

APPENDIX TO THE FINAL REPORT

OF THE

IRISH MILK COMMISSION, 1911.

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Presented to both Houses of Parliament by Command of His Majesty.



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BY THE LORD LIEUTENANT-GENERAL AND GENERAL GOVERNOR
OF IRELAND.

ABERDEEN.

WE, John Campbell, Earl of Aberdeen, Lord Lieutenant-General and General Governor of Ireland, hereby nominate and appoint:—

PATRICK J. O'NEILL, Esquire, J.P., Chairman of the County Council of the County of Dublin;
SIR JOHN LENTAIGNE, F.R.C.S.I.;
GEORGE A. MOORHEAD, Esquire, F.R.C.S.I.;
ALEC WILSON, Esquire, of Belvoir Park, Belfast;
DERMOD O'BRIEN, Esquire, President of the Royal Hibernian Academy;
JOHN R. CAMPBELL, Esquire, B.Sc., Assistant Secretary in respect of Agriculture of the Department of Agriculture and Technical Instruction for Ireland;
ALBERT E. METTAM, Esquire, M.R.C.V.S., Principal in the Royal Veterinary College of Ireland;
Lady EVERARD, of Randlestown, Navan; and
Miss MARGARET MCNEILL, Assistant Inspector of Reformatory and Industrial Schools, Ireland;

to be a Committee to inquire into the alleged scarcity in the supply of Milk in some parts of Ireland, and to report upon the causes of the deficiency, where it exists, its effects upon the public health, and the means whereby the deficiency can be remedied; and also to inquire into and report upon the dangers of contamination and infection in the present Milk supply, and the methods best adapted to guard against these dangers.

We further appoint the said Patrick J. O'Neill to be Chairman of the Committee.

Given at Dublin Castle the 8th day of November, 1911, by His Excellency's Command.

J. B. DOUGHERTY.

BY THE LORD LIEUTENANT-GENERAL AND GENERAL GOVERNOR
OF IRELAND.

ABERDEEN.

WHEREAS We, John Campbell, Earl of Aberdeen, Lord Lieutenant-General and General Governor of Ireland, did by Warrant bearing date the 8th day of November, 1911, appoint Patrick J. O'Neill, Esquire, J.P., Chairman of the County Council of the County of Dublin; Sir John Lentaigne, F.R.C.S.I.; and the several gentlemen and ladies therein mentioned to inquire into and report as to certain questions affecting the supply of Milk in some parts of Ireland;

AND WHEREAS one of the Members of the Committee so appointed, namely, Sir John Lentaigne, has tendered to Us his resignation of his appointment as one of the said Committee;

Now WE do appoint Sir Stewart Woodhouse, M.D., to be one of the Committee for the purpose aforesaid in the room of the said Sir John Lentaigne, resigned, in addition to and together with the other members of the Committee whom We have already appointed.

Given at Dublin Castle the 2nd day of January, 1912, by His Excellency's Command.

J. B. DOUGHERTY.

LIST OF WITNESSES.

Page.	Name of Witness.	Capacity in which Witness gave evidence.
A.		
86	ANDERSON, R. A. ...	Secretary to the Irish Agricultural Organisation Society.
83	ANDERSON, WILLIAM JOHN ...	Manager of the Omagh Co-operative Creamery.
B.		
28	BARBER, JOHN ROBERT ...	Farmer, Collooney District, Co. Sligo.
94	BARRETT, Dr. JAMES W., C.M.G. ...	Of Melbourne.
3	BETTY, Dr. MOORE ...	Medical Officer of Health, Enniskillen.
43	BOYLE, Rev. JOHN ...	Parish Priest of Falcarragh, Co. Donegal.
100	BRITTLEBANK, J. W., M.R.C.V.S., D.V.S.M. (Vict.) ...	Chief Veterinary Inspector, Manchester.
15	BROWN, WILLIAM JAMES, J.P. ...	Member of the Enniskillen Rural District Council.
76	BROWNE, J. G. ...	Farmer, Strabane.
C.		
118	CAMERON, Dr. J. SPOTTISWOODE, M.D., B.Sc. ...	Medical Officer of Health, Leeds.
112	CHALMERS, Dr. A. K., D.P.H. (Camb.) ...	Medical Officer of Health, Glasgow.
68	CLEMENTS, R. S., J.P. ...	Representing the Omagh Rural District Council.
26	COLLIS, JAMES ...	Manager of the Collooney Co-operative Creamery.
92	CRAIG, Professor JAMES FERGUSON, M.R.C.V.S. ...	Re Denmark.
80	CUNNINGHAM, JOHN ...	Member of the Dungannon Urban District Council.
D.		
136	DELEPINE, Professor A. SHERIDAN, M.B., C.M., M.Sc. ...	Director of the Public Health Laboratory connected with the Manchester University.
121	DIXON, JAMES A., M.R.C.V.S. ...	Chief Veterinary Inspector, Leeds.
181	DRENNAN, JOHN T., B.L. ...	Registrar and Assistant Secretary to the Estates Commissioners.
F.		
46	FLETCHER, D. ...	Executive Sanitary Officer, Londonderry.
G.		
63	GALBRAITH, J. ...	Dairy Farmer and Milk Vendor, Derry.
36	GALLAGHER, BERNARD ...	Vice-Chairman, Board of Guardians, Glenties Union, Co. Donegal.
12	GALLAGHER, DENIS ...	Manager of the Lough Eagish Co-operative Creamery, Co. Monaghan.
21	GALLAGHER, MICHAEL ...	Farmer, Collooney, Co. Sligo, and member of the Committee of the Collooney Co-operative Creamery.
56	GOSSELIN, Major Sir NICHOLAS ...	Member of the County Monaghan Agricultural Committee.
H.		
52	HANNA, Mrs. STEELE ...	Hon. Secretary of the Eglinton Branch of the W. N. H. A., Co. Londonderry.
73	HARRIS, Dr. HUGH ...	Medical Officer of Health, Stewartstown, Co. Tyrone.
48	HOWATT, JOHN, M.R.C.V.S. ...	Veterinary Inspector, Londonderry.
L.		
17	LAIRD, Dr. JOHN, J.P. ...	Medical Officer of Health, Sligo No. 1 Rural District.
155	LLOYD, JOHN SMOUT, F.R.C.V.S. ...	Chief Veterinary Inspector, Sheffield.
65	LYON, JAMES ...	Manager of the Ballyrashane Co-operative Creamery, near Coleraine.
M.		
54	McCAUL, Dr. GEORGE B., J.P. ...	Representing the Derry Corporation.
24	MACDOWEL, Dr. E. C. ...	Surgeon to the Sligo County Hospital, and Visiting Physician to the Sligo Lunatic Asylum.
40	M'DWYER, Rev. HUGH ...	Manager of the St. Columba Industrial School for Boys, Killybegs, Co. Donegal.
71	M'GILLION, JAMES ...	Representing the Omagh Urban District Council.
85	M'LOUGHLIN, PATRICK ...	Member of the Omagh Urban District Council.
11	M'MEEL, Rev. GEORGE, D.D. ...	Parish Priest of Pettigo, and representing the Belleek Branch of the W. N. H. A.
33	M'NEILS, MICHAEL, J.P. ...	Clerk of the Glenties Rural District Council, Co. Donegal.
143	MALCOLM, JOHN, F.R.C.V.S. ...	Chief Veterinary Inspector, Birmingham.
58	MORRISON, Dr. H. S. ...	Medical Officer of Health, Aghadowey, Co. Antrim; and President of the Aghadowey Co-operative Creamery.
42	MURRIN, THOMAS ...	Resident in Killybegs District, Co. Donegal.
128	MUSSEN, Dr. A. A. ...	Assistant Medical Officer of Health, Liverpool.

LIST OF WITNESSES—*continued.*

Page.	Name of Witness.	Capacity in which Witness gave evidence.
	N.	
123	NIVEN, DR. JAMES	Medical Officer of Health, Manchester.
	O.	
30	O'BOYLE, JAMES, J.P.	Farmer, Killala District, Co. Mayo.
38	O'BYRNE, PATRICK	Resident in Killybegs. Co. Donegal.
	P.	
185	PRENTICE, DAVID, M.R.C.V.S. ...	Superintendent Transit Inspector in the Veterinary Branch of the Department of Agriculture, Ireland.
	Q.	
133	QUINTON JOHN T.	Food and Drugs Inspector, Liverpool.
	R.	
149	ROBERTSON, DR. JOHN, M.D., B.Sc. ...	Medical Officer of Health, Birmingham.
159	ROBERTSON-SCOTT, J. W.	Re Goats and Milk-sheep.
	S.	
183	SCURFIELD, DR. HAROLD, M.D. ...	Medical Officer of Health for Sheffield.
50	SHIER, R.	Superintendent of the Derry Abattoir.
169	SMITH, J. L.	Principal Clerk, Local Government Board, Dublin.
78	STEWART, JAMES, J.P.	Representing the Strabane No. 1 Rural District Council.
	T.	
67	TILLIE, Alderman MARSHALL, D.L. ...	Representing the Derry Corporation.
116	TROTTER, A. M., M.R.C.V.S.	Chief Veterinary Inspector, Glasgow.
	W.	
1	WHALEY, GEORGE	Chairman of the Enniskillen Urban District Council.
6	WHYTE, WILLIAM R., J.P.	Manager of the Scottish Wholesale Co-operative Society, Enniskillen.
81	WILSON, R. J.	Secretary to the Omagh Co-operative Agricultural and Dairy Society.

**PLACES AND DATES OF MEETINGS OF THE COMMISSION
FROM 8th AUGUST, 1912, TO 23rd OCTOBER, 1913,
INCLUSIVE.**

ENNISKILLEN	...	8th August, 1912	...	...	...	Evidence taken.
SLIGO	...	9th August, 1912	...	...	...	Do.
KILLYBEGS	...	12th August, 1912	...	...	...	Do.
LONDONDERRY	...	13th August, 1912	...	...	...	Do.
OMAGH	...	14th August, 1912	...	...	...	Do.
Do.	...	15th August, 1912	...	...	...	Inspection of Creameries in Co. Tyrone.
DUBLIN	...	2nd and 3rd October, 1912	...	...	...	Evidence taken.
MANCHESTER	...	7th and 8th November, 1912	...	...	...	Do.
BIRMINGHAM	...	9th and 11th November, 1912	...	...	...	Do.
DUBLIN	...	29th and 30th November, 1912	...	...	...	Committee Meetings.
Do.	...	13 and 14th December, 1912	...	...	...	Evidence taken.
Do.	...	23rd December, 1912; 12th, 17th and 18th February; 15th, 16th, 17th, 23rd, 24th and 31st May; 6th, 20th and 30th June, 1st September; 3rd and 23rd October, 1913.	Committee Meetings.

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FORTY-SIXTH DAY.—THURSDAY, 8TH AUGUST, 1912.

The Commissioners met at the Courthouse, Enniskillen, at 10 o'clock, a.m.

Present :—P. J. O'NEILL, Esq. (Chairman); LADY EVERARD; MISS MARGARET McNEILL; Sir STEWART WOODHOUSE, M.D.; G. A. MOORHEAD, Esq., F.R.C.S.I.; DERMOD O'BRIEN, Esq.

S. W. STRANGE, Esq., *Secretary*.

Mr. GEORGE WHALEY examined.

26007. The CHAIRMAN.—I understand, Mr. Whaley, you are Chairman of the Enniskillen Urban Council?—Yes, sir.

26008. And you are familiar with the administration of that body under the Public Health Act?—Yes.

26009. Would you be good enough to tell the Commission what arrangements have been made by your Council for the administration of the Dairies and Cowsheds Order?—The Council brought the Order into operation immediately after it was passed, and we have appointed inspectors; a veterinary inspector and a dairy inspector who goes round from time to time to examine the dairies and milkshops, and that inspector reports periodically to the Urban Council.

26010. The condition in which he finds the dairies and cowsheds?—Yes.

26011. Has he reported satisfactorily on their condition or otherwise?—On the whole, the law is fairly well complied with.

26012. Have you ever been obliged to resort to prosecutions for the purpose of enforcing the provisions of the Order?—Yes, in one or two instances.

26013. For what breach of the Order?—The construction of the byres.

26014. Do the magistrates seem to think that was a serious matter, and do they co-operate with the Council in their efforts to have the provisions of the Order enforced?—Yes.

26015. You have no reason to complain of want of co-operation on their part?—No; they give us every assistance.

26016. Was your officer able to secure the alterations he considered necessary in the premises?—Yes.

26017. Are there milkshops in the town?—There are.

26018. Are these inspected?—Yes, periodically.

26019. Are reports ever made by your officer as to the condition in which he finds these shops?—Yes; he reports to the Council.

26020. Has he ever reported any breaches of the regulations with regard to the manner in which the milk is stored in these shops?—Well, I think if there was any fault at all it is in the matter of the storage of the milk.

26021. He finds it is not always stored in as healthy surroundings as he would desire?—That is so.

26022. Have you ever instituted prosecutions with regard to the manner in which milk is stored?—No.

26023. Were the matters reported on not considered of sufficient gravity to institute prosecutions?—It would mean perhaps abolishing the shops altogether.

26024. That is what I wanted to get at. Did your Council feel that if they enforced the Order they would drive people out of the trade?—Yes. To my knowledge in the majority of cases that would be so.

26025. Have you the same feeling with regard to the condition of the byres?—No. I think the law with regard to the condition of the byres has been enforced in strict conformity with the Order.

26026. So that the only matter in which you found it necessary to deal leniently was with regard to the storage of the milk?—Yes.

26027. Would the owners of the milkshops be cow-keepers themselves, or people who buy milk and retail it?—I think they are persons who buy milk and retail it again.

26028. What proportion of the milk consumed in the town would be raised in the urban area?—I can hardly answer that question.

26029. Is there any scarcity of milk, do you think, in the town at any period of the year?—No; I think, on the whole, we have an adequate supply.

26030. So far as your knowledge goes, you are not able to state that at any period of the year those who are desirous of procuring milk, and having money to buy, cannot find it in the town?—I think, on the whole, if they had money to purchase it they could get it at any time.

26031. You must have a large industrial population in Enniskillen?—Yes. The population of the town is about 5,000.

26032. Have you any knowledge of the quantity of milk that would be consumed in the household of an ordinary mill operative earning from 20s. to 30s. a week?—I cannot answer that question.

26033. Probably we will get that from the doctor?—I presume you will.

26034. I presume a fair quantity of milk is sent into the town for sale from outside areas?—Yes. There are several milk carts coming in.

26035. And vending milk through the streets and supplying private houses?—Yes; they have their customers.

26036. Is any inspection made of the milk so distributed by your officers?—No; our officers do not interfere, so far as I know, with the milk sold from carts that come in.

26037. Not even to the extent of taking samples to see if it is adulterated?—I don't think so.

26038. Is there a Food and Drugs Act officer under the Urban Council?—No; but there is under the County Council.

26039. Have you heard of any samples taken by him of milk from outside areas?—Yes.

26040. Have prosecutions resulted?—Yes. I have one case before my mind.

26041. What sort of fines were imposed by the Bench?—I think pretty heavy fines. In the case I have in my mind I think it was a fine of £1, so far as I can recollect.

26042. The reason I put the question is because we have heard complaints elsewhere that the local Magisterial Bench fail to realise the gravity of offences under the Order, and only impose nominal penalties. I wanted to know have you any reason to complain in that respect in Enniskillen?—No; we have not.

26043. Has your medical officer ever reported to the Urban Council that he suspected the milk supply of being the cause of an outbreak of infectious disease in the urban area?—I don't think so.

26044. Has there ever been a suspicion that infectious disease was traceable to the milk supply in the town?—No.

26045. Would you think it desirable that your Council, for example, should have the right to go into the country outside the urban area to ascertain the conditions under which the milk that is sold and consumed in the town is produced?—Yes.

26046. You would be in favour of conferring that power on urban authorities—to go into the district in which the milk is produced, and have an officer

Mr. GEORGE WHEATLEY.—8th August, 1912.

of your own to report the conditions under which the industry is carried on?—Yes; seeing that they compete with the local producers.

26047. To ensure absolute uniformity in trade, and to secure that the milk supply would be cleanly and healthy?—Yes.

26048. Is registration enforced against all cow-keepers and milk vendors in the town?—Yes; against all cow-keepers who sell milk. Of course there are a number of people who keep cows for their own private use who are not required to register.

26049. Have prosecutions ever been instituted against persons who sell milk without being registered?—Not that I recollect.

26050. It is universally known throughout the town that registration is enforced, and that those who sell must comply with the registration formula?—Yes, that is generally known.

26051. Have you any knowledge of what steps are taken by the Rural Council to enforce the provisions of the Order?—Yes. I understand that lately they have put the Order into operation.

26052. And only recently?—Yes, only recently. They have appointed a veterinary inspector.

26053. Is he the same veterinary inspector as acts for the Urban Council?—He is.

26054. Regarding the condition of the cows, has the veterinary inspector reported to your Council that he found animals in the dairy herds that he suspected of suffering from tuberculous infection?—Yes, in one or two cases, and he has seen that they have been disposed of.

26055. He has never recommended the slaughter of these animals to your Council?—No.

26056. He has never reported that he was unable to get rid of these cows from dairies that were supplying milk to the town?—No. He has got rid of them.

26057. Will your veterinary officer be examined before us?—Yes.

26058. Well, then, we will get that information from him?—Yes.

26059. Would you be in favour of licensing dairies and cow-keepers; I mean licensing them in the same way as spirit grocers would be licensed for their trade? In the first instance that they should make application to the local authority that the premises should be inspected; that the character of the person making the application should also be investigated to ascertain whether he was a person who would be likely to carry on a legitimate trade, and that the licence should be at the will of the Council, renewed, as the person complied with the regulations laid down?—Yes.

26060. You think that would be helpful to the Urban Council?—Yes.

26061. And to more completely control the sale of milk and its production under hygienic conditions?—Yes, I think it would be of assistance.

26062. Have you any reason to think or believe that any of the outside authorities are weak in the administration of the Order by reason of the influence that may be brought to bear on members of local Councils to overlook certain defects?—Yes. I think the Order was adopted in a half-hearted way by some of the surrounding Councils.

26063. Would you be in favour of having the administration of this Order controlled by some central authority, who would, at least, supervise the work of the local authority?—The local authority is perfectly competent.

26064. They are perfectly competent, I admit; but on your own statement some of them have not shown the diligence in carrying out the Order that you would think necessary?—That does not apply to the Urban Council.

26065. It is for the protection of such authorities as yours that every district that sends milk into a town like Enniskillen should be required to enforce the same conditions as are enforced in the urban area?—Yes. With that object it would assist.

26066. And it would lead to more uniform administration of the Order throughout the country generally?—Yes.

26067. Do you know anything about the condition of the cattle that supply milk outside the urban area?—No; I don't know anything about that at all.

26068. Are there many creameries in this region?—We have a creamery in the town.

26069. Is there any sale of separated milk from that creamery?—I don't think so.

26070. Is the separated milk all sent back to the

farmers who supply the whole milk?—Yes, so far as I know.

26071. And no retail trade is done in separated milk amongst the poorer inhabitants of the town?—No; it is all buttermilk they deal with.

26072. Is that subject to inspection by your officer the same as the new milk?—It is subject to our officer as regards cleanliness.

26073. It comes into his purview to report as to the condition in which this milk is offered for sale?—Yes. It is generally stored in the same premises as the new milk.

26074. The only real complaint you have to make is that the milk in the small shops is not stored in as good condition as you would like to see it?—That is so.

26075. Has your officer ever reported that he discovered milk kept in vessels that were not clean?—I do not think so. I think he has reported that the vessels have not been kept covered.

26076. That they are exposed to contamination by flies?—Yes.

26077. Has he ever reported that he has found those engaged in the handling of the milk were not clean in their persons?—He has not.

26078. And, so far as you know, he has no reason to complain on that score—his reports have not indicated that?—No.

26079. You would hardly know anything of the milk yield of the cows?—No.

26080. Lady EVERARD.—I think you said you would like the Urban Council to have the power to go into the rural district to inspect the dairies from which the milk for the town is derived?—Yes; I think it would be only just and fair to the urban suppliers.

26081. Or rather the consumers?—To both.

26082. What is the price of milk in Enniskillen?—3½d. a quart in winter and 2½d. in summer. That is the price, to the best of my opinion.

26083. Would you advocate that all the by-products of milk should be under the same rules and regulations as new milk? As you are aware, at present a person may sell butter, or skim milk, or buttermilk, and he is not subjected to inspection of any kind. Would you recommend that all the by-products of milk should be under the same rules and regulations as new milk?—That is a very big question. I would want time to answer that. You open up the question of butter shops.

26084. The CHAIRMAN.—What Lady Everard desires to know is whether those who don't sell milk, but who make butter at home, should be under the same regulations as those who sell new milk sweet?—Yes; I would be in favour of that; but I don't think there is such a case as that in the town of Enniskillen.

26085. We are not dealing with the town only, and we would be glad to have your views on the question generally, even though it might not apply to your own area?—Yes.

26086. Lady EVERARD.—We have had evidence of butter containing the germs of tuberculosis?—Yes. Of course, it would be a capital idea to bring them under the same rules as new milk.

26087. I think you said you would advocate licensing instead of registration. You think it would be more advisable that the cow-keepers should be licensed?—Yes; I think it would be a help.

26088. Do you think that a whole-time veterinary surgeon would be more advisable than what we have at present? We have evidence that the veterinary surgeon is not paid sufficiently to make him perfectly independent. The veterinary surgeons told us also that they considered if a whole-time surgeon was appointed by the Department or the County Council it would be advisable?—That would only apply to large areas.

26089. For the whole county?—Yes.

26090. The idea was that his work would be much freer, and probably better done?—I believe it would tend to efficiency.

26091. Sir STEWART WOODHOUSE.—Is your inspector of dairies and cowsheds the sub-sanitary officer for the district?—He is our water inspector as well.

26092. In addition to the County Council officer who looks after the adulteration of milk, do the Constabulary take samples for analysis?—The inspector is a sergeant in the Constabulary.

26093. Dr. MOORHEAD.—Is he the inspector of food and drugs?—Yes.

26094. Are there any articles sold in the milk shops besides milk?—Yes, there are.

26095. What kind would these be?—Well, groceries.

26096. Paraffin oil?—I am not in a position to say

whether paraffin oil is sold in these shops. I would not say it is not, but I am not in a position to say it is.

26097. It has never been reported that any obnoxious articles are sold in these milk shops?—No. I don't think it has been specifically reported what particular things were in the milk shops; but I know it has been reported that there are things in milk shops other than milk.

26098. There are no separate milk shops in the town—shops that go in exclusively for the sale of milk?—No.

26099. Are you satisfied that there is a sufficient supply of milk for the public?—Yes. I never heard any complaints about the supply.

26100. Mr. O'BRIEN.—The creamery that is in the town, is it co-operative or proprietary?—It belongs to the Scottish Co-operative Wholesale Society.

26101. Do you say they sell buttermilk?—No; I don't think so. They give back all the separated milk to the farmers who supply the whole milk.

26102. And the buttermilk, too, I suppose?—Yes, as far as I know. The manager of that creamery is chairman of our Public Health Committee, and you will have him later on before you.

26103. The milk that comes in from the outside area, and which is sold to people in the town, is that also sold in the streets from carts?—It is supplied from a cart to people's houses.

26104. Only to certain individuals?—Only to customers.

26105. It is not sold to any one in the street who comes up and says, "I want a half-penny worth of milk"?—No.

26106. It is practically milk that is ordered before and then just delivered?—Yes.

26107. I suppose that is delivered in ordinary cans—they don't supply it in sealed cans or bottles?—It comes in in large cans, and it is measured into the cans of the customers at their doors.

26108. Is the milk taken out of the tap, or do they dip in a vessel for it?—It is taken out of a tap.

26109. The can is covered; it is a proper can?—Yes.

26110. It is not liable to contamination?—No; it is covered, and appears to be very well and cleanly kept.

26111. Do you know how many shops there are selling milk in the town of Enniskillen?—I suppose there would be some five or six altogether.

26112. Not more than that?—I don't think so; but our officers will give you evidence on that.

26113. So that those who are selling are selling a considerable amount of milk?—Yes; they are distributed over the town.

26114. And each of them is selling a good quantity of milk?—Yes.

26115. Do many of the people living in the town get the milk from outside the urban district?—For sale, do you mean?

26116. No, for their private consumption. Are there many people in the town who have cows and farms of their own outside the town sending in milk?—I don't think so. We have no case such as that.

26117. Is the bulk of the milk which is consumed in Enniskillen retailed from the shops?—No. I would say the bulk of the milk that is consumed in the town is supplied by the dairies in the town.

26118. They actually keep the cows in the town?—Yes. We have to graze them outside the urban district area, because we have no accommodation within the urban district. We are built on an island.

26119. The cattle are wintered in the town?—Yes.

26120. And are liable to inspection by your officer?—Yes.

26121. But when on grass they are outside your area, and not liable to inspection?—So far as I know, I do not think they are inspected by our inspector.

26122. In the same way he does not know under what conditions they are milked in the summer when on grass?—He knows they are milked in the open.

26123. He may know that from practical experience, but has he the right to go out and see how they are being milked, and whether they are being milked in a cleanly way?—Our deputy inspector would not have the power our veterinary inspector would have, seeing that the latter is also inspector for the rural district as well as for the urban district.

26124. You think there is no danger of a cow that would come under his inspection in the winter as being delicate, and perhaps subject to tuberculosis, being sent to the farm outside, and kept there in order to avoid inspection? That has happened a good deal in many parts of England—they keep the healthy cows that were under immediate inspection in the town and send the sickly ones outside, and the milk is sent in all the same?—I do not think there is any danger from that source here.

Dr. MOORE BETTY examined.

26125. The CHAIRMAN.—I understand, Dr. Betty, you are Medical Officer of Health of this district?—Yes.

26126. Do you hold any other public appointment?—I am Dispensary Medical Officer as well.

26127. Consequently, you are familiar with the conditions under which the poor feed and nourish their children?—Yes, fairly well.

26128. Is there any scarcity of milk for the infant population in this district of Enniskillen?—So far as I know, the quantity available is sufficient, but the quantity used by the individual family is insufficient.

26129. Is that owing to want of appreciation of the food value of milk or inability to procure?—To both causes combined, I would say.

26130. Do you find any improvement as to the appreciation of the value of milk amongst the working class population?—I cannot say that I do.

26131. You do not think they are any more enlightened on that question than they were five or ten years ago?—I would not say so.

26132. Is there a branch of the Women's National Health Association in this town?—Yes.

26133. Do they employ a nurse?—No.

26134. To what particular branch of the work are their energies directed?—I do not think they have directed them to any particular branch.

26135. Have you thought of any means by which this knowledge might be more widely disseminated amongst the working-class population?—They could be instructed by health visitors.

26136. Would you think lectures would be in any way helpful?—I don't think so.

26137. They would not be likely to attend them?—I don't think so.

26138. Would you think a visit of the nurse to the homes of the people would be helpful?—Yes, more so than lectures.

26139. Miss McNEILL.—Is there a district nurse in the town?—Yes.

26140. The CHAIRMAN.—Under whom does the district nurse act?—Under the medical officers of the town.

26141. Has the advisability ever been suggested to whoever fills this position of instructing those responsible for the care and management of children in the value of milk as a food?—I don't think so.

26142. It is not part of the nurse's duty to impart that knowledge?—I would not say it was.

26143. Do you think it would be a useful way of disseminating the information?—It would, no doubt.

26144. Is she responsible to the Urban Council or to the Rural Council?—She is not responsible to any Council. She is under the control of the medical officers of the town, with the committee.

26145. So far as you know, that committee has never given this lady any instructions to advise mothers as to the manner in which they should feed and nourish their children?—Not so far as I know.

26146. Do you find many delicate and ill-nourished children in your district?—Yes, a large percentage.

26147. Is there any radical cause producing that result?—I attribute it to bad feeding—unsuitable feeding.

26148. Do you find children of tender years given what you regard as absolutely unsuitable food and nourishment?—Yes.

26149. Tea?—Yes. I have known children a month old getting potatoes. I know a healthy child fed on potatoes from a month old.

26150. Was it necessity that prompted the mother to do that?—I would not say it was. It was not necessity.

26151. However, it is not a practice that you would recommend generally?—No; we don't recommend it.

26152. This lady took the care of her infant into her own hands, and treated it as she thought proper, according to her lights?—Yes.

26153. Have you much tubercular trouble in this town?—Principally glands and joints amongst the poor children.

26154. Would you think that attributable directly or indirectly to improper nourishment?—Yes, combined with bad teeth.

26155. Have you ever traced an outbreak of infectious disease to the milk supply?—No.

26156. No such trouble has arisen in your district?—No.

26157. Have you had any outbreak of scarlatina?—Yes; about three years ago—a mild epidemic.

26158. You have no reason to believe that the food supply was in any way responsible?—No, I had no reason to believe it.

26159. You believe that the working-class population do not know the value of milk as a food for the nourishment of children?—I do.

26160. How far would you attribute that to poverty or inability to buy?—Well, of course, there are some who cannot afford to buy a sufficient quantity of milk. Take, for instance, a man with 12s. a week, who pays 8s. a week rent, and has seven or eight children. He cannot buy very much milk. There are several instances of that kind.

26161. That is not an uncommon position in which to find a working man?—No.

26162. Is the rent so high as 3s. a week?—Yes. In some cases they live in a room.

26163. Miss McNEILL.—They have a garden attached to the house for which they pay 3s. a week?—No.

26164. The CHAIRMAN.—Have any artisans' dwellings been provided in your district?—No.

26165. I take it that there is rather a scarcity of housing accommodation when rents run to such a prohibitive figure?—That rent, 3s. a week, is for a whole house; but, on the other hand, we have several houses vacant.

26166. Has your population diminished?—It has.

26167. You, as Medical Officer of Health, have never been requisitioned by the veterinary inspector to examine the conditions prevailing in dairies with the object of confirming his opinion that the circumstances were not in conformity with the Dairies and Cowsheds Order?—No.

26168. Have prosecutions been undertaken to your knowledge for the adulteration of milk?—There have been one or two.

26169. You have never been called upon to give evidence with regard to them?—No.

26170. Is there much bread-baking carried on in the homes of the poor?—In the rural district?

26171. Yes?—I would not say so.

26172. Your district embraces a rural area?—Yes.

26173. What are the conditions as to the manner in which the children are fed, as to the amount of milk available, and as to its use by mothers in nourishing children in the rural district?—I have ordered a milk diet for children and it was impossible to get it.

26174. Is that scarcity growing, or has it been the same as long as you recollect?—The consensus of opinion is that the creameries are responsible for it.

26175. Are the creameries scattered all over your district?—They are scattered fairly well.

26176. Do the creameries sell milk retail?—Not as far as I know.

26177. Have you any knowledge of the value of separated milk as a food?—No.

26178. Is it used by the poorer population?—I believe it is. In the line of making bread it is, I know.

26179. Do they give it as a liquid food to children?—I cannot say that. I have no experience of it.

26180. It has not come under your observation?—No. In the case of sickness, the people attribute it to the separated milk. For instance, intestinal disorders.

26181. What would be your view on that question?—It would all depend on the milk.

26182. Miss McNEILL.—Do you mean that it happened once or several times?—I have several cases in which that statement was made to me.

26183. It has been repeatedly made to you?—Yes. They state that the separated milk is the cause of the disease.

26184. These would be infantile cases?—In adults also.

26185. The CHAIRMAN.—At all events, rightly or wrongly, the feeling prevails amongst the population that the drinking of separated milk is a suspected cause of the ailments described?—Yes.

26186. And without having a knowledge of the milk, or the conditions in which it was kept, you could not say definitely whether that was so or not?—No.

26187. It is quite possible that the belief may be well founded?—It may be.

26188. The keeping property of separated milk is very limited?—Yes.

26189. And after it has been brought from the creamery, in a few hours it turns quite sour, we have been told?—Yes.

26190. And the consumption of a food of that kind would in all probability be likely to produce the ailments to which you refer?—I don't know that the sour condition of the milk would be injurious. I think it might be attributable to the foreign substances in the milk.

26191. You would suspect it as a means of carrying infective germs into the system?—The creameries say they sterilise milk, but I do not know whether that is so or not.

26192. We have had a variety of evidence with regard to the temperature to which milk is raised at the creamery, and I do not know that any one has ever stated that they raised it to the sterilisation temperature. It has been suggested to us that the raising of the temperature and the destruction of lactic acid bacilli render the keeping qualities of separated milk very much more limited than that of ordinary milk. That would not be contrary, I suppose, to any views you entertain?—I don't quite follow.

26193. It has been stated to us that the destruction of the lactic acid bacilli in the milk renders it more liable to the development of other germs, which turn it rancid, than if it had not been subjected to the increased temperature?—Yes.

26194. Have you ever been called on to make any inspection of the milk shops in the urban area by the officer in authority, and to give your opinion as to whether or not the conditions under which the milk was stored were healthy or otherwise?—I have not been called on to do so, but I have done it.

26195. And have you had reason to complain?—Yes.

26196. The surroundings were unsuitable?—Yes.

26197. Is there any want of cleanliness in the vessels themselves?—I would not say in all.

26198. There are several articles sold in the same store that would be likely to give a taint to the milk?—Yes, quite a number—paraffin oil, tobacco, cabbage, potatoes, &c.

26199. It is the small huxters' shops which usually purvey milk?—Yes; that is what I am alluding to now.

26200. Have you ever known the owners of these small depots to evade the inspection of the officers appointed by the Urban Council by storing milk in other premises than in the shop in order to avoid inspection?—No. I don't think they have any reason to evade it. If they had reason they possibly would.

26201. Do you happen to know whether the custom prevails in the rural district of the farmers supplying the labourers who work for them with milk?—Would that be daily workers?

26202. Yes?—It is quite a common thing.

26203. Is it a universal practice?—No, but it is common all the same. For instance, a man who cares a farm for the farmer has milk for his wages.

26204. It is not the ordinary custom for the farmer to supply his labourer with a given quantity of milk?—No.

26205. Where that custom did not prevail, where would the labourer get his milk supply from?—He would buy it.

26206. Would he buy it from the farmer?—No, but from the man with one cow.

26207. In some districts you might find labouring men so located that they might not be within reasonable distance of such a person, and might have to go without milk?—Yes.

26208. Do they use condensed milk?—I have not seen it.

26209. Or milk powder?—No.

26210. Have you had any experience of typhoid carriers?—No, none. We have not had a case of typhoid

here for three years in the urban district; and I had only three cases in my district in eighteen years.

26211. That is a very exceptionally lucky bill of health?—Yes.

26212. Lady EVERARD.—Are goats kept in Enniskillen?—There are about four in it—four or five.

26213. Are they kept in the rural district?—Yes.

26214. Are they not a great help in the milk supply?—They are.

26215. Have the people in your district the new breed of goats?—No; only the ordinary goat.

26216. These don't milk in the winter?—No.

26217. Have you a Babies' Club in Enniskillen?—No.

26218. You spoke about mothers not having a knowledge of the value of milk; don't you think it would be advisable if the children in the schools were taught the value of milk as a food?—I do; but I think it would be more advisable if the mothers were taught.

26219. It is hard to get at the mothers?—Except by house-to-house visits.

26220. Is your nurse a Jubilee nurse?—Yes.

26221. Cannot the committee impress on her the importance of telling the mothers the value of milk?—She has enough to do. I think it would take a whole-time official to impress the value of milk and the rearing of children on the mothers.

26222. And, therefore, you think a Babies' Club might be valuable?—Yes.

26223. Have you any infantile cholera in summer?—We have not much of it. Hardly any this year.

26224. Miss McNEILL.—This is not a year that it would be likely to occur very much. Was there any last year?—No, none last year; we might have an occasional case, but very few.

26225. Lady EVERARD.—Do you find mothers make porridge for their children?—I would not say that, on the whole, they do. To my mind, they don't make enough.

26226. Do you find they use bakers' bread, and don't bake home-made bread?—Few bake bread at home.

26227. Would you not advocate home-made bread instead of bakers' bread for children?—I don't know that it would be much difference.

26228. Sir STEWART WOODHOUSE.—You said that there is a pretty fair amount of tuberculosis in this district—a good deal in the bones and glands?—Yes.

26229. And you attribute that partly to milk and bad feeding?—Yes.

26230. Do you mean that there were tubercle germs in the milk or that it was due to want of milk?—To want of milk.

26231. Have you known of cases in which you believe that the tubercle germs in the milk were the cause of tuberculosis in children?—I cannot say.

26232. Is poverty increasing, do you think, in the district; are the people less able to buy milk than they were, say, ten years ago?—I would not say poverty is increasing. I think they are better off than they were.

26233. What have they to pay for milk in the country districts—in the rural portions of your districts, when they buy it from the small farmers?—A penny a pint would be the outside.

26234. So it is rather cheaper there than it is in the urban district?—It is cheaper.

26235. You don't attribute any of the summer diarrhoea that you have to the milk; you have very little summer diarrhoea?—Any diarrhoea that we have may be attributed to faulty feeding.

26236. Dr. MOORHEAD.—I notice from your *précis* of evidence that you state you have prescribed cod-liver oil as a substitute for butter fat?—Yes.

26237. That is, I presume, in cases where the people cannot get milk?—Where it is absolutely necessary for the children's sake.

26238. Would these be children who have not plenty of milk?—I would not say so.

26239. Is it not in consequence of their not having a sufficient supply of milk that you give them the cod-liver oil?—Yes.

26240. You would not look on cod-liver oil as an economic or proper substitute for butter fat?—No.

26241. And if the people could get plenty of milk you would not have any necessity for getting cod-liver oil?—There would not be so much need. If we had proper sanitary surroundings and proper conditions and better milk we would have no need of cod-liver oil.

26242. Do the mothers nurse their children?—Yes; the majority of them.

26243. You are satisfied that there is a large number of people who cannot get a sufficient quantity of milk owing to not being able to pay for it, or ignorance?—There are a certain percentage who cannot afford to get it. On the other hand, there is a certain number of people who can get it and don't get it.

26244. They don't know the value of it?—Probably they don't.

26245. And the others cannot get it because it is outside their means?—Yes; but on the other hand, there are families who can get it and won't get it. But it is not from the want of knowledge of the food properties of milk, but they will devote the money to other purposes.

26246. Mr. O'BRIEN.—They rob the children?—Yes. You will get an instance of a father who is drinking.

26247. Dr. MOORHEAD.—The money is spent on porter instead of milk?—That is the way.

26248. Have you any idea as to how to improve the position of those people who require milk and don't get it?—I cannot formulate any scheme.

26249. Would you say that gland and bone troubles are on the increase or decrease?—I would say on the increase.

26250. Mr. O'BRIEN.—You say you have no pulmonary tuberculosis here?—I have.

26251. You say in your *précis* of evidence that you have not many cases of pulmonary trouble?—Last year three died under nine years of age.

26252. You think that such cases have been brought in from outside?—To my mind, the cause of the spread of consumption in general is the fact of advanced cases of consumption living and dying in the house, and infecting it.

26253. You find that the people don't really recognise the infectious nature of the disease?—People recognise it; but where is the provision to avoid it?

26254. When you have suspected cases, have you been able to get them to do anything towards isolation, and keeping windows open, and that sort of thing?—Isolation in the homes of the working classes is absolutely impossible with the surroundings.

26255. Have you any cases of tuberculosis that has been brought back by returned Americans?—Yes.

26256. That occurs?—Yes. I know one instance up the Lake when a son came back, and he infected the whole family out of existence. I know another house where another family was lost through tuberculosis.

26257. Dr. MOORHEAD.—Do you find much amongst returned soldiers?—Very few. I have not a great knowledge of returned soldiers here. Occasionally we do find returned soldiers suffering from the disease.

26258. Lady EVERARD.—Are there any migratory labourers in your district?—No.

26259. Miss McNEILL.—It has been suggested to the Commission in other places that where there is an inability on the part of the people to procure milk some municipal supply might be established?—That is so. But would the authorities do it? I would like that more from a philanthropic point of view than as a tax on the locality.

26260. The point raised is that it will probably tax the locality in some heavier degree in some other way if it is not dealt with?—You are dealing with tubercular trouble.

26261. I am referring to the general health of the locality?—Yes; but to my mind the local bodies have enough to grapple with at present, and the majority are slow in carrying out what they have to do.

26262. You think the practical difficulties would be too great in connection with the establishment of a scheme of that kind?—They would not be too great if you had any administrative powers. If you had an Act it would get into abeyance, like other Acts.

26263. You think that the provision might be there but that the public bodies would not avail of it?—Quite so.

26264. Have you many cases of a family of six or seven children where the wages of the father are only 12s. a week; are there many of such cases?—There are a good few of these. These cannot feed their children properly.

26265. Will not they become a charge on the district ultimately?—I don't think so.

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26266. Do you think that a family can be reared on an income like that?—No.

26267. And are they not likely to be a charge upon the district?—Eventually.

26268. That is what I meant?—Yes.

26269. So it is hardly an economy to avoid meeting the case now?—No; it is false economy.

26270. But you don't think the municipal authorities at the present time, generally speaking, would be likely to take the matter up?—No.

26271. You also allude to a case of tuberculosis under nine years?—Yes. These were children.

26272. Over nine years one finds pulmonary consumption more common than under nine years?—Yes.

26273. Is there much factory work or industrial work for mothers in this district?—We have practically none.

26274. There is very little work for married women in Enniskillen?—They have no factory work.

26275. They have no work that will interfere with the rearing of their children?—No; we have no factory work.

26276. The CHAIRMAN.—I would be glad to know your opinion about subsidising a milk supply for the working population, and whether you think it would be an economical administration of public funds to have the children reared in such a way, and nourished in such a manner, as would ensure their growing up strong men and women?—Yes.

26277. And if it did entail at the outset some additional burthen on public funds, don't you think it would ultimately become reproductive in its results?—Yes.

26278. It would save an expenditure on outbreaks of infectious disease, when the badly-nourished members of the community are the first to become affected. It would save expenditure on workhouses and asylums?—Yes, general expenditure.

26279. And, although it might arouse some unpopularity in the public mind at the outset, in all probability, when the people would come to realise what its effects were, they would become more tolerant of the additional burthen?—I think so.

26280. Would you not also be in favour of having such administration as that supervised rigidly from some central source, which would insist on having it carried out in a legitimate way. Representations would be made, say, by medical officers, who would have the best first-hand knowledge of the conditions under which the working-class population were fed; they would report to their Council, and there would be some central authority to supervise the administration of these Councils, to see that the representations made by the medical officers were not overlooked?—Yes. On the other hand, the medical officers in most places hold only casual appointments.

26281. Mr. O'BRIEN.—What do you mean by "casual appointments"?—There is no particular attention paid

to public health. Take, for instance, the medical officer of a dispensary. You cannot expect him to deal with public health matters if he is attending members of a family; you cannot expect him to make a sanitary report about the house, or the people will not have him again.

26282. The CHAIRMAN.—That is why I suggest central control—that that officer will not be allowed to hold his appointment unless he conscientiously discharges his duties in all its branches, and when it becomes known that every doctor will have to conform with the regulations laid down, then I take it that the objection that you raise to the local feeling would necessarily disappear, because every doctor would be obliged to do exactly the same thing?—On the other hand, there are lots of us obliged to do things we cannot do. A solution of that problem is the appointing of an independent officer.

26283. I quite see your point; but what I want to convey is this. In order to secure the proper administration of the idea you have in your mind you would want the co-operation of the medical practitioners?—You can leave the final duties to the medical officers of health.

26284. What you would suggest is that the medical officer in charge of a case would make a report to the medical officer of health?—Yes; a private report.

26285. I understand what you mean—that the private practitioner should make a report to the medical officer that he had found a condition of things that was unsatisfactory in the course of his practice, and the centrally appointed officer should go and investigate that question for himself, and take whatever action he thought was necessary?—That is my idea.

26286. Lady EVERARD.—You want him, roughly, to act on the lines of the tuberculosis officers who will be appointed under the Insurance Act?—I want him independent of the public.

26287. Dr. MOORHEAD.—A central medical officer of health or county medical officer to discharge his duties efficiently would have plenty to do?—He would be a full-time officer.

26288. And his time would be fully employed?—Yes.

I quite agree with you.

26289. Lady EVERARD.—I think the same thing applies to a veterinary surgeon?—It does.

26290. The Commission had evidence from veterinary surgeons that if a whole-time veterinary inspector was appointed he would make a great difference, because he would be quite independent?—Yes.

26291. Dr. MOORHEAD.—You are of opinion that the Sanitary Acts are perfectly inoperative without the existence of such a medical officer as you have indicated?—Quite so.

Mr. WILLIAM R. WHYTE, J.P., examined.

26292. The CHAIRMAN.—I understand, Mr. Whyte, you are Chairman of the Public Health Committee in Enniskillen?—Yes, sir.

26293. And you are also, I believe, manager of the Scottish Wholesale Co-operative Society in this town?—Yes.

26294. We have had from the Chairman of the Urban Council a history of the steps taken by your Council for carrying out the provisions of the Dairies and Cowsheds Order, and I need not take you over the same ground again?—No.

26295. I would like to know if, in your opinion, there is any scarcity of milk in the urban area at any period of the year?—There is no scarcity of milk, particularly in the summer season, but there is a scarcity of milk in the winter season. The vendors of milk in Enniskillen can supply the wants of the people in every detail during the summer; so much so, that they have more milk coming into the town than they can dispose of in the summer, because I have reason to know that they send milk to my creamery.

26296. They have a surplus after their customers are supplied?—Yes, some of them, in the summer months.

26297. Does your creamery work during the entire year?—Yes.

26298. It works summer and winter?—Daily in summer, and two or three days in the week in the winter time.

26299. Do you sell milk retail at any period at your creamery?—No.

26300. Have you ever been applied to to sell milk retail?—No.

26301. Do any of the creameries with which you are familiar in the district sell milk retail?—Not that I am aware of.

26302. Whether proprietary or co-operative?—Yes; I am not aware of any of them that do that.

26303. Lady EVERARD.—Would they do so if they were asked?—I don't know. I cannot say. I can only speak for one creamery. I don't think we would be prepared to do it.

26304. The CHAIRMAN.—You would think that any order that would compel the creameries to supply milk retail would be likely to hamper the carrying on of the trade?—It would. It would entail a vast amount of labour, which we are not prepared to undertake. Of course, if there are compulsory powers made, I suppose it will have to be done; but in the conditions under which we work our business we are not prepared to retail milk.

26305. I don't use the words "retailing milk" in the ordinary way that would be applied in the case of

a grocer retailing his wares. What I did suggest in the retailing of milk would be this: At a certain period in the morning or evening, for an hour or two, it should be possible for a person requiring milk to go to a creamery and get it. That is the sense in which I spoke of having milk sold retail. How far would such a custom as that interfere with the management of a creamery?—It would upset the existing arrangements of the creamery; and I don't think that I and my firm would be prepared to entertain it. You will understand that I am only manager of this creamery, and I cannot say for certain what the directors would do in the matter; but I give you my personal opinion.

26306. I want to know from you, as a practical man, how far the establishment of such a custom as I have indicated would interfere with the management of creameries?—It would interfere in this way—it would create a new system of book-keeping.

26307. I don't suggest for a moment that there should be any credit given, but that the sales should be for cash?—Sales for cash require to be entered.

26308. I want you to look at this question, if you please, from the point of view of the Commission. The idea has been suggested, and it is very widely held in many districts throughout the country, that the establishment of the creameries is largely responsible for the scarcity of milk available to supply the working population. Now I offer no opinion as to whether or not that is a well-founded belief, but I tell you that it has been persistently put before this Commission in various parts of the country; and if the Commission should come to the conclusion that it is well-founded, and if it should be disposed to make a recommendation that creameries should sell milk retail when applied to for it, would you think that would be an unreasonable condition to impose on creamery managers and proprietors?—I do; because if there was a scarcity of milk there is nothing to prevent vendors from making arrangements with the farmers to supply them with more milk. The farmers bring milk to our creamery. They can come or leave.

26309. They are voluntary suppliers?—Yes; voluntary suppliers.

26310. I won't labour the question further. I have your opinion that it would be an unreasonable condition to impose on creamery managers to ask them to retail milk?—Yes; I think it is unreasonable, because the vendors of the milk can procure extra supplies of milk if they require it.

26311. From the district from which you draw your supply, obviously you limit the supply available for sale in that district, and it is in those districts I have asked whether you think it would be reasonable to require creameries to sell milk retail. Have you any reason to complain of the manner in which the milk is supplied to your creamery?—We have no reason to complain as to how the milk is sent in.

26312. From the point of view of cleanliness, or otherwise?—From the point of view of cleanliness, we have certain rules that we adopt, and we have certain examinations that take place, and surprise visits by the Inspector of the Department of Agriculture, who reports on these matters. In addition to that, we make a point that we will take no milk unless it is perfectly sweet, and the cans are clean and in good condition. We have frequently refused milk.

26313. What would happen to the milk that would be refused by you?—The farmers would take it back.

26314. Would it be taken in by other creameries?—I don't think so. There was a little difficulty about it at one time—that when we refused milk it was taken by another creamery. We made an arrangement in our districts that where milk was refused by one creamery for being in an unfit state the neighbouring creamery be notified of the fact; and if presented at that creamery next morning should not be taken. That rule has been adopted.

26315. That has not been the universal experience; because we have been told repeatedly that if a farmer's milk is refused by one creamery it is taken by another?—I admit that. We have had experience of that; but we got over it by making arrangements with the creameries.

26316. Has it been loyally observed?—Yes. We make our managers observe it.

26317. Has it really been followed rigidly, and do you know from actual experience that it is followed by every creamery manager?—Yes, in our district.

26318. And you, from time to time, receive notifications from certain creameries that a supplier's milk has been refused, and if that supplier comes to you, you also refuse it?—Yes. The result of the arrangement entered into between the creameries in my district is that we have practically no cause for complaint since we adopted it. Prior to that we had many cases.

26319. What effect has that custom on the condition in which the milk is sent in?—It has improved it; because they have to be more careful or they will get the milk returned.

26320. How often in a month would you be obliged to return milk because you were dissatisfied with its condition?—I cannot answer exactly that. It is practically reduced to nil.

26321. Does it occur once a month?—I don't think it would occur more than once a month. It would not go over once a month.

26322. I want to find out how far the custom has been really observed. You spoke of the inspection of the co-operative creameries by the officer of the Department: is your creamery inspected by the same officer?—Yes; all creameries are.

26323. You make no objection to that inspection?—No. We are registered under the Department, and, according to the registration, we are liable to inspection.

26324. Regarding that inspection, have you any reason to complain that the officer is over-severe in enforcing the conditions laid down for his guidance?—We welcome the inspection, and we consider it does a lot of good; because the Inspector from the Department can approach the farmers better than we can approach them. He stands on the platform, and inspects the milk, and if he finds anything unsatisfactory in the milk he makes a report on it. If he finds an improvement that he can suggest to farmers he tells them what should be done, and any suggestions that he makes are in nearly all cases carried out. We welcome inspection of that kind, because it does an immense amount of good.

26325. It is helpful to you in securing your milk in the condition you desire to have it?—Yes.

26326. Do you have any sale of separated milk in your creamery?—No.

26327. That is returned to the contributors?—Yes.

26328. How long do you think separated milk will keep sweet after it is returned?—Of course, it depends a lot on how it is separated; how it is heated, and how it is cooled down.

26329. What is the custom followed in your creamery with regard to the heating of the milk?—We pasteurise all our milk and cool it down.

26330. To what temperature do you raise it?—180 to 185 degrees Fahrenheit.

26331. Do you invariably raise it to that temperature?—Yes.

26332. At all seasons of the year?—Yes.

26333. From 180 to 185 degrees?—Yes.

26334. By what method—is it passed over a cylinder or passed through tubes?—The milk is heated by steam.

26335. And the entire body of the milk is heated from 180 to 185 degrees?—Yes.

26336. Dr. MOORHEAD.—In bulk?—Yes.

26337. The CHAIRMAN.—How long is it subjected to that temperature?—Not more than five minutes.

26338. What quantity of milk would be in the vessel at the time that it is subjected to that temperature?—120 to 130 gallons.

26339. Is it only a portion of the milk that comes in contact with the heated surface that is raised to that temperature, or is the entire body raised to 180 or 185 degrees?—The entire body is raised.

26340. Miss MCNEILL.—Would it be at that temperature for five minutes?—I think so.

26341. Dr. MOORHEAD.—Is the temperature of the milk taken after leaving the vessel?—Yes.

26342. And it registers 180 or 185 degrees?—Yes; it varies.

26343. Mr. O'BRIEN.—Down to what temperature is the milk cooled?—To 80 or 90 degrees by means of water.

26344. The CHAIRMAN.—What quantity of milk do you deal with at your creamery in the summer season?—We have eight auxiliary creameries, and we have our central creamery here in Enniskillen. We simply do the separation at the auxiliaries, and we bring all the cream into Enniskillen and manufacture the butter here.

Mr. WILLIAM R. WATTE, J.P.—8th August, 1912.

26345. Do you pasteurise the cream after the separation takes place?—No.

26346. You do nothing further with the cream?—No.

26347. The temperature is not again increased in any way after the cream is extracted?—No.

26348. What quantity of milk could be dealt with in the year by your auxiliaries feeding your central creamery?—In a day we get about 15,000 gallons.

26349. Mr. O'BRIEN.—You don't separate on Sunday?—No. We only separate once a day.

26350. The CHAIRMAN.—No work is done on Sunday?—No.

26351. Is the milk on the Monday morning in the hot season sour?—There is sometimes a little difficulty during the warm weather; but the farmers, as a rule, churn their Saturday night's and Sunday morning's milk for themselves. None of the creameries in the North work on Sundays at all.

26352. How long have you been in charge of this creamery?—Since it was opened, thirteen years ago.

26353. Can you form any opinion as to whether the milk yield of the cow has varied in any way in that time, improved or disimproved?—It has improved.

26354. The yield has increased?—Yes; the milk supply. In 1911 the supply was extremely small.

26355. That was an abnormal season?—Yes. This year there would be an increase of 20 per cent. over last year.

26356. As a result of the altered condition of vegetation?—Yes.

26357. Taking an average of three or four years, is it your opinion that the milk yield from the cows has increased, in your experience of thirteen years?—Yes.

26358. Is that admitted and recognised by the farmers?—It is.

26359. Because the contrary opinion has been expressed in a variety of instances, and I wanted to know what is the condition in your experience, and if you could suggest any causes that led up to it?—When the creameries were first started it was a new system to the farmers. The milk is bought at the creamery subject to the butter fat it contains. The number of cows in this district would be from five to ten on an average farm. If a farmer had an average light test to his milk we would recommend that farmer to bring in to us each cow's milk separately. We would test it for him, and if he had a cow that had a low test we would advise him to get rid of that cow; and that has been carried out to a large extent, and it has brought about a great improvement.

26360. That is the weeding-out process?—Yes.

26361. And you help them as far as your experience goes in carrying out the experiment to determine which is the poor milker and which is the profitable dairy servant?—Yes; and we advise him to dispose of the poor cow.

26362. Is your winter supply increasing or decreasing?—It is at a standstill. Our winter supply of milk here, compared with our summer supply, is that we would get as much in one day in summer as in ten days in winter.

26363. What is the difference between the winter and summer price?—The price of milk is regulated according to the price of butter. If butter is a good price, there is a better price for milk; and if it is a low price, there will be a low price for the milk.

26364. What is the average price for July and August?—Last month's price would average 4½d. or 4¼d. for butter fat.

26365. And in May and June?—About an average of 4¼d. for butter fat.

26366. And in the winter season?—The average would be about 5½d. in the winter season, up to 6d. for butter fat.

26367. Mr. O'BRIEN.—For butter-fat alone?—Yes.

26368. The CHAIRMAN.—You always give them the separated milk back?—Yes; and we give them a proportion of the buttermilk.

26369. Do you think that milk could be produced for winter dairying at the price of 4¼d. per gallon?—I don't think so.

26370. With what object do those who supply you in the winter carry on winter dairying? Is it as an economic undertaking to increase their annual-income?—It just depends on how the farmers have their cows calving.

26371. In some districts we have been told there is no winter calving at all. Here you have winter calving, and I want to know why those who are engaged in the dairying industry arrange to have winter dairying. Do you think that the cow calving in the winter season is likely to give a larger yield of milk in twelve months than the cow calving in March or April?—I cannot answer that.

26372. You never heard an opinion expressed on that question?—No.

26373. Mr. O'BRIEN.—Do the farmers in your district keep milk records?—Very few.

26374. Miss McNEILL.—Does the diminished winter supply affect your price?—Yes; it is a great drawback to us, this small supply we get in winter. It is very injurious to the Irish trade.

26375. The CHAIRMAN.—Have you thought of any scheme that would make winter dairying more popular than it is?—No; but I always have been trying to get farmers to have their cows calving at various seasons of the year, so that they can give us a more uniform supply, but the farmers say it does not pay them to do so.

26376. The complaint always is that winter dairying does not pay, because of the expenses of feeding the cows and the price that is available for milk?—Yes.

26377. Farmers don't set themselves out to provide winter feeding, which would be likely to increase the flow of milk in the winter season?—No.

26378. Is there any development in the growing of catch-crops for the winter and spring seasons?—No, I don't think so.

26379. No effort is made to stimulate the flow of milk in that way?—No; there might be exceptional cases here and there. We have one or two farmers in the district who are a bit enterprising, but generally there is no improvement.

26380. Amongst those that have increased their winter supply as a result of experiments, they have found that they can make it more profitable?—No.

26381. There is no development from that point of view at all, so far as your experience goes?—No.

26382. Mr. O'BRIEN.—Do you know what the average yield of a cow here would be per year?—It is very varied. Cows in our district do not produce more than two-and-a-half gallons a day, and others give up to four gallons.

26383. The CHAIRMAN.—Mr. O'Brien was more interested in what the actual yield would be?—Yes.

26384. Mr. O'BRIEN.—Do you have many cows with an average of 600 gallons?—We would not have a big number at 600 gallons.

26385. The CHAIRMAN.—What would you regard as about the average yield of a cow in this district—450 to 500 gallons a year?—450 to 480.

26386. Mr. O'BRIEN.—Certainly, winter dairying would not pay at that figure.

The CHAIRMAN.—And at 4½d. a gallon. We find in other districts that there was a more marked difference between the summer and winter prices than exist in this district?—There is some milk that we pay as high as 7d. a gallon for, but it depends on the quality of the milk. In December and January it is 5½d. to 5¼d. a gallon on an average.

26387. To what do you attribute the increased weight of butter fat in the milk which produces the higher price; is it the land on which the cows are fed or the artificial feeding?—There is a good deal in the grass.

26388. Do you find that some lands yield a persistently poor quality of milk?—Yes.

26389. Do you find it impossible to improve that quality with artificial feeding?—We find that the milk of some farmers in the same townlands is considerably better than their neighbours almost adjoining them. We can only attribute that principally to the pasture, or to the cows themselves; and that is one of the reasons why we ask the farmers to have each cow's milk tested, so that they could weed out the unprofitable cows.

26390. What breed of cows is used here?—The cross-bred shorthorn mostly.

26391. Have you any experience of the milk yield of the pure-bred shorthorn?—No.

26392. Do any keepers of pure-bred shorthorn herds send milk to your creamery?—No; not that I am aware of.

26393. Are there many labourers' allotments in the district?—Yes.

26394. Do any of these keep cows?—Some keep one and more two cows.

26395. And do they send milk to the creamery?—Some do. We have a number of one-cow suppliers.

26396. Some of these might be occupants of cottages?—Farm labourers, or occupants of cottages.

26397. Do you happen to know if it is the custom for the farmer to give a quantity of milk to the labourer who is working on his farm as portion of his wages?—I think it is in the way of giving them the use of a cow.

26398. How far does that custom prevail of giving the labourers the use of a cow?—I think it prevails in every case.

26399. Say, a farmer keeping ten cows, would he give the use of a cow to the labourer that would be engaged on his land?—Yes; that is done frequently.

26400. Almost universally?—I think it is pretty universal about here. He gives the labourer the use of a cow, and grazes it on his own land.

26401. The cow is the property of the farmer?—Yes.

26402. And is fed with his cows?—No. The cow belongs to the farmer, and he can change it.

26403. Lady EVERARD.—What does the labourer pay for the use of this cow?—I cannot say. It is part of his agreement.

26404. Mr. O'BRIEN.—What are his wages here in such circumstances?—I cannot say.

26405. The CHAIRMAN.—Have you ever heard any complaint of any dairy farmers finding it difficult to procure the necessary labour to attend to their cows?—Labour is scarce in the district.

26406. Mr. O'BRIEN.—They are mostly small farmers in the district?—Yes. The farmers in this district find it very difficult to procure labour.

26407. The CHAIRMAN.—Is that owing to the scarcity of labour or to a better market being available in other pursuits?—Emigration is taking a lot away of the labouring class, and the farmers find it more difficult to procure labour.

26408. There is no migration of labour to England or Scotland?—Yes.

26409. They persistently go year after year?—Yes.

26410. In the spring and summer seasons?—All the year round people are going to England or Scotland, or America or Canada.

26411. This is what one would call the ordinary emigration, which is, unfortunately, too prevalent over the country, but is there an exodus of the labouring population to England and Scotland?—That does not exist so much in this district as in the West.

26412. And in Donegal?—Yes; there is a scarcity of labour.

26413. Is the scarcity of labour responsible in any way for the limitation in the number of cows kept?—I would not think so: I don't think it caused any reduction in the number of cows kept.

26414. It has been represented to the Commission in other districts that the continuous service required in the care and looking after of the cows makes the work unpopular with labourers, and that they prefer to engage in other occupations that give them the Sunday free. Have you heard the ordinary dairy farmers complaining in this district?—I have heard the farmers complaining that it is impossible to procure labour for work in connection with the farm. They cannot get help; so much so that it is almost impossible for them to carry on their farming in the way it ought to be done.

26415. Does that lead to the restriction of tillage and the inability to find winter feeding for winter dairying?—It must have some effect.

26416. That would indirectly operate on the milk yield and on the keeping of cows in milk in the winter season, when they require more care and attention?—Undoubtedly, it would have an effect in that way.

26417. Have you found any marked difference between the yield of butter fat in the morning and in the evening?—We cannot tell that, because we only take in the milk in the morning.

26418. It is the mixed milk of the morning and evening?—Yes.

26419. Mr. O'BRIEN.—Do they mix the milk?—Yes.

26420. Don't you consider that rather a bad principle—putting the hot milk on the milk of the night before?—The milk is cooled down.

26421. The CHAIRMAN.—How is it cooled down?—With water.

26422. By the immersion of the vessel in water?—Yes. We insist that the morning's and the evening's milk be kept separate. There are exceptional cases where they mix the milk, but where they do so, it is cooled down. We keep the night's milk by itself and the morning's milk by itself. In some cases we get them mixed.

26423. Mr. O'BRIEN.—Do you ever store milk for the farmers?—No.

26424. You only take the milk in as you are separating?—That is so.

26425. The CHAIRMAN.—Are proper steps taken by the farmers to store their milk?—Yes. It is their interest to look after the milk, otherwise it will be refused, and they are compelled to keep their milk properly. They bring it in in good condition. In fact, we have practically no trouble in that way in our district.

26426. Is it ever reported to your creamery that in the home of a certain supplier infectious disease has broken out?—No. We never had any case of infectious disease.

26427. And the milk is received indiscriminately from all farmers, whether those connected with the handling of the milk or in the household of the farmer himself are in good health or otherwise?—Yes. If there was a case of infectious disease in the house of a farmer we would stop receiving the milk from him.

26428. Do you ever receive a notification from the Medical Officer of Health that infectious disease has broken out in the premises of any farmer supplying your creamery?—Yes; we had one or two cases in the County Leitrim.

26429. Do you get some milk from Leitrim?—Yes; we have one of our auxiliaries in Leitrim.

26430. What action was taken in that case?—We refused to take the farmer's milk.

26431. For what period?—Until the medical officer certified that it was safe to take it.

26432. And do you require that certificate from the medical officer?—Yes; he notifies us when the disease is supposed to be cleared out, and we have another talk with the medical officer, and if he reports satisfactorily the milk is received.

26433. How often has that occurred in five years?—In thirteen years we have had only about three cases.

26434. Do you know whether the farmers are careful in selecting the cows they buy, and when they rear cows from calves that they select heifers whose dams have been good milkers?—As far as they can they do.

26435. They are alive to the necessity of making every effort to secure that the cows will be the best milk-yielding cows that it is possible to procure?—They are alive to that.

26436. Have you ever heard any complaint made against the introduction of premium bulls as being inimical to the milk supply?—No. The veterinary surgeon will be able to answer that question better than I would.

26437. One would imagine that a person coming into contact with the farmers as you do would have heard complaints of all the ills to which the stock are subjected?—Any conversation I have with the farmers is to get the best results possible. It is a matter of £ s. d. If they keep a cow with a good milk yield, and a good percentage of fat, it is an important matter. To help him we invite him to send in samples of his cows' milk separately, and they do so; so they are alive to the importance of the matter.

26438. Mr. O'BRIEN.—Have the Department established any cow-testing associations in this district?—Yes, several.

26439. The CHAIRMAN.—Are they catching on?—Yes.

26440. Do you think that they will be helpful in increasing the milk yield?—I think so.

26441. Can you suggest any better method?—No.

26442. Is the milk ever subjected to bacteriological examination for the presence of tubercle germs?—Yes; by the authorities from time to time.

26443. Never by the creamery authorities?—No.

26444. Had you ever reason to suspect that the milk of an unsound cow was being sent into your creamery?—No.

26445. No such cases ever came under your observation?—No.

26446. And none of the veterinary officers who are holding appointments in the various districts from which your milk supply is drawn have ever reported to you that one of your suppliers had one or two unhealthy cows in their herd?—No.

26447. Lady EVERARD.—What guarantee have you that the milk supplied to your creamery does not come from infected cows?—I have no guarantee. The local authority is the only guarantee we have—the veterinary surgeon who is appointed by the District Council to see into these matters.

26448. Do you know if the farmers feed their calves on separated milk?—Not wholly. When a cow calves the farmer does not send the milk into the creamery for about four weeks. Afterwards, the calves are fed on separated milk, but it is augmented with linseed.

26449. You have not heard of the separated milk having any injurious effect on the calves?—No. I made inquiries about that, and the farmers say that they can rear as good calves as ever they did.

26450. Sir STEWART WOODHOUSE.—What is the size of that receptacle in which the milk is raised to 180 or 185 degrees Fahrenheit; about how many gallons of milk would it hold?—120 or 130 gallons.

26451. How is the heat applied?—Exhaust steam, or live steam.

26452. Does it surround it as a jacket?—Yes.

26453. There are no tubes through it?—No.

26454. How long is the separated milk in the establishment before the farmers come for it as a rule?—When the farmer delivers his new milk it is taken in at one platform, and when he goes to the other end of the building he gets his separated milk.

26455. Within half an hour?—Within ten minutes.

26456. So that all the separated milk is returned immediately?—Yes.

26457. Does all that milk go to calves, or do you know is any of it used for domestic purposes?—It is used for calves. I don't think any of it is used for domestic purposes.

26458. What would be the objection to its being used for domestic purposes apart from the fact that it does not contain butter fat?—It is not used for domestic purposes, only for feeding calves or pigs.

26459. Have you ever taken a drink of separated milk yourself?—Often.

26460. Would you know it from ordinary sweet milk?—Yes.

26461. Has it an objectionable taste?—No; I have taken it frequently.

26462. You would take it immediately after separation?—After it cooled down. If the separated milk is sent out from the creamery without being cooled down, it will not keep as well.

26463. And then it becomes disagreeable?—Yes.

26464. In what space of time?—It depends on the weather, and the way it was heated up.

26465. In favourable weather do you think it could be drunk twelve hours afterwards?—I think it could.

26466. Dr. MOORHEAD.—The entire bulk of the milk is uniformly heated?—Yes.

26467. And it all attains to that temperature of 180 or 185 degrees?—Yes.

26468. Are the vessels in which the farmers deliver this milk sterilised at your creamery?—No; the farmers look after their vessels themselves.

26469. There is no steam pipe at the creamery for the purpose of cleansing the farmers' vessels?—No, but the milk from the auxiliary creameries is sterilised.

26470. But the vessels in which farmers bring their milk are not cleaned at the creameries?—Not by us, but they are by the farmer.

26471. Are they cleansed after delivering the milk?—No; they put the separated milk into them.

26472. The cans go back in the same condition as they arrive?—Exactly.

26473. Have you any large producer of milk in the district, are there any people who keep twenty or thirty cows?—I think very few farmers would keep more than ten cows. Five to ten cows would be the average of the farmers here. You would get a few probably with fifteen cows; but they are very few.

26474. You don't know the conditions under which these cows are kept?—In what way do you mean?

26475. With regard to their surroundings, housing, and all that kind of thing?—I am frequently about the country districts, and the conditions are, I consider, satisfactory.

26476. Cleanly?—Yes.

26477. And the cows are healthy as far as you can see?—Yes.

26478. Mr. O'BRIEN.—You don't steam farmers' cans at the creamery before putting in the separated milk?—No.

26479. Would you consider that advisable?—I don't think so.

26480. You are quite satisfied with the cleanliness of the vessels brought in?—Yes.

26481. You have done away with the brass gauge inside the vessels?—It is nearly done away with.

26482. Do you allow the suppliers to put any cloths under the lids?—No.

26483. Do they use any of these thin sheets of metal?—Some of them do.

26484. I suppose none of the cans are locked when they come into the creamery?—No.

26485. It would be too cumbersome, and you would not have time to unlock them all?—Yes.

26486. You said you thought it would be difficult for your company to sell milk retail?—Yes. I don't think we would agree to that. Besides, there is no necessity for it, because the vendors when they want milk can arrange with the farmers for a supply.

26487. I can understand that it would be difficult to sell half a pint or a pint to every person wanting the milk, but it ought not to be difficult for the creamery to give a depot thirty or forty gallons of milk a day. Would you undertake that?—I don't know that we would undertake it, but it would be a better arrangement than the other one.

26488. Supposing anyone started a depot in the town of Enniskillen, they could not go to one farmer in the district and ask him to contract for forty gallons a day winter and summer; they cannot get it?—They could get it.

26489. Is there a single farmer who could undertake to supply that quantity?—You could get a couple of farmers, or three.

26490. It would be more difficult to arrange with three farmers than with the creamery. Do you think the creamery would undertake the supply if there was a depot?—I don't think so.

26491. They would get more for it than for their butter?—Our firm would not favour it for this reason; that if a milk depot was established in Enniskillen there would be no difficulty for that depot to make arrangements with the farmers to supply it with milk independent of the creamery.

26492. It would pay you better to sell milk than butter?—It depends on how you work your business.

26493. I think it would pay you better to sell milk. The average price you give for butter fat is, say, 4½d. to 4¾d. a gallon all the year round. It would pay you to sell milk at 8d. a gallon all the year round?—I quite admit that.

26494. It would pay most creameries to sell the milk?—The farmers want the separated milk. If I sell the whole milk of the creamery what would the farmers do for their separated milk.

26495. The CHAIRMAN.—The obvious answer is that he would keep what he requires at home.

Mr. O'BRIEN.—Your society is a co-operative society and you pay according to the butter fat?—Yes.

26496. But your suppliers are not members?—No.

26497. It is proprietary in that sense?—No.

26498. They have no voice in settling the price?—No.

26499. What do you do with the washings of your creameries—are they run into a stream?—Yes.

26500. You have had no trouble about polluting the stream?—No.

26501. What do you do with the sludge in the separating bowls?—We have to take it out.

26502. And what do you do with it?—We put it into a manure pit.

26503. You don't destroy it?—No.

26504. You never had any trouble from it?—No.

26505. It is stuff that does not get putrid, but it does not vanish very quickly?—No. I never had any trouble in that way. I shall be glad to show the creamery to the Commission if they have time to visit it.

26506. You receive from auxiliaries mainly?—Yes.

26507. How many gallons do you separate a day here?—Twelve to thirteen hundred gallons in the central.

Reverend GEORGE McMEEL, P.P., D.D., examined.

26508. The CHAIRMAN.—I understand, Doctor McMeel, you are Parish Priest of Pettigo?—Yes. I have been appointed by the Belleek Branch of the Women's National Health Association to give any evidence before this Commission I can. There is a creamery at Belleek—one of the co-operative creameries, and there are one or two auxiliaries. I find that the village of Belleek is well supplied with milk, from inquiries I made, and there is no shortage of milk if the people can afford to buy it in that village.

26509. Milk is always available for those who are able to buy it?—Yes. There is one district—the Mully-breen district. The people there are very poor, and I was informed by the Medical Officer of Health, Dr. Kelly, that they cannot obtain milk during the winter season for love or money.

26510. It is not procurable even if they had money?—No; it is a mountainous locality. The arable land there is very limited. They don't keep more than one cow, and in the winter she goes dry. The people are in a very abject condition.

26511. Obviously the children in that district would not be properly nourished?—Not at all. They are delicate.

26512. Bloodless?—Yes. I asked Dr. Kelly if he had many cases of consumption—pulmonary consumption, or glandular joint trouble, and he told me that he had only one or two cases, and I was rather surprised at that.

26513. The people must live on the good air they have, I suppose?—I cannot account for it. There is another townland—Ball; the farmers are very poor there and consequently they have not any milk during the winter season. I asked Dr. Kelly what he would suggest as a remedy and he said he did not know. There is a prejudice against keeping goats in the country, owing to their destructive habits. He told me that he heard of a good goat from Asia Minor or South Africa that would be useful. The doctor said it was a very good milker and that it would be well to introduce it.

26514. That would be the introduction of a breed of goats that would yield milk in the winter season?—Yes; that is what we want to obtain.

26515. How far would the goat remedy the condition of affairs in that district?—It would be applicable to that district, which is in the County Fermanagh, and it would be good over a good portion of Donegal, too. I would say that it would be useful for the whole parish of Pettigo, which is eighteen miles long and eight miles wide.

26516. In the mountainous districts these goats, which are hardy animals, would be able to eke out their own existence and be no tax on the land?—Yes, and there would not be many hedges to destroy.

26517. In the districts in which the creameries exist, how far do you think they would be responsible for the limitation of the milk supply?—There is a general outcry against the creameries in every district.

26518. Does that prevail in your district?—Yes. They say that in the days gone by the buttermilk was rich and of a good quality, and very wholesome and that is now altogether a thing of the past.

26519. Do they allege that the butter from the creamery is less nutritious than the home-made butter?—Yes.

26520. One quite recognises that the loss of the buttermilk is a great drawback?—Yes, and nothing can compensate for it. It is sad to think that there were not near so many cases of tuberculosis previous to the famine as there are to-day.

26521. Mr. O'BRIEN.—Don't you think the people got vitiated with the tea-drinking?—That is another cause of weakening them.

26522. The CHAIRMAN.—The question arises as to how far the limitation of the milk supply has been responsible for the extension of the tea-drinking habit. They act and re-act on each other?—Yes.

26523. Is any use made of the separated milk from the creamery for domestic purposes?—I am told it is unusable; that for pigs and calves it is not suitable unless something is added to it.

26524. It is quite recognised that the elimination of the butter-fat impoverishes it to such a degree that it will not sustain animals in a vigorous state, without supplying the butter-fat?—Yes.

26525. Do the farmers add the fat?—Yes; they add meals and flax, and as these are very costly the question is where is the advantage of feeding them on it.

26526. Whether or not the use of the whole milk in limited quantities instead of the use of the separated milk, plus the addition of the butter-fats, would not be a better feeding stuff for the animals?—Yes.

26527. What is your opinion about the milk yield of the cow of to-day as compared with the animal of twenty years ago?—I consulted some people in Enniskillen that I thought would be able to give me some information, but I could not get statistics. I believe that through the Department the stock is improving. The Ayrshires are good for milk.

26528. Are there many Ayrshires in your district?—Yes; there is a man who has some amongst his herd.

26529. Of course, it is quite a recognised thing that the Ayrshires are a good breed of animals for milk production, but unfortunately the offspring is not a good meat producer?—No; not so good as the Polled Angus.

26530. Are there many of the Polled Angus kept in your district?—Yes, a good number. Dr. Kelly told me that on the south side of the Erne consumptive cases were very prevalent. There had been more cases, but we got them eliminated through the work of Lady Aberdeen and the nurses.

26531. Do the working-class population recognise the value of milk as a food?—They do, of course. They know it is very nutritious and wholesome. Of course, tea is a terrible curse. It is used three or four times a day by the poor people. They sometimes may use it black and keep it stewing.

26532. Do they ever give it to children?—Yes. The poor cannot afford a constant supply of milk in the winter time.

26533. Would you think that the imposition of a condition upon creamery managers to sell milk retail at certain periods morning or evening would be, in any degree, helpful to your district in securing a milk supply?—I am afraid the people I referred to living in the mountainous district would not be affected by that.

26534. I am speaking of the people living close to the creamery; would the selling of the milk retail be helpful to them?—In Belleek parish, where the people keep a supply that they don't send to the creamery, they have not to trouble the creamery, but I daresay if there was a depot at the creamery a great many people would go there. In other parts of the country where there are auxiliary creameries, the farmer with three or four cows does not want to have his quantity lessened. The farmer wants as big an account as he can with the creamery, and he won't sell it even for a higher price than he gets from the creamery to a person who requires it retail.

26535. One must look on this from the wider point of view of public health?—That should be kept to the front always.

26536. And it is in order to obviate the conditions that have been created by economic changes that have been introduced that we must look for a remedy for the evils that have been created?—Yes.

26537. And it was with that object I asked you, did you think that the creamery should be bound to sell milk retail? Your district being mountainous and thinly populated, the creameries would be limited and those within a walking radius would represent a small number?—Yes.

26538. And some other means would have to be adopted in regard to them?—Yes.

26539. And there you would suggest the introduction of the goat that would be a milk-yielder all the year round?—Yes.

26540. Do you think that all public authorities should be authorised to provide milk in certain localities where it is not procurable, and if any deficit should arise, be enabled to defray that out of the local funds?—It is a difficult question. The taxation might cause a bad feeling in the locality.

26541. I quite see an objection to it in the beginning, but what I would urge would be this—that it would be an expenditure that would bring in a certain definite result in the reduction of the weaklings, which must be a strain on public resources?—There is a good deal to be said in favour of it from that point of view.

26542. It has been recognised that public funds may be expended for the upkeep of workhouses and asylums, and for providing a supply of pure drinking-water, and if these things are warranted, why should not a further expenditure be justified to make available a milk supply which science and practice have proved to be the best and most suitable food, especially for young children?—It is one of the best remedies that could be produced to meet the present evil, having such a miserable lot of weaklings as we have in the country.

26543. The prosperity of the State must depend largely on the health of the citizens?—Yes.

26544. By increasing health you increase the prosperity of the State, and the expenditure I submit from that point of view would be quite justifiable?—I quite agree with what you have said, but the difficulty would be, would the local authority undertake this and where would the milk come from.

26545. All reforms create difficulties, and unless someone is willing to work a way through the difficulties the evils existing will continue unredressed. Someone must undertake to point out a way of relieving the difficulty?—That is so.

26546. Two or three schemes have been put before us. In the first instance it was suggested, with regard to the town population, that depots should be established where milk would be retailed at a fixed price. That was the remedy suggested for the town population. In the more remote parts of the country where the question of transit is of importance, it has been suggested that a contract might be entered into with farmers to supply within a certain radius of their houses and that the residents should know where the milk was procurable?—I think that would be a very practical way to solve the difficulty.

26547. And the goat question would also be applicable to other districts. No one scheme would deal with every district. The scheme would be sufficiently elastic to deal with the conditions prevailing in each district?—Yes; I think that is a very practical way of meeting the difficulty.

26548. Do you think that the necessity which exists would warrant assistance being given through some State or local fund?—I do believe that the necessity is such that some means should be adopted to supply this crying want, particularly in the winter season.

26549. And consequently this would be a reproductive expenditure, in view of the fact that it would ensure a healthier and more vigorous population, which would be better able to resist disease, would be able to follow their pursuits with greater energy and industry, and be of greater use to the nation?—Yes.

26550. Lady EVERARD.—Do you know anything about the Toggenburg breed of goats?—I read something about them in the paper.

26551. The Department of Agriculture and the Women's National Health Association have started a Goat Society and it is the wish of the Department that the applications for goats should be made through the Women's National Health Association, so if you apply to the Goat Society in Ely House you will get all the information you require. These new goats kid

at any time. They are not like the old Irish goat, which kids only in the spring, and they are not destructive either.

Mr. O'BRIEN.—They are just as destructive, but they are a little bit tamer. If you put them near a tree they will eat the bark?—I am prejudiced myself against the introduction of goats, but the necessity is so great that I would welcome an improved breed.

26552. Lady EVERARD.—You can tether them and they are safe then?—Yes.

26553. I think you said you had a district nurse?—Yes.

26554. Is she provided for by the Women's National Health Association?—She is.

26555. Has she been doing good work in your district?—Yes. So the doctor tells me.

26556. Does she tell the mothers the value of milk?—I don't know, but I suppose she does. She is a thoroughly intelligent, smart, well-trained lady. I think the people are alive to the value of milk, but sometimes their poverty is so great that it is impossible for them to buy it.

26557. Does the Nursing Committee supply milk?—We have not it formally established. I authorised the doctor, if there was a case that badly needed milk, to give it.

26558. You have not got a local fund?—No.

26559. Sir STEWART WOODHOUSE.—The bulk of the people in your parish are small farmers?—Yes.

26560. Have you many labourers?—We have not many. At Belleek, we have a pottery and there are 150 or 200 hands employed there. There are agricultural labourers throughout the country. We have a couple of dozen labourers' cottages built in the parish.

26561. But still, I take it, nine-tenths of the people in your parish are small farmers?—Yes.

26562. They keep a couple of cows, I suppose?—Yes, a couple of cows.

26563. Do they rear the young stock?—They rear the calves that are from these cows.

26564. I suppose their stock are hardy stock that are out in the summer and winter?—They have sheds for them in the winter.

26565. Dr. MOORHEAD.—They don't keep the stock in the dwellings with themselves?—No; I have not a case of that in the whole parish. Half of the parish is in the County Donegal. It is under the Congested Districts Board and they give encouragement for improving the cottages and sheds; they give premiums and that has raised the condition of the people. The sanitary conditions are not to be complained of.

26566. I suppose it is a country that you have nothing to hope for from the breaking of grass lands?—The greater part is rough and mountainous and there is part of it better inland.

26567. The CHAIRMAN.—Are there many ranches?—Not exactly ranches. There is an estate owned by Colonel Leslie around Pettigo. The land around Pettigo is fairly good, but it is bad land around Lough Derg, where it would be a penance for people to live.

26568. Dr. MOORHEAD.—They have free grazing in the mountain in common?—The people have no right to put cattle out.

Mr. DENIS GALLAGHER examined.

26569. The CHAIRMAN.—Are you interested in agriculture, Mr. Gallagher?—Yes, sir; to the extent that a creamery manager should be interested in what provides them with the means of living.

26570. Do you manage a co-operative creamery?—Yes.

26571. Where is it?—Lough Eagish, in the County Monaghan.

26572. Are there any auxiliary creameries connected with it?—No.

26573. How many gallons of milk do you deal with?—18,000 at the present time.

26574. Does your creamery work all the year round?—Yes.

26575. How many days does it work in the winter?—Three days, and two days in February and March.

26576. Are February and March the period of the greatest scarcity?—Yes.

26577. Is there any variation in the quantity of milk supplied in the winter months compared with, say,

five years ago?—At the present day the milk supply for the winter months would be about four times what it was when I took up the management of the creamery six years ago.

26578. To what cause do you attribute that?—To the educational work of the committee in getting the people to supply winter milk.

26579. What methods are being adopted?—Addresses have been delivered at the general meetings of the shareholders and papers read, and the people told how winter dairying could be carried on.

26580. Has the practice of producing catch crops been introduced?—Yes, to a slight extent.

26581. Is it being pushed by the agricultural instructor in the county?—Yes.

26582. Is he keen on the question?—Yes, very keen.

26583. Has he received any co-operation from the farmers?—Yes; considering how slow Irish farmers are to adopt anything new.

26584. Do they realise that cows that calve in the winter season are better and heavier milk yielders than cows calving in April or May?—Yes; those who have given it a trial.

26585. It was not regarded as a factor in increasing the annual yield of milk up to a recent period?—No.

26586. Now those of your farmers who have experimented are convinced?—Yes; the results have proved it.

26587. And, of course, that is the most conclusive way that this can be brought under the notice of the farmers in the district?—Yes, it is the most effective way.

26588. What is the winter price for milk at your creamery?—Last winter it was 5½d. a gallon on an average, but we cannot afford that in consequence of the limited supply. The returns for butter would not afford that if the full working expenses were deducted, but a percentage only of the expenses was deducted.

26589. Mr. O'BRIEN.—How many months do you call the winter months?—January, February, and March. 5½d. was the average for these months, and 5d. for December.

26590. The CHAIRMAN.—Have you any more difficulty in producing a market in the winter than in the summer season?—For the quantity there is less difficulty. We have no export trade; we have a local trade.

26591. Would "local" mean that the province of Ulster would consume all the butter you make?—Yes, and a little sent to Dublin.

26592. Do all your suppliers take back their separated milk?—Yes.

26593. No sale of separated milk takes place at your creamery?—Except by those who have no milk of their own.

26594. About how many would purchase the separated milk?—About a score—labourers in the country.

26595. What price do you charge for the separated milk?—A halfpenny a gallon.

26596. That is a small charge?—There is always something left over when the suppliers have taken away the percentage allowed to them, and the balance is sold to labourers at a halfpenny a gallon.

26597. Do you sell whole milk?—No. I have never been asked.

26598. Would it interfere with the management of the creamery to any appreciable extent if the whole milk was sold?—I don't think so.

26599. And you don't think it would be a great hardship if the managers of creameries were obliged to sell milk in the morning and evening?—It might mean a little extra trouble in book-keeping.

26600. I was thinking of cash transactions entirely?—There would be no trouble.

26601. And it would be no hardship on the creamery?—No, provided the price was all right.

26602. Is there any substantial town around your creamery?—No.

26603. Is it a village?—No. The nearest town or village is four miles from it?—Castleblayney or Ballybay.

26604. What size farms, as a rule, supply your creamery with milk; what number of cows would be kept by your suppliers?—The average number would be about three. The farmers are small.

26605. That would mean, I suppose, from two to twelve cows?—From about two to ten.

26606. Few would exceed ten cows?—Few.

26607. Have you any reason to complain of the condition in which the milk is sent into your creamery?—Not at the present time.

26608. Has it improved in recent years?—Yes. The creamery was started about when I took up the management six years ago, and at that time they did not seem to realise the bad effects of dirty milk. There was a saying prevalent amongst the farmers: "Sure, it's all right; it's going to the creamery." The return of an occasional can of milk to the farmers soon remedied that.

26609. Have you any creamery in your district that would take milk that you would reject?—No.

26610. We have heard elsewhere that milk refused by one creamery will be accepted by another?—An agreement exists amongst all the managers of creameries not to take dirty milk rejected by a creamery.

26611. Is it really observed?—I believe it is.

26612. We have been told elsewhere that if milk is refused at one creamery it is taken at another?—I have not known of a case in Ulster. I had one instance where a supplier left a creamery dissatisfied with the price. He came to me, and after a few months I had to refuse his milk because it was dirty. Then he went back to the first creamery. I wrote to the manager of the creamery saying I was obliged to refuse the man's milk supply because it was not clean, and some time previously the understanding had been arrived at between the creamery managers not to accept milk which had been rejected by another creamery, and next morning this man's milk was refused at the creamery to which he took it.

26613. That had an effect upon the suppliers?—Yes.

26614. The fact got noised about that the milk was refused at two creameries?—Yes.

26615. Have you more reason to complain of the milk supply of the person who has only one cow than the farmer who has a number?—No, except from its being kept over; but I find the milk is equally clean.

26616. Do you find the milk equally clean when the cows are in the byres and in the pasture?—Yes; and even when it is sour it is clean. When the lids are taken off the cans, and when you stand over it, the odour is quite clean though the milk is sour. It comes in sour in the winter time from being held over.

26617. Does the milk that is held over a little sour produce as sweet butter as milk that would be perfectly fresh from the creamery?—You would require to pasteurise the cream after separating it.

26618. And after you take in stale milk and subject it to the ordinary process, you would need to pasteurise the cream afterwards?—Yes.

26619. You are obliged to have recourse to that if you do not get the milk fresh?—Yes; you cannot pasteurise the milk then. You have to pasteurise the cream.

26620. What is your ordinary separating temperature?—145 degrees.

26621. You don't get beyond that?—Not for separation.

26622. For pasteurization, what temperature do you go to?—From 175 to 180 degrees.

26623. Is milk that is being subjected to that temperature kept in motion by beaters while in the vat or vessel in which the pasteurization takes place?—Yes. It leaves the heater at that temperature.

26624. Mr. O'BRIEN.—Do you test that?—Yes; at the outlet pipe from the heater there is a thermometer always set.

26625. The CHAIRMAN.—Is it your opinion that the yield of the cows supplying milk to your creamery is better or worse than when you took up the work?—It has improved.

26626. To what cause do you attribute that improvement?—I think the people exercise more care in the selection of cows, and that they are taking steps to weed out the bad ones, because a greater number of the suppliers come to me for separate tests of each of their cows.

26627. Mr. O'BRIEN.—You have instructions from your Committee to test milk for individual members?—No, but I have done it. I have advised the farmers to send the milk of the separate cows.

26628. The CHAIRMAN.—That you might advise him as to the cow that is lowest in butter fat?—Yes, and I try to calculate for them the yield per cow, or institute a comparison between two cows in the matter of yield.

26629. Do you find a marked difference in butter fat between the deep milking cow compared with the light milking cow?—Yes.

26630. It does not invariably happen that the cow giving the smallest quantity of milk gives more butter fat?—No. I have known it not to be the case.

26631. It is an erroneous conclusion to arrive at that because a cow is a light milker she gives a very good percentage of butter fat for the quantity she yields?—It is.

26632. Do you find a difference in the yield of butter fat in different farms?—Yes, often in the case of farms closely adjoining.

26633. Would you attribute that to the feeding of the cows, to the cows themselves, or to the pasture on which they are raised?—I would attribute it to the three causes. It might be one, it might be the other, or it might be the third.

26634. Is more care exercised by the farmer in the selection of the cows than was done some years ago?—Yes. They are making great efforts to improve them from the milk-producing point of view.

26635. How many of them keep records?—I don't think there are more than three or four of them going in for the registered dairy bull scheme.

26636. Are there any cow-testing associations in your district?—No, only what I do for them myself in testing the milk of their cows.

26637. Are you familiar with the scheme of cow-testing scheme—that the duty should not be imposed on it to your locality?—It would be difficult in my district.

26638. Why—owing to the apathy of the people?—No, but the duty most generally falls on the creamery manager.

26639. Where the scheme is universal and widespread, arrangements will be made to have an officer who will devote himself to the inspection of these cows, and to see that the records are properly kept?—Yes.

26640. That is the only objection you see to this cow-testing scheme—that the duty should not be imposed on the creamery managers, because they would not have time to carry it out?—Perhaps all of them would not.

26641. How do you dispose of what is commonly described by the not over-appetising name "creamery sludge"?—It is carried out to a lake quite convenient to the place.

26642. No difficulty has ever arisen as to the discharge of the sewage into the lake?—No.

26643. And no injury to the fish has arisen in consequence, as far as you know?—No. In fact I know one river where the creamery sewage was emptied into and the trout increased to a large extent. It was a small river, and the people used to dam it occasionally and team it in bucket fulls. Fish for ten miles came to the place where the creamery sludge was emptied into the river.

26644. In Monaghan County what steps have been taken to put the Dairies and Cowsheds Order into force?—They have appointed inspectors.

26645. They have appointed a veterinary inspector?—I have not heard of any veterinary inspector.

26646. Have you heard of recent prosecutions under the Order?—No, but I know of some parties having to improve their byres.

26647. It was done under pressure?—Once the inspector declared it should be done, it was done.

26648. Would the general application of the Order have any effect in reducing the number of people who produce milk?—It might for a short time, but it would be only for a very short time, because I had experience of that. I had a number of suppliers from Carrickmacross Rural District, and for a time they refused to be registered, but afterwards they came in.

26649. And the obvious conclusion was that they voluntarily complied with whatever alterations were suggested?—Yes.

26650. Would you think it necessary that a scheme should be devised for the granting of loans for carrying out such structural alterations as may be necessary in order to secure the proper housing of cows of people of limited means?—Yes.

26651. And you think it would be helpful to the local authorities in carrying out the provisions of the Order if such a fund was available?—Yes, because it is dread of the expense that prevents a number from undertaking the alterations.

26652. Do any of the Monaghan farmers make any provision for the storing of their milk; have they a milk store in connection with their byres?—I think the majority of them use the house that they used as a dairy before the creamery started.

26653. The milk is not stored in very unsuitable surroundings?—No, because the odour from the milk would tell that.

26654. If it was brought into contact with substances likely to give it a flavour?—Yes.

26655. What distance do they send to your creamery—four miles?—Some milk travels over six miles by road. It is conveyed on a hired cart; one man takes up the milk of a district.

26656. The individual farmer cannot well afford to deliver milk from that distance?—The individual farmer does not deliver to me for more than a mile and a half.

26657. Is it the shorthorn cross cow that is used in your district?—It is to a great extent now; they are beginning to introduce the shorthorn cross.

26658. In substitution for what?—I can scarcely say.

26659. For a nondescript bull?—Yes.

26660. What they call in the south of Ireland a scrub bull?—Yes.

26661. And you find that there is an improved taste on their part to keep an animal of pure blood and one of good conformation?—They don't approve so much of an animal of pure blood. There are pure-bred animals kept in the district under the county scheme, and I find that a good animal purchased in Roscommon by my Society commands more patronage.

26662. Does your Society set itself out to provide the district with bulls suitable for the locality?—For the last three years they have kept one in the district, and would have kept more if they could procure people to keep them, but they consider the land is not sufficiently good for a first cross of the shorthorn, and the climate is a bit cold too. They consider that a Roscommon bull with perhaps two or three crosses of shorthorn blood and the old Irish cow better suited to that district, and I believe they are right. I find that the calves bred from the bulls they breed turn out better than calves from the pure-bred premium bulls.

26663. Are there many premium bulls?—Nine or ten, I think.

26664. Do you get any milk from a dairyman who keeps a pure-bred shorthorn herd?—No; there is no man who has that herd in the district.

26665. Do any of the Aberdeen Angus breed ever come in as bulls?—No, but I have seen some come in as cows, and they are bad milkers.

26666. Do you think the old Irish cow was a distinctive type of animal?—I think she was, to some extent.

26667. Is she in existence at the present time?—I believe there are districts in the west of Ireland where you would get the animal pure.

26668. You mean where the type most generally predominates?—Yes.

26669. Did farmers recognize that they were a good milking type of beast?—Yes.

26670. And they would be anxious to procure them if available?—Yes; and bulls of that type.

26671. Have any of the farmers in your district gone in for the Department's dairy bull scheme—having their cows selected and registered under the Department's inspection, and served by a premium bull?—I do not know of any of them doing that.

26672. You are not familiar with this scheme?—I know it is in existence.

26673. None of the farmers in your neighbourhood have been co-operating with this scheme?—No.

26674. They have been doing so in the neighbouring county?—Yes, I believe so.

26675. Do you think that your suppliers would be likely to patronise a bull of that breed if he were available?—Yes.

26676. A bull that was the produce of a dam with a milk producing record not less than 600 gallons?—They would.

26677. Do any of them breed their own heifers?—They do.

26678. In selecting heifers for breeding purposes, do they endeavour to select those that are the produce of dams that are good milkers?—Yes. They run the heifer from the best cows they have.

26679. They regard the production of milk as an hereditary quality?—Yes.

26680. Almost equally in the male as in the female parent?—Yes.

26681. Mr. O'BRIEN.—Are all your suppliers members of your co-operative creamery?—No.

26682. Are the majority?—The minority of the milk suppliers are members.

26683. They object to have new members?—Not exactly, but the creamery movement was new to the people when it was started, and it was only the most advanced farmers that would invest any money in it. In the course of time, when the cost of erection was paid off, the Society did not consider it necessary to press the suppliers to become members, and they just allowed them to supply in the ordinary way.

26684. Would it not be more advantageous for the creamery to have them as members, because it would give them a greater hold over them and greater power of inspection of their milk and byres?—I don't think so.

26685. You have no competing creamery about you?—No, not what could be called a competing creamery.

26686. Do you do a trade in anything else besides butter?—Agricultural goods to a small extent. We supply seeds and manures.

26687. Miss McNEILL.—With regard to the Dairies and Cowsheds Order, do you think that Order should be made to apply to all the products of milk—butter and everything else—as well as to the people who sell milk, so that if they did not send to the creamery, but made butter at home, they would still be forced to comply with the Order, would it improve matters?—I think it is more necessary that the Order should apply in the case of butter made at home, because there is no check on that, and there is some check in the creamery, where the milk will be returned if dirty.

26688. Do you think the Order would be advantageously made to include every person who sells any product of milk?—It should be made to apply to all cow-keepers. At the present time the demand is limited, and rather than submit to the Order numbers of farmers refuse to sell milk where they have only one or two customers, whereas if the Order were made generally applicable they would sell the milk.

26689. The CHAIRMAN.—There would be no point in evading the provisions of the Order?—No; there would be nothing gained.

26690. Would you extend registration to the point of licensing, so that any person found on a few occasions guilty of offences against the Order, might have the licence withdrawn in the case of a grave offence?—I would have them fined.

26691. Would you consider that licensing rather than registration would be more successful in getting a supply of wholesome milk?—No, I don't think so in the country districts, because numbers of them would not apply for the licences.

26692. Supposing it was made imperative?—In that case, of course, the licence would be a sort of penalty.

26693. It would secure absolute uniformity that all should conform with the requirements, and that every one keeping a cow might in consequence be disposed to sell the surplus milk in the locality, and thereby extend the number of those who are willing to supply milk in small quantities?—It would have that effect, because at the present time they refuse to sell milk.

26694. Because it would bring them under the Order?—Yes, in the rural district, where the demand for milk is not great, and the number of purchasers is very few, they refuse to sell it.

26695. Your point is that if the Order was applied to all it would tend to increase the milk supply?—Yes; it would make the milk more available.

26696. Lady EVERARD.—What guarantee have you that the milk sent to your creamery is healthy?—I have no guarantee.

26697. Because a creamery manager in the south of Ireland thought it would be good to have some guarantee that the milk supplied to his creamery was perfectly pure?—Yes. I don't think that he could know that all the milk supplied to him was the milk of healthy cows.

26698. The CHAIRMAN.—Is there any other aspect of the question, Mr. Gallagher, that you would like to direct the attention of the Commission to?—No. The point I wanted to make was the general application of the Dairies and Cowsheds Order to all keepers of cows.

26699. Your view opens up a new aspect of the question, and I am inclined to agree with you, that if the Order were extended to all cow-keepers it would increase the number of those who are inclined to sell milk?—Yes. There is another point with regard to increasing the supply and that would be if the Department would award premiums more generally to other than pure-bred bulls.

26700. Their dairying scheme is to extend premiums to bulls of this particular type which would be bred on milking lines only?—I think they might go further.

26701. One of the suggestions made before us was that the premiums offered to the dairy bull should be at least equivalent to the premiums offered to the pure-bred bull. It was suggested to us that the premium should be made equal, and that prizes should be offered at local shows for heifers, the produce of these milk record cows, just as they would be offered for heifers the produce of herd book cows, and that the prizes might be even greater than those offered for the pure-bred, in order to increase the number of dairy farmers engaged in the industry?—Yes. The man who would be engaged in breeding dairy cattle as a general rule would be less fitted to bear the expense.

26702. And it is a new enterprise, and naturally would need more fostering?—Yes.

26703. And it is in the hands of people who are less able to develop it?—Yes.

26704. Mr. O'BRIEN.—You say in your précis that all the creameries have steaming blocks?—Yes.

26705. Do the farmers avail themselves of these?—Yes.

26706. You don't do it yourself at your creamery?—Yes; in the case of all people not doing it themselves; we deduct something nominal on each occasion.

26707. It ensures the cans being cleaned at least once in the day?—Yes.

Mr. WILLIAM JAMES BROWN, J.P., examined.

26708. The CHAIRMAN.—You reside close to Enniskillen, Mr. Brown?—Within seven miles of it.

26709. Are you at all interested in agriculture?—Slightly; I am a farmer.

26710. Are you a dairy farmer?—I carry on mixed farming; I cultivate a little, and send milk to a creamery.

26711. Is your creamery co-operative or proprietary?—The creamery to which I send my milk is the Scottish Co-operative Company.

26712. A branch of this creamery in Enniskillen?—Yes. It is close to us. That is why we go there.

26713. Have you any knowledge that would enable you to compare the prices given by the Scottish Co-operative Creamery with other co-operative creameries that are owned by farmers in the district?—The farmers' co-operative creamery is nearly as near to me, and it is doubtful which pays best.

26714. The Scottish Co-operative Company, I understand, trade largely in other articles. Would that be in any way responsible for the people patronising them?—Indian meal is the only article they deal in at the auxiliary I send milk to, and it is an advantage to the people to be able to get it there. They get a bag of Indian meal and it is settled up out of their account.

26715. There is no other trading carried on in that particular auxiliary?—No.

26716. Are there many goats in your district?—A great many of the farmers prefer to keep a goat. I think it is to enable them to send more milk to the creameries, but for my part we keep none of them, and if I was asked my advice I would say not to keep them.

26717. Do many of the cottiers keep goats for their own supply?—Yes, nearly everyone where I reside.

26718. Have any of the new breeds of goats been introduced—the Toggenburg or the Anglo-Nubian?—No.

26719. The advantage of these goats is that they give milk at all seasons of the year. The ordinary Irish goat gives milk only at the period when milk is procurable from the cow?—Yes.

26720. It is an advantage to have these goats in profit at any period of the year?—Yes, to the cottiers and labourers.

26721. It is of these I am thinking. If anyone in your district requires information with regard to these new breed of goats they can get it on applying to the Irish Goat Society, Dublin. They may be able to get some of these animals into the district for the purpose of crossing with the native goat?—They would be an advantage, I suppose.

26722. From the point of view that they would be able to produce milk in the winter and spring, they would be an advantage?—Yes, but a large amount of our labourers are herds, and the parties who employ them supply them with a milch cow the whole year round.

26723. Then I take it there is very little scarcity in your district?—No; not in our neighbourhood.

26724. The custom is that the farmer gives a cow all the year round to the man working for him?—Yes; they are very well off—as well off as the ordinary small farmer.

26725. The scarcity is not by any means acute?—No.

26726. Are you in the Enniskillen Rural District?—Yes, and I am a member of the Council as well.

26727. We have had evidence as to what has been done in the district with regard to the carrying out of the Dairies and Cowsheds Order. Does your inspector present many reports as to the condition in which he finds the byres?—It is not put into execution as yet. Nine-tenths of the people have not made the improvements.

26728. But ultimately you hope to secure that by the pressure of the inspector's visits?—Yes, and the anxiety of the people, too, to keep their places clean.

26729. Are they manifesting a desire to co-operate with you in putting their premises into proper condition?—Yes.

26730. Are you at all apprehensive that the financial expenditure necessary to make the structural alterations would hamper these people?—Yes, at the start, but in the end it would be an advantage. Three-fourths of them have become the owners of their land, and are anxious to improve their houses and offices as well.

26731. So you would not be apprehensive that the general application of the Order would drive any of these people out of the milk trade?—Not at all.

26732. It has been represented to the Commission already that if the provisions of the Order were rigorously enforced, some farmers would be unable to find the capital necessary to make the alterations required and that they would consequently be put out of the trade?—I don't think so.

26733. That would not happen in your district?—No.

26734. In Ulster generally you don't think that would be the result?—No. The people are very saving, and there are very few of them that have not a nest egg, and if they are compelled to make the improvements it would be a benefit to them ultimately.

26735. Do you go in for winter dairying to any extent?—No.

26736. Do any of the farmers in your locality?—No. We see to it that we have more milk in the winter than formerly. The old practice was to have the cows dry in November.

26737. You have always a surplus over what you need yourself?—Yes.

26738. Does that apply to a good number of the farmers in your locality?—Yes, because otherwise the creameries would have to close up.

26739. What is the winter price of milk at the creamery?—About 5d. or 5½d. a gallon in the winter, and in the summer about 4d. would be the average price.

26740. Is it your opinion that the cow of to-day is as good a dairy servant as the cow you knew twenty years ago?—She might not be as good for butter purposes, but she is as good for milk purposes, and the short-horns are a nicer class and more fancy, more saleable, and, I think, better for butter purposes too.

26741. As a commercial beast you think she is a better animal than the cow that existed twenty-five years ago?—Yes; I remember the old Irish cow.

26742. Do you regard the old Irish cow as a distinctive type of beast?—Yes; you would rarely get one now. There was generally a white streak on the back; the udders were generally large, and the cows were rather thin in flesh.

26743. And not very shapely in conformation?—They were not shapely.

26744. Dr. MOORHEAD.—What colour were they?—Generally pale yellow. There were a good many of the Devonshire cattle that were looked upon as the old Irish breed; they were a deep red with large horns.

26745. The CHAIRMAN.—Where have you known this old Irish cow to be kept last?—There is only one I know at the present time, and it is owned by a carpenter named Montgomery.

26746. That is the nearest approach to what you would regard as the old Irish cow?—Yes.

26747. Miss McNEILL.—Is she a good milker?—She appears to be. She is very nearly like the Jersey. The banker here has a Jersey like the old Irish cow.

26748. The CHAIRMAN.—But she probably would be a Jersey cross?—Yes.

26749. Did the carpenter breed this cow, or did he buy her?—I don't know. He used to have a great many cattle that used to take disease and die. When I asked him where was the flow from his carpentry

shop, in which he had a lot of painting material, he showed me, and I said that that was the cause of his cattle dying.

26750. Lead poisoning?—Yes.

26751. And did he alter the course of the stream?—Yes, and since that time, ten years ago, he lost no animal. I fancy lead poisoning was the cause.

26752. And, furthermore, the sequel has proved that your surmise was correct?—Yes.

26753. Is there any development of winter dairying in your district?—The idea, I think, is to keep more cattle, if possible, for winter dairying, because it pays somewhat better. The price is higher.

26754. Is any effort being made to provide suitable feeding for cattle by the growing of catch crops?—We labour very little in county Fermanagh. The land is stiff and not porous; the water lies on it, and it does not pay for labour. We are using slag to improve the grass and hay.

26755. This gives you better feeding for your cattle in winter?—Yes, and they do better.

26756. Have you instituted any comparison that would enable you to state whether or not the cows that calve in the month of November would yield a larger supply of milk than the cow calving in March or April?—I think they would not yield as much milk unless they were hand fed.

26757. I always assume that they would be properly cared?—They would give a larger flow in that case.

26758. When the cows are bleaching, you think that then the fresh bite of grass would again increase the flow of milk when the cow most needs a stimulus?—Yes.

26759. That is not necessary after the cow calves, because she has had a period of rest; she does not need a stimulus so much as when she has been three or four months milking, and that helps to increase the yield of milk over the entire twelve months?—I daresay it would.

26760. It is quite a recognised thing that the cow that calves in November will yield more milk than the cow calving in April or May?—I would not be surprised. I leave the women to look after the milk.

26761. You have to buy the cow?—Yes, but that is a small part of the matter.

26762. Do you go to the fairs to buy the cows?—We generally rear what we require; and then we have stock farms.

26763. In selecting the heifers that you keep for cows, are you always careful to select these that are the produce of good milkers?—We have never studied that question. We consider the colour and shape, and the prospect of selling in the market afterwards.

26764. Do you grow roots and grain, or when you are feeding your cows in the winter season do you give them roots and grain?—Seldom; we give them a mash of oatmeal, or bran, or Indian meal. We grow very little mangolds, or turnips, or other roots.

26765. Do you ever feed potatoes to cows?—No.

26766. It is a capital food?—I would expect so, but there are generally a few pigs which generally get the potatoes.

26767. As a matter of fact, I am told that the best root feeding for milk production would be parsnips?—We grow them, but only for table use.

26768. Are there many labourers' cottages in your locality?—Almost none. There is a scheme floated, but there has only been one labourer who applied for a cottage within a radius of miles around me. I have asked some of them to do so and they say: "I prefer to be caretaking than going in for a labourer's cottage." They have a great many more advantages in connection with their caretaking than they would have if they went into a cottage. They have their free cow, and their free turf, and their home for nothing.

26769. The conditions under which they live and serve here are different from other localities?—Yes. I have always advocated that the labourer ought to be allowed to buy out his cottage and become owner of it.

26770. Are there many premium bulls in your locality?—Yes, a few.

26771. Are they of the shorthorn breed?—At Florence Court they have three or four breeds—the shorthorn and the black bull.

26772. So that your district is fairly well served?—Yes. A good many of the farmers keep their own bulls, and they like to have a good one.

26773. I think a good deal of taste is exhibited by the northern farmers in selecting the stock they keep?—They say it is as easy to feed a good one as a bad one.

26774. And the result when you come to sell is substantially in favour of keeping a good one?—Yes. I offered £8 for a calf the other day in Swanlinbar.

26775. Was that a Cavan-bred calf?—Yes.

26776. Have any of the farmers in your locality gone in for the Department's scheme for promoting the keeping of dairy bulls?—None that I know of.

26777. Do any of them keep milk records?—I don't know of one unless they keep them at Florence Court.

26778. You don't know any farmer keeping them?—No.

26779. And you don't keep them yourself?—I do not.

26780. The majority of the labourers, I take it, according to your view, have the use of cows from the farmers for whom they work?—They have the use of a cow. I have a labourer. He keeps a goat, and he gets a measure of milk every night when he is going home, winter and summer.

26781. Does that custom prevail universally in your locality?—I don't think it prevails universally, but it is the general intention and likely to become the general custom, because we have to pay more to the labourers, and they are a bit haughty if they are not pampered up a little bit. On the whole I think they have more profit than the farmers.

26782. Have you any difficulty in getting labour at the present time?—No, and what is strange I am thirty-five years now keeping a home and I never went to a fair or market for a servant, and I never had any need to do so.

26783. You can get enough to supply your needs without doing so?—Yes. I say to the farmers that I hold it is a discredit to have to go to the fair for labourers, and they say "we cannot get them." I told them, "you don't treat them right." We rarely lose a labourer except they emigrate or get married.

26784. They are living in contentment and peace in your place?—I think so.

26785. Do the labourers sometimes borrow money for the purchase of cows?—Caretakers as a rule are ambitious enough to get on until they own the cows themselves. I have some of them that own their own cows, and I am very glad of it.

26786. There is a laudable ambition on their part to own their own cows?—Yes, and the person that is anxious like that is the best for the man that employs him.

26787. Mr. O'BRIEN.—We have had evidence in several parts of the county that where a labourer has

a cow, or facilities for keeping a cow, he sends his milk to the creamery instead of giving it to his family?—Some of them do, and some of them if they got the price of milk would drink it, but they are looked down upon with contempt; that thing is dying out.

26788. How much land is given with a labourer's cottage in your district?—Under the scheme that is floated by the Council it is a statute acre. That is not sufficient to keep a cow, but my answer is that labourers prefer to caretake for me, or for some other farmer, than go into a labourer's cottage, because they get the run of a cow or two, or three, over the whole farm.

26789. You say in your précis of evidence that if the labourer were helped to purchase a cow he could keep it on his piece of land?—I was not referring to the man who had a Union cottage at all. My evidence is confined almost altogether to labourers that are outside Union cottages. It refers to men who have the grazing of a cow given to them.

26790. In the case of your labourer, you give him, at all events, the grass of a cow. If he choose to buy one for himself you would give him the grass of it?—Certainly. He could feed his own calf under the same conditions as he was feeding the cow that I would supply him with.

26791. Do you give him potatoes?—The caretaker on, say, one farm I have, has sometimes three calves and two cows. I saw his cheque from the creamery and it was £2 5s. 8d. for the month in addition to feeding his own family. He has all the crop he can put in for himself.

26792. What wages does he get?—None at all. He is working two parts of his time for himself. He looks after my cattle and sees that they are all right, and that is his principal work, and he has all the other advantages with them.

26793. Does he own these cows himself?—No, but I say if he did I would have no objection.

26794. You propose that he should own these cows himself?—Yes.

26795. And that he should be helped to do so?—Yes.

26796. Are there any co-operative credit societies in your district amongst the farmers or labourers?—No.

26797. You don't know the sort of way these societies work?—No, but I would think that if there was a co-operative bank in our district, it would be of advantage to small farmers and labourers who wanted to better their condition.

26798. I should have thought that yours was a district that was eminently suited for a co-operative society or bank?—Yes.

The Commission then adjourned until the following day to Sligo.

FORTY-SEVENTH DAY.—FRIDAY, 9TH AUGUST, 1912.

The Commissioners met at the Courthouse, Sligo, at 1 p.m.

Present :—P. J. O'NEILL, Esq. (Chairman); LADY EVERARD; MISS MARGARET McNEILL; GEO. A. MOORHEAD, Esq., F.R.C.S.I.; and DERMOD O'BRIEN, Esq.

S. W. STRANGE, Esq., *Secretary*.

Dr. JOHN LAIRD, J.P., examined.

26800. The CHAIRMAN.—You are a medical practitioner resident in Sligo, Dr. Laird, I understand?—Yes.

26800. Do you hold any public appointment under the local Boards?—Yes.

26801. Would you be good enough to say for the information of the Commission what these appointments are?—I am Medical Officer of No. 1 District and Consulting Sanitary Officer for the borough of Sligo and Medical Officer of Health for the district.

26802. Do you happen to know what provisions are made by the Sligo Rural Council for the enforcement of the provisions of the Dairies and Cowsheds Order?—I think it has not been put into force by them.

26803. No officer, lay or professional, has been appointed by them for the purpose of making an inspection of the dairies or the cowsheds in the district?—Not that I am aware of. I am not really quite certain on this point.

26804. Have you, as Medical Officer of Health, ever

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been requisitioned by any subordinate in the service of the Rural District Council to determine whether or not certain conditions to which his attention was directed were sanitary or otherwise?—No, not with reference to the milk supply.

26805. Is there an ample supply of milk in the urban district of Sligo for the poor?—No.

26806. Is that a constant scarcity, or is it only in existence for a certain limited period of each year?—It is not sufficient at any period of the year.

26807. There is a scarcity throughout the entire year?—Yes.

26808. Has it reached such an extent that those who may have money to buy milk would not be able to procure it in the town?—Occasionally that has happened.

26809. And have you, in the course of your professional practice, sometimes ordered a milk diet for children or patients for whom it might be suitable food and have you been told that it was not procurable?—Yes.

26810. You have a knowledge of Sligo for a considerable number of years, I take it, Dr. Laird?—Yes.

26811. Are the existing conditions worse or better within your recollection?—They are better, I think, in general.

26812. The milk supply is more ample now than it was, say ten or fifteen years ago?—I should say it is.

26813. Is there any want of appreciation on the part of the poor as to the value of milk as a food for children?—No; they fully appreciate it.

26814. And whatever scarcity exists, and wherever children are insufficiently or improperly fed, it is due to the fact that milk is not procurable?—It is not procurable in sufficient quantities.

26815. Have you ever had reason to complain of the quality of the milk?—Well, I don't think they have often complained of it.

26816. Has it ever appeared to you to be poor in quality?—It has.

26817. And not as cleanly as one would wish it to be?—Yes.

26818. And under these circumstances—in the absence of any steps being taken by the local Council—of course, you have been powerless to provide any remedy for these people?—Yes.

26819. That seems rather an unfortunate state of things, does it not? Are you of opinion, as a medical man, that the children in Sligo are improperly or insufficiently fed with nourishing food?—Yes.

26820. And that is mainly caused by the scarcity of the milk supply?—Yes.

26821. Does your experience—I take it, it would—bring you into the rural districts surrounding Sligo?—Yes.

26822. With regard to the population there, how are they off for a milk supply: are they better or worse off than the people living in the town?—They are perhaps as well off as those in the town, but since the creameries have been established, of course, there is not the same supply of milk that there was formerly, particularly for the children.

26823. Is it your opinion that the introduction of the creamery system has been in some degree responsible for the limited supply available for human consumption?—It is.

26824. Do you think the scarcity is more acute in districts where the creameries are numerous than it is in the ordinary agricultural district where the creameries are not within convenient distances of the farm?—Oh, yes.

26825. Do you happen to know if any of the creameries sell milk retail to any person who might make application to them for a small quantity?—I think they do. People passing by go in and may get it.

26826. Would that apply to the rural population?—I don't know that, but if you were passing by the creamery and asked for milk they might supply you with it.

26827. Would that be gratuitously or for money?—I fancy it would be for money. I am not sure.

26828. You are familiar with some of the large institutions in the town; do you happen to know whether the Workhouse or the Lunatic Asylum have any difficulty in procuring milk?—I don't think they have any difficulty, but I don't think it is of the best quality.

26829. Not so good as you would like to see it as a medical man?—No.

26830. Have you ever known prosecutions to be instituted for the adulteration of milk in the urban or rural area?—I have not heard of any. It may be possible there were some, but if there were they were extremely rare.

26831. You have no recollection of ever having been called upon, as Medical Officer, to certify as to the quality of the milk?—No.

26832. Or to express any opinion as to whether or not the milk was pure?—No.

26833. Do you feel yourself helpless with regard to the use of impure or unclean milk in the present circumstances?—Yes.

26834. Absolutely helpless?—Yes.

26835. And, I take it, that it is your view that that is a very undesirable state of things to prevail?—Most undesirable.

26836. And injurious to the health and well being of the industrial population?—Yes.

26837. Do you happen to know what quantity of milk would be taken into the home of a workingman earning less than £1 a week, who would have a wife and three or four children to provide for?—I don't know; it would be very small.

26838. Are the babies properly nourished in the early stages of their existence?—They are, not. That is, I consider, a matter of vital importance.

26839. And it is due entirely to the difficulty of procuring a pure and adequate supply of milk?—Yes.

26840. Have you thought of any scheme which would remedy the existing evil—I mean from the administrative point of view?—Well, since the creameries have been established, of course, the greater portion of the milk is going to them; consequently, the children are not getting the milk as they did in former times, which is extremely injurious to the young constitutions. Children, of all others, require a good milk supply. It is infinitely more important for them than it is for the adult. If you get more cows, I daresay there will be more milk sent to the creamery, so I don't think that that would meet the case. I feel very strongly with regard to the supply of milk for the children and my recommendation would be that a large number of goats of a good breed be imported into Ireland. In fact, I would like to see a pair of goats attached to every labourer's cottage. The goat is immune to tuberculosis. The cow is not. Goats' milk would be very much better and safer for the use of the children than even cows' milk would be, and I think it would be a very good plan if there was a good supply of milk from goats, because that could not be sent to the creamery. The cream being fairly white in colour and the butter white, it could not be sent to the creamery, so they would have it for the use of their children. That is the suggestion I would make for the supply of the children.

26841. And that would apply to the industrial population largely?—Yes, and especially for the children, because as the children are fed at present we will have a dwindling population and the children will not grow up so strong.

26842. And the adults will not have the same resisting power?—No; the probabilities are that if the child is not strong the adult will not be strong. At present I am aware of a fact, which I think is really dreadful as far as the children are concerned, and that is that they are actually getting tea out of feeding-bottles; that would be ruinous for the children and destroy their nervous system. It will not nourish them; on the contrary, it will do them a great deal of harm.

26843. Is it your opinion that the treatment to which the infant population is being subjected at the present time will, in all probability, be a fruitful source of enfeebled vitality, and perhaps conduce to mental derangement when these children arrive at manhood?—Certainly.

26844. That is a deplorable possibility to face?—It is.

26845. Would it be your opinion that it would be a judicious expenditure of public money to make some provision for having an adequate supply of pure and clean milk available for the nourishment of the child?—Yes; it is most intensely important.

26846. And would it, in your opinion, be an economic expenditure if public funds were devoted to that purpose?—Certainly.

26847. And it would be a reproductive expenditure of public money?—It would.

26848. Which would save a considerable outlay in the future with regard to the upkeep of workhouses, lunatic asylums, hospitals and kindred institutions?—Yes, certainly.

26849. Have you ever suspected the milk supply as being the source of infectious disease?—Yes, occasionally.

26850. And has any action ever been taken by the public health authority under these circumstances?—Yes; occasionally, a dairy has been closed if typhoid fever would be traced to it and the milk supply suspended for the time being.

26851. Would that be done by the act of the local governing body?—Yes.

26852. And it has been rigorously enforced where the medical officer of health reported that infectious disease had broken out in the family of certain milk suppliers; the local authority would prevent the sale of milk from that house?—Yes.

26853. On whose certificate would the trade be resumed—on the certificate of the Medical Officer of Health in charge of the case?—Yes.

26854. Have you ever traced an outbreak of typhoid to the milk supply?—Not in my district.

26855. But it is not at all an impossible contingency?—No.

26856. Is any supervision exercised, so far as you know, by creameries with the object of ensuring that the milk sent into these institutions is produced under healthy and hygienic conditions?—I am not aware of any.

26857. Would you not think it desirable?—Very desirable.

26858. Would you not also think it desirable that the provisions of the Dairies and Cowsheds Order should apply to all farmers who are engaged in the home butter-making?—Yes.

26859. Is much butter-making carried on in this region now?—There is a fair share.

26860. But, of course, the creameries have considerably curtailed it?—Very much.

26861. Suppose it were made imperative on the creameries to sell pure milk in whatever quantity it might be asked for, how far would that go, do you think, to relieve the necessities of the poor. Of course, it is not suggested that it would deal with the difficulty as a whole, but how far would it be helpful?—It would be helpful for a couple of miles around the creamery.

26862. But the creameries are not sufficiently numerous in this district that all the people would be helped?—No.

26863. Some people would probably be six miles from a creamery?—Yes.

26864. And in their case it would not be helpful?—No.

26865. Have you much tuberculosis amongst children in this region?—There is a good deal of tuberculosis.

26866. What form is the more prevalent—bone trouble?—In the young children it would be more abdominal.

26867. Would you consider improper feeding and nourishment potent factors in producing such ailments?—Yes.

26868. And I suppose, as far as one can be humanly certain of anything, many of the cases coming under your observation would be directly traceable to that cause?—Yes.

26869. Have you much pulmonary trouble?—Yes; there is a good deal of it.

26870. Is it on the increase or on the decline?—I cannot say whether it is increasing or declining. I think it is about the average.

26871. Do the farmers who send milk to the creamery retain a sufficient quantity for the nourishment of their own families?—No.

26872. That seems a very reprehensible practice?—It does.

26873. And what causes them to pursue that insane course?—The money they get for the milk.

26874. In all probability they are obliged to provide some other food for their children which may be more expensive in reality than the milk would be?—Yes; that is true.

26875. Less healthful and giving less nourishment?—Yes. They are living on tea now instead of porridge and milk, which was infinitely better. They are selling their milk and buying tea.

26876. And, I take it, you have no doubt that that is a very unwise course to follow?—A very unwise course, indeed.

26877. It makes one rather pessimistic in regard to the future when those who have milk actually at their disposal sell it for the small price which they get from the creamery, and fail to nourish their own families in a way that would make them grow into healthy men and women?—Yes.

26878. Would it not seem under these circumstances, that there is a want of appreciation and knowledge as to the value of milk as a food?—Yes.

26879. Have you a branch of the Women's National Health Association in Sligo?—Yes.

26880. With what philanthropic work is it most concerned; is it looking after the babies, or the sick, or what branch of work is it doing?—Well, I cannot just answer that question.

26881. Is there a Babies' Club here?—I don't think so.

26882. You have not heard of this branch making any arrangement to supply the mothers of infants with milk?—Yes; a milk depot has been opened recently.

26883. Is that a meritorious work, in your opinion?—Yes, very.

26884. And one that is likely to produce beneficial results amongst the infant population?—Yes.

26885. I presume you would like to see an extension of that work?—Yes.

26886. Would you think the need sufficiently acute to warrant a local authority in undertaking the establishment of a milk depot for the purpose of providing milk for the industrial population?—Yes, I would.

26887. And even if this did entail some financial strain on local resources, in your opinion that would be a wise and justifiable expenditure?—It would.

26888. And one that would be reproductive, and likely to increase the wealth of the country in providing a healthy population which would be better able to discharge their duties in life and produce wealth for the nation?—Yes.

26889. Lady EVERARD.—What is the population of Sligo?—Between ten and eleven thousand.

26890. What is the price of milk retail?—I don't know.

26891. What do you pay yourself?—I don't really know, as I keep a cow for supplying my household with pure milk.

26892. I think you said that the Dairies and Cowsheds Order has not been put into force in Sligo yet?—It has not, as far as I know.

26893. There has been no veterinary officer appointed?—Not that I am aware of.

26894. So you don't know how far the cows are responsible for the tuberculosis you spoke of?—No.

26895. You don't know whether the cows are healthy or not?—No; I have no knowledge of the health of the cattle, but I know that they are not kept in a cleanly condition throughout the country.

26896. And do you think, supposing the Order was put into force, that the Urban Council ought to have power to go and inspect the dairies in the district from which the milk supply is drawn?—Yes.

26897. Because we have had that very strongly impressed on us in other places. At the present time the Urban Authorities have not these outside powers of inspection?—Not that I know of.

26898. Do you know whether milk powder or condensed milk is used?—Condensed milk is used.

26899. And milk powder?—I have not seen that used.

26900. Have you got a Jubilee nurse—a District nurse in Sligo?—Yes.

26901. Is the Women's National Health Association responsible for her, or is she a charge on the district?—There is a Committee formed.

26902. A Nursing Committee?—Yes.

26903. Does the Jubilee nurse impress on the mothers the importance of feeding their children on milk and not on tea?—She does when she is there.

26904. And do you think the mothers are beginning to realise how important it is?—Yes.

26905. We heard yesterday in Enniskillen of a child that was fed on potatoes from a month old. I think you stated that you were in favour of introducing goats?—Yes.

26906. The Women's National Health Association are in favour of sending out goats of the improved breeds. At present they cannot be imported?—Why?

26907. Because there is a rule against it until the ports are opened?—Yes, I understand.

26908. The Department are now trying to introduce the Toggenburg and Anglo-Nubian goats; they kid at any time of the year, whereas the ordinary Irish goat only kids in the spring or summer. The Toggenburg and the Anglo-Nubian goats kid at any time of the year, and if the cottager had two goats, one kidding in May and another in November, in that way he could be provided with milk all the year round for his children. Would you advocate that?—Most strongly.

26909. Have you had much infantile cholera?—Not this summer, but we had last summer.

26910. Did you consider it traceable to milk?—Yes, and the way in which they feed their children with milk. Perhaps I might make a remark about the way they feed their children. I greatly disapprove of the long tube feeding bottle. I think that the person who invented that bottle killed more of the human family than Napoleon ever did in his wars. Sometimes I have been called on to see children who were fed on long-tube bottles, and if you take the cork out the smell of it would almost sicken you, not to speak of drinking the contents, and every drop of milk taken through that tube is poison, and really there should be an Act of Parliament making this long-tube bottle illegal.

26911. Its use is illegal in France?—Yes, and it ought to be made so in Ireland. They are ruinous to the children.

26912. Miss MCNEILL.—Are they much used in Sligo?—Yes, they are very much in use, in the country parts particularly.

26913. Lady EVERARD.—The reason is that it is less trouble to the mothers?—Yes, but it is ruinous to the children.

26914. Would you approve of all the by-products of milk being placed under the same rules and regulations as new milk?—Yes.

26915. Dr. MOORHEAD.—Is breast-feeding common amongst the mothers?—It is in the country parts.

26916. Not so much in the town?—No.

26917. Of course, the children are healthier that are brought up that way?—Yes, but I think the practice of breast-feeding is rather lessening.

26918. It is getting unpopular?—It is not as popular as it was.

26919. Do you attribute that to any industrial occupations followed by the mothers, or anything of that sort?—No, but simply that the mothers like to have more freedom.

26920. Is there much bone tuberculosis amongst the children?—Yes, a fair amount.

26921. Would you attribute that to any particular form of food?—To milk; to milk from tubercular cows.

26922. Are the people ever in such straits that they cannot get milk for love or money?—In cases of sickness I have heard them say that they cannot get it.

26923. Would that be in an urban or a rural district?—In both.

26924. That they cannot possibly get milk although they have perhaps a child dying for want of it?—Yes.

26925. And you had prescribed it?—Yes.

26926. And they could not get it for love or money?—No; except they sent a long distance for it.

26927. Have you, as Medical Officer of Health, ever reported on the sanitary condition of the cowsheds?—I have, occasionally.

26928. Is the supply of milk drawn from the rural or urban district?—Mostly from the rural district.

26929. Mostly from the small farmers?—Yes.

26930. Is there any milk at all produced in the urban area?—Yes.

26931. Are the sanitary conditions in the urban area anything better than in the rural?—No.

26932. Perhaps worse?—Yes, more confined.

26933. Are there many labourers' cottages in your district?—Yes, a good many.

26934. Do the labourers occupying them keep any cows?—No; they cannot keep a cow.

26935. They could not keep a cow on their acre of land?—No.

26936. Have you a good water supply in the town?—Splendid.

26937. And the health of the district is pretty good?—Yes.

26938. Mr. O'BRIEN.—You advocate very strongly the introduction of goats?—Yes.

26939. This is a subject in which I am much interested. You say that the goat is immune from tuberculosis?—Yes.

26940. Have you any reason for saying that; to what extent have you gone into the subject?—I have not gone into it very much, but I have read what the authorities say on it.

26941. Because I think that there is a certain amount of doubt in regard to that. They are pretty free from tuberculosis, but the question is whether if they were kept in confined places they might not develop it?—That is quite possible.

26942. And if you have every labourer with a couple of goats, and he has his acre of land, part of it would have to be tilled and he would have to keep his goat in a house practically?—I would not say so.

26943. You mean he would tether them along the roadside?—No, but goats, of course, are destructive.

26944. They are, and you will find a great deal of opposition unless you say that your goats are going to be kept in the house?—Yes, or on the little plots of grass they have.

26945. Of course, that is the way it should be done—to tether them on half the acre and to grow their crops on the other half, but I think you will find it rather difficult, because the labourer's goat is likely to go into a neighbour's land?—A strap round the neck with a chain attached to a stake in the ground would secure them.

26946. I think it would be unpopular. I think you would find that most of the farmers would be against the introduction of goats?—I daresay they would, but I think we ought to think of the children instead of the farmers.

26947. I quite agree, and I think goats are important. I have got some of these new breeds myself for the purpose of helping the introduction of them. I think you said just now that the mothers were rather inclined to give up breast-feeding?—Yes; they are not feeding so much as in former times.

26948. Is that because they are not sufficiently nourished themselves?—It may be so.

26949. How long do they go on feeding their children at the breast?—Sometimes nine months and sometimes twelve months.

26950. But there are fewer of them now that will undertake it?—Yes.

26951. Miss MCNEILL.—Don't you think the change of diet has affected the nursing mother; don't you think the use of tea would have something to say to it?—Yes, that would have an injurious influence.

26952. Mr. O'BRIEN.—Do the creameries about here sell separated milk at all for human consumption?—Not that I know of.

26953. Have you any opinion as to the food-value of separated milk, not for infants but for adults?—Separated milk is excellent as long as they will get the fat from some other source.

26954. Take the ordinary diet of a child or young person of fifteen or sixteen years; if they had plenty of separated milk and, say an ounce of butter, it would make an excellent meal?—Most excellent.

26955. Or any other fat besides the butter?—Yes.

26956. I gather from what you say that the use of oatmeal porridge has gone out very much?—Yes.

26957. Don't you think that if you were to give a sufficient supply of milk to the people they would have considerable difficulty in getting the children to drink it; that their taste has been vitiated by drinking tea with a tremendous lot of sugar in it, and consequently you would find it very difficult to get them to drink the milk?—If the tea was withheld they would be very glad to get the milk.

26958. The tea is always there for the elders?—Yes.

26959. The children look on it as a sign of being grown-up to get tea as their mothers do. I think that parents in very many cases where they can give milk don't give it, because they find that the children don't want it?—Yes.

26960. Don't you think that by selling milk and buying other food for their children, parents fail to recognise the value of milk for their children?—Yes; that is so.

26961. Miss O'NEILL.—Are there many mothers in Sligo whose occupation takes them away from their homes?—Not many.

26962. There are no industries employing women?—It is the younger girls that go.

26963. Not the married women?—No.

26964. So that does not enter into the health of the infants?—No.

26965. You mention creameries as affecting the milk supply—the fact that it was all sent to the creamery?—Not all.

26966. I mean an excessive amount of it?—Yes.

26967. Do you refer to the children in the farmers' houses or to the children whose people live near the farmer's house; do you mean that other children than the farmer's own children have been affected?—Yes; because if the milk is sent to the creamery it cannot be supplied to the neighbours about.

26968. Were they in the habit of doing that?—Yes.

26969. Do you think that there was not a scarcity before the creameries were established?—Milk might have been scarce, but it is more scarce since the creameries were established.

26970. Because the Commission has had evidence of scarcity in districts where there were no creameries as well as in districts where creameries had been established?—Yes, that may be so.

Mr. MICHAEL GALLAGHER examined.

26977. The CHAIRMAN.—Are you interested in agriculture, Mr. Gallagher?—Yes. I am a farmer.

26978. Living in the district of Collooney?—Yes.

26979. Is that a dairying district?—It is half dairying and half farming.

26980. With what object is the milk raised there?—It is sent to the creamery almost exclusively.

26981. What class of creameries are there in the district?—Co-operative.

26982. You are connected with the creamery management yourself?—I am a member of the Committee of the Collooney Creamery; we have our manager here.

26983. Is there a scarcity of milk in the locality do you think?—Not for domestic purposes.

26984. There is a sufficient quantity available at all periods?—Yes. As a matter of fact some people who supply the village with milk send what they have over and above to our creamery.

26985. Would that plentiful supply be available in the rural districts as well as in the villages?—Yes.

26986. Is it the custom of the farmers in that locality to give those working on their land a supply of milk for their families?—Yes. I would say that labourers are very scarce in the locality.

26987. There are not many labourers, pure and simple?—No.

26988. But if there are any labourers in the locality, where do they get their supply?—They buy the milk from local vendors.

26989. Have they any difficulty in procuring it?—Not the least.

26990. At any period of the year?—Not that I am aware of.

26991. And no complaint has reached you as to their inability to procure milk?—No.

26992. Your knowledge would extend on towards Ballina?—Yes.

26993. The same supply is available for that whole area?—Yes. The milk suppliers in the winter sell the milk to the local people who are short of it.

26994. Do any of the creameries sell milk?—No.

26995. You are never asked?—No.

26995A. Would any of the creameries, if a cottager within easy reach applied for a quart of milk, supply him?—They never apply to us, but we would refuse to sell. I may say it was only in two cases we were applied to; one was by Kiltimagh Convent, and another institution.

26996. The milk was not required to supply the needs of local residents?—No; we were never applied to by them.

26997. And none of the local creameries do supply milk in that way?—I don't know anything about the management of any other creamery. The Collooney Creamery does not sell milk in that way. We sell cream.

26998. The Commission is not interested in that; the people who buy that are able to look after their own interests?—Yes.

26999. Is there any sale for separated milk?—Yes.

27000. From the creameries?—Yes.

27001. And it is sold?—Yes.

27002. For what purpose?—Making bread, I would expect, principally.

26971. Are there many labourers' cottages in the district?—A good many.

26972. Are there many labourers who have houses other than Union cottages?—Yes, but they are diminishing because a large number of labourers' cottages have been provided.

26973. So that the labourers who would not have grazing for goats will be getting fewer and fewer each year?—Yes.

26974. The CHAIRMAN.—Notwithstanding the vitiated taste that prevails at the moment, is it your opinion that if more milk was available, a larger quantity would be used?—Yes.

26975. And even that pernicious custom now prevailing of giving tea to children would be diminished if milk was available as food?—Yes.

26976. And that, in your opinion, would conduce to the health and well-being of the rising generation?—Yes; that is so.

27003. Is it given to children as a drink?—Not that I know of.

27004. Have you any experience of separated milk yourself?—No; except for calf feeding.

27005. Have you ever tasted it?—Yes.

27006. Is it palatable to drink?—I would not say so.

27007. You would have no appetite for it at all events?—No.

27008. Is it a fact that separated milk rapidly goes bad if not used immediately?—I would not say so.

27009. How long would it keep?—Two or three days, I have seen it.

27010. Even in the summer time?—Yes.

27011. Have you ever tasted it after the lapse of that period?—No. I never tasted it six hours after it came from the creamery.

27012. Does any change take place after twelve hours?—It gets thick.

27013. Is it fed to calves in that condition?—Yes.

27014. Is there any other food mixed with it?—Something is always mixed with it.

27015. What is mixed with it as a rule?—Flax seed and Indian meal.

27016. Boiled flax seed?—Yes.

27017. Is it good food for calves?—I don't believe it would be, alone.

27018. But with the addition of the concentrated food you allude to, is it then a good food?—It is.

27019. Is it possible to make separated milk equal to new milk by the supply of fats in another form?—I don't believe so.

27020. But something can be done to remedy the absence of fat by giving concentrated foods?—Yes; it can be considerably improved.

27021. Do you think that the rearing of calves in the way you have indicated has any effect on the health of the stock?—I think not.

27022. Are you in the habit of feeding calves in that way?—Yes.

27023. And keep feeding them to maturity?—Yes, all my life.

27024. You have had experience of keeping them when they were fed on whole milk previous to the introduction of the creamery?—Fed on buttermilk.

27025. When you speak of feeding on buttermilk, that would mean when they were about a month old?—Yes.

27026. Is it your opinion that you can grow as healthy and vigorous stock by feeding them on separated milk, with the other foods you have spoken of added, as if you were feeding them in the old way?—Yes, I can.

27027. That is your *bona fide* opinion?—Yes; that is my experience.

27028. You think that the stock are as vigorous and as healthy brought up in that way as if they were fed and brought up under the old system?—Yes.

27029. With regard to the milk yield of the cow, do you keep records?—They were partly kept. We started a cow-testing association last year, but owing to the illness of the secretary, records were not continued up to the end. The owners failed to send in the samples and have them weighed owing to the illness of the secretary. This year we are doing it regularly, and I am secretary of the cow-testing association.

Mr. MICHAEL GALLAGHER.—9th August, 1912.

27030. What would you estimate the average yield of the dairy cow to be in your region?—Well, I think at present fifty per cent. of the cows would qualify; they will give at least 5,000 lbs. during the milking period.

27031. That would be 500 gallons?—Yes, but taking the entire cows of the district I think that would be above the average of the whole herd.

27032. What would be the average of the whole herd?—In the creamery we are not in a position to judge that, because a certain amount of milk would be kept at home, but as far as the cow-testing association goes I think that nine-tenths of the cows would yield 500 gallons of milk.

27033. Have these cows whose milk you have weighed been selected out of the herds in which they are?—No; the entire herd must be tested, under the rules of the association.

27034. You are not allowed to test selected cows?—No.

27035. Do you think that scheme is likely to point out to the farmers that, up to the present, they have failed to realise the cows which were the worst dairy servants?—Yes.

27036. And is it your opinion that a great many, even of the intelligent farmers, have a wrong conception of the milk yield of their cows generally?—It seems so, but I think myself, the introduction of these premium bulls have exercised a considerable influence over the milk yield.

27037. A beneficial or an injurious influence?—Most injurious. I think the breeders of premium bulls have paid greater attention to the flesh forming properties than to the milk yielding qualities of the animal.

27038. What premium bulls are used in this county?—Shorthorns.

27039. Are there many Aberdeen Angus bred?—No.

27040. They are not a good milking strain?—They are not.

27041. Is the Aberdeen Angus ever used in the dairy herd?—Not that I know of.

27042. What is the inducement to use the Aberdeen Angus cross—is it because the calves sell better?—Yes, and they say the quality of the beef is better, and is looked for by butchers. They weigh better than the shorthorn in a given size.

27043. What is the average price of milk at your creamery in the summer months?—I cannot tell you right off. It would be about 3.70d. a gallon, or thereabouts. The manager, who is present, will tell you that.

27044. What quantity of milk do you handle in the winter season at the creamery?—It would be very small.

27045. The creamery works about three days in the week at the winter time?—Yes.

27046. Is the winter supply increasing or diminishing?—Well, I think it is increasing very slightly.

27047. Does the idea prevail amongst the farmers in your district that winter dairying does not pay?—Undoubtedly.

27048. What would be the winter price of milk at the creamery?—Something over 4d. a gallon.

27049. Not more than that?—4d. or 5d. I would expect.

27050. I am afraid it would be very hard to make winter dairying pay at that price?—Yes.

27051. We have been told in other places that the summer prices run up to 6d. a gallon?—Yes.

27052. What is it prevents your creamery being able to give a better price than 4½d. or 5d. a gallon in the winter?—Our working expenses for the small quantity of milk delivered, I think.

27053. We have heard in another place that the custom is only to charge the same proportion of expense against the milk handled in the winter season as the average cost for the whole year. Do you follow that practice?—No.

27054. You do charge the whole of the expenses against the milk dealt with?—I think so; the manager will tell you about that.

27055. Do you think the introduction of the cow-testing association is likely to be helpful to the farmers by increasing the yield of milk?—I think it will, decidedly.

27056. And you think it is necessary that some demonstration should be carried out for the purpose of convincing the farmers that there are certain cows in

their own herds that it is uneconomic to keep?—Yes. They admit that themselves. I have met farmers with a representative of the Department, and they admitted that.

27057. Don't you think that up to the present they do not realise that fact?—They cannot understand why they are getting bad prices, and it probably arises from the fact that there are some bad cows in their herd.

27058. When you speak of bad prices, you mean that the milk supplied to the creamery yields a low financial average per cow?—No, but I mean that compared with some of their neighbours they don't get as good a price.

27059. That would be consequent on the quality of the milk?—Yes; the price is regulated by the amount of butter fat.

27060. I understand that it is on the butter fat you pay?—Yes.

27061. And is it a fact that land that appears to be equal, and perhaps in some instances to be better, for milk production is not so good for producing milk rich in butter fat as other land?—Yes.

27062. Is that a recognised thing among your suppliers?—I think the difference rests solely with some bad cows in the herd.

27063. Cows yielding a poor quality of milk?—Yes.

27064. And you think it is desirable not only to test the cows as to the quantity, but as to the quality of the milk as well?—Yes.

27065. A few cows yielding poor milk will necessarily depreciate the quantity of fat?—Yes.

27066. Is it your belief that if a cow yields a poor quality of milk she will in all probability give a larger weight and quantity than a cow that yields rich milk?—Yes; that is my experience. I have some cows of that character myself.

27067. It was only yesterday that I asked the same question of another witness engaged in the trade, and he said that the cow that has a light milk yield is not the cow that would necessarily yield rich milk?—As a matter of fact she generally does.

27068. That is your experience at all events?—Yes, and as far as I know the cow-testing associations go to show the same.

27069. Is there much mortality amongst the calves in your region?—Nothing extraordinary.

27070. No epidemic amongst them?—No. The principal cause of any epidemic would be blackleg.

27071. You don't lose any of them from white scour?—Not that I am aware of.

27072. What percentage of the calves born in the district would be reared to maturity?—A lot would be sold.

27073. How many of them would survive up to six months old?—More than 90 per cent.

27074. That is very much more fortunate than they are in other counties not a thousand miles from where you are?—I have heard Cork is very bad.

27075. And Limerick. One man told me he had only succeeded in rearing nine calves from forty-five cows?—We have no such experience in county Sligo as that. The principal cause of mortality in calves in the county Sligo up to eight months would be blackleg.

27076. Mr. O'BRIEN.—Do you find that is more prevalent amongst cows that are going about amongst this rough pasture?—No; I have seen it to occur in all classes of pasture.

27077. The CHAIRMAN.—As a rule blackleg is not a disease that affects wasted or badly fed calves. It is the best animals that get affected?—I have seen bad calves die of it.

27078. As a rule, so far as my experience goes, it is always the thriving well-nourished animals that are affected?—Not always.

27079. In my own county I may tell you what prevails; it is always the thriving well-nourished animal that is more susceptible to it?—It was supposed up to some time ago that high feeding was the cause of it.

27080. Have you ever seen a calf cured of blackleg?—Never; it is incurable.

27081. I have heard of cures, but have never seen them?—I have used a preventative.

27082. Inoculation?—It is an American remedy. Since I have used it I have not had a single death from blackleg. I have been using it for over two years.

27083. Have you used Seaton's remedy?—No. I do not think it is successful. I rely on the blacklegoids.

27084. Have you any tuberculous animals cropping up from time to time?—Very few; there might be some.

27085. What becomes of them ultimately?—They are sold.

27086. For what purpose?—They are shipped to Glasgow.

27087. To make German sausages in Glasgow?—I think so.

27088. At all events, you are not interested in the purpose to which they are devoted, provided you get current coin of the realm for them?—I don't sell many of them.

27089. I mean the farmers of the district?—Yes. I know they are sent to Glasgow—Belfast and Glasgow.

27090. And their subsequent history interests you no more?—No.

27091. Is the presence of these animals in the herd a substantial loss to the farmer?—Yes.

27092. Do they occur sufficiently often to make them a source of serious loss to the farmer?—No.

27093. What percentage, do you think, would now leave a district in the year of animals of that type and character; how many out of a hundred?—It would be very small.

27094. Ten?—I think five would be the maximum.

27095. From three to five per cent.?—Yes. I may say that in this district cases are very rare, but I believe there may be some in other districts.

27096. Is your land healthier and sounder than the districts where it is more prevalent?—Yes, and we have a better breed of cattle.

27097. Are certain lands regarded as healthier than lands in an adjoining district?—I would only say that as regards the flesh forming qualities of the land.

27098. With regard to the milk yield from the cows, is it improving or is it disimproving?—I think it would not be improving. I think the amount of milk would not be improving.

27099. Is it at a standstill?—Compared with eight or ten years ago, I think it would be decreasing.

27100. To what cause do you attribute that?—To the introduction of the premium bulls.

27101. What bull would you suggest in substitution of the shorthorn to improve the milk yielding quality of the stock?—The Department are starting a breed of dairy bulls, and I believe that that would be a help.

27102. Have any of the cow-keepers in your locality co-operated in that scheme; have they offered their cows for inspection?—Yes, but we only started last year. I would expect about eight or ten would be accepted this season only. Next year I expect there will be about fifty.

27103. You think it is a scheme that is likely to become popular?—I think so.

27104. Are you hopeful that it will result in the production of a bull that will beget stock that will be better dairy stock than from the ordinary shorthorn?—I believe so.

27105. How many premium bulls are there in the county?—About thirty, roughly speaking.

27106. I fancy they would be only a small proportion of the bulls used in the county?—There would not be fifty per cent.

27107. Thirty per cent., perhaps?—About that.

27108. What class of bulls are used besides the premium bulls?—The cross with the ordinary cows and premium bulls perhaps, and they are using the Polled Angus cross.

27109. Would you not think that is detrimental to the milk supply?—It is detrimental to the breeding qualities, I think. They don't breed so well.

27110. What would be the colour of the cross with the Polled Angus and the shorthorn?—Black, with horns.

27111. Would you think a heifer of that kind would turn out a good dairy breed?—It might be a good milker, but I expect it would be a bad matron.

27112. It would produce bad stock?—Yes; the cross is not a good one.

27113. Would you favour the shorthorn bull and the selected cow?—Yes; a dairy bull, of course.

27114. Would you desire to have a shorthorn bull coming in from a breed with a milk record?—Yes; but, of course, if my object was to produce store cattle I would favour the shorthorn or the Polled Angus bull. I would not introduce the Polled Angus for milk.

27115. In the interests of the dairy, the Polled Angus is undoubtedly detrimental?—Yes; it is not useful for dairy purposes.

27116. How many of the premium bulls that are in use in the county would be Polled Angus?—Certainly 50 per cent.

27117. Would it approach 50 per cent.?—Hardly; it might be 30 per cent.

27118. I am talking now of the premium bulls?—Yes, I understand.

27119. Are there any Galloways in the mountain district?—Not premiums.

27120. They have them in Mayo?—Yes, I know.

27121. Very much to the detriment of their milk supply, as they told us?—Yes; they must use them there, because they have a lot of mountain land.

27122. Is Collooney in the Sligo Rural District?—Yes.

27123. No effort has been made by the Rural District Council to put into force the provisions of the Dairies and Cowsheds Order?—Yes; they were forced to adopt it by the Local Government Board.

27124. And has it been put into force recently?—Yes. They have a veterinary inspector appointed.

27125. And is he actually at work?—Yes.

27126. Has he been visiting your locality?—Yes.

27127. Has he been making reports as to the condition in which he finds the cow byres?—He has made some reports.

27128. Have any proceedings been instituted for the purpose of enforcing the provisions of the Order?—I am not aware of any.

27129. How long is it since the appointment has been made?—I think it would be twelve months.

27130. Has the veterinary inspector ever directed attention to any cows that he suspected of having tuberculosis?—I am not aware. Mr. Conlon, the Clerk of the Rural Council, is here, and he may be able to tell you.

27131. You have told us already that you do not believe there is any necessity for the creameries to sell milk in your own district?—Yes.

27132. If the need should exist in other districts not so happily circumstanced as yours with regard to the milk supply, would you think, from your knowledge of creamery management, that it would be an unreasonable thing to insist on creameries selling milk for domestic purposes if required?—I think they could not do it.

27133. Why?—Because they have to return 80 per cent. of the separated milk to the owners.

27134. That is merely a matter of arrangement. This Commission is dealing with a larger issue than the relations between the creamery committee and their suppliers. They are dealing with the public health, and if the needs of the public health demand that the milk should be sold at creameries, would it interfere to any considerable extent with the management of creameries?—Yes.

27135. Why?—Because the suppliers would cease to send their milk if they did not get back the separated milk.

27136. You told us that 80 per cent. of the separated milk has to be returned?—80 per cent. of the new milk.

27137. I would not apprehend that the demand would deal with a very large proportion of the gross receipts, but if a district is deprived of its milk because of the action of the creamery, and if the children are deprived of a necessary and essential food, would you, in these circumstances, think that the inconvenience to the creamery should stand in the way of the protection of human life?—Oh, no.

27138. And if the circumstances demanded that such a rule should be enforced, you don't think that it would interfere to any considerable extent with the creamery management?—No. I know, as far as our district is concerned, that if it occurred it is only a small quantity that would be required—practically none.

27139. I am accepting that as correct, but unfortunately there are other districts that are less advantageously placed from this point of view than yours?—Yes.

27140. Do you know is much care exercised by the cow-keepers in keeping their cows in a healthy and cleanly condition, and are they careful in handling the milk?—Yes. The creamery will not accept milk except it is sent in a proper condition.

27141. We have been told in other places that if milk is refused at one creamery, it has only to be taken to a neighbouring creamery and it is accepted there. Has anything like that happened here?—No.

27142. Have you ever known milk to be returned to a farmer by the creamery manager?—Yes.

27143. Is that fairly universal as a custom amongst the creameries other than the Collooney creamery?—I only know about the Collooney creamery.

27144. We have been told in other places that if milk is rejected in one creamery it has only to be taken to a neighbouring creamery and accepted there?—That would be unreasonable.

27145. That is a very grave source of danger?—Yes; I would hardly expect them to do that.

27146. In some districts you have rivalry between the co-operative and proprietary creameries?—We have no proprietary creameries in Sligo. Mr. Lonsdale had creameries, but they ceased to exist.

27147. How many cows would the ordinary farmer have in your district?—About four.

27148. What distance is the milk sent from to your creamery?—Five or six miles into the central station. On an average it would be about five or six miles to the auxiliaries, as well as to the central creamery.

27149. How many auxiliaries have you got?—Eight, I think.

27150. And they are scattered over all this region?—All over the county.

27151. On the south side?—Yes; and we have also one in the north and one in the north-east.

27152. Is much care exercised by the farmer in the purchase of cows as regards those that are likely to be good milkers?—Yes, in my district.

27153. Where do they buy them?—In the local fairs.

27154. Outside their own county?—No, principally in the county.

27155. In Manorhamilton?—No. In Ballymote, Collooney, and Tubbercurry.

27156. In selecting heifers, do the farmers pay any heed to the milk producing qualities of the dam?—I think not.

27157. Do you think that would be desirable?—Yes.

27158. Do you think the development of the cow-testing association is likely to develop that knowledge amongst the cow-keepers?—Yes.

27159. And to improve the custom they have been following up to the present?—Yes.

27160. Have you found the quality or the quantity of milk largely affected by the feeding given to the cows?—Yes.

27161. Can you increase the quantity?—Yes.

27162. Can you improve the quality?—I expect you could.

27163. That is a very debatable question. I must say that personally I share your own view, though some experts hold the contrary view?—I expect you would improve the quality.

27164. Lady EVERARD.—I understand the Dairies and Cowsheds Order is not enforced in this district?—It is in Sligo Rural District.

27165. Is Collooney in that district?—Yes.

27166. Though it is enforced, are all the dairies supplying your creamery registered?—I think the majority of the farmers have registered with the Clerk of the Council.

27167. Even though they have registered, your creamery has no guarantee that the cows supplying it with milk are perfectly healthy?—No.

27168. Creamery managers have told us all over Ireland that that is a great blot?—I think that quite recently in Tubbercurry district we have lost a lot of suppliers owing to the action of the inspector there threatening prosecutions, but as far as I know it has not affected Sligo Rural District up to the present.

27169. Do you pasteurise your milk when it comes into your creamery?—No.

27170. Do the people in your neighbourhood value the use of milk; do the mothers realise the value of milk as a food?—I think they do.

27171. Do the people use stirabout in your district?—The majority do.

27172. They are fed on tea?—They are not fed on it exclusively.

27173. Or potatoes, as we have evidence in Enniskillen?—We use potatoes.

27174. You don't feed babies on them?—No, but young children may be fed on a mixture of potatoes and butter.

27175. Do they have home baking?—Exclusively in the country.

27176. Are there many goats kept in your neighbourhood?—Yes, by several farmers.

27177. What breed are they—the old Irish breed?—I expect so.

27178. I suppose they only kid in May?—Yes.

27179. They don't kid in the winter?—No.

27180. Don't you think it would be a valuable thing for the cottager to have goats that would kid at any time of the year?—Yes.

27181. These Toggenburgs and Anglo-Nubians do that?—I don't know them. I know as a matter of fact the majority of the farmers, as well as the cottagers always keep a goat.

27182. Why do they do that? Have they got an idea that it prevents disease?—Yes.

27183. Do cows suffer much from abortion in your district?—Not in my district, but I know that in other parts of county Sligo they do.

27184. But not in your district?—No. In this area I believe it is rather prevalent.

27185. Dr. MOORHEAD.—Have you many labourers' cottages in your district?—Yes, a great number. We have about three hundred in the Sligo Rural District.

27186. They have an acre of land attached to these cottages. Have any of these occupants cows?—No; I don't believe they have. The exception would be if they have.

27187. Have they all goats?—Yes.

27188. Every one of them?—Yes.

27189. Do you use tuberculin as a test for your cows?—No.

27190. It is not used at all in your district?—No.

27191. So far as you know are the cow-sheds kept in a fair way?—Yes.

27192. Mr. O'BRIEN.—Do you think that there is an improvement in the condition in which cows are kept because of the introduction of creameries, and the fact that creameries will not take dirty milk? Do you think that that has had any effect in improving the cow-sheds and the general handling of the milk?—I don't think so. The amount of dirty milk sent to the creamery would not be so serious as to affect it. The number of cases would be so very small that the milk would have to be returned, and, therefore, it would hardly have any effect in changing the cow-sheds.

27193. I suppose at your creamery your manager never goes to inspect the cow-sheds of any farmer who habitually sends, or who seems inclined to send in, dirty milk?—I don't think any farmer, so far as I know, is in the habit of sending in dirty milk. The cases would be exceptionally rare. We have had very few cases in our creamery where milk had to be returned because it was dirty. We had cases of milk being returned because it was sour.

27194. Have you seen any cows at all in your neighbourhood openly affected with tuberculosis?—No.

27195. You have never seen them?—No.

27196. The most you have seen is an occasional pinner?—That is all.

27197. Did you never see a cow with a tuberculous udder?—No. I never saw that.

27198. You think, on the whole the milk supply is not sent from diseased animals?—No.

27199. You don't know of any such case?—No, I don't.

27200. If there had been any case where a creamery had been suspected of disseminating some infectious disease, has it ever had to be shut up because there was fever in the district?—Never. When our local medical officer of health finds a case of fever he notifies us and we cease to take milk from the supplier. I know one case in this connection last year, and we ceased to take the supplier's milk until we were informed by the medical officer of health that it was safe to do so.

Dr. E. C. MacDOWEL examined.

27201. The CHAIRMAN.—You are a medical practitioner, resident in this town, Dr. MacDowel?—I am surgeon of the Sligo County Hospital, and Visiting Physician to the Lunatic Asylum.

27202. And you have general practice throughout the town and district surrounding?—Yes; a considerable district.

27203. In your opinion is there an adequate milk

supply available in this locality for the children of the poor?—I think there is a very inadequate supply indeed. Very often in the winter time. That was brought under my notice a few years ago. When I was ordering milk for children the mother would say it was impossible to get it, and they really depended on the charity of their neighbours to get milk. It was almost impossible in the case of illness or delicate children to get the milk. I was speaking to a friend of mine who was a considerable authority in creamery matters and he showed me some remarkable figures. I won't mention the creamery to which he referred. He showed me a remarkable statement in consequence of what I said to him about not being able to get milk. Taking the months of January and February, there were, in January, 3,700 gallons of milk sent to this creamery, and in February, 3,200 gallons, but in the same year, in June and July, there were over 80,000 gallons sent. That is what struck me as extraordinary—the decrease in the winter was quite as large as that.

27204. Might one infer from these figures that when such a small quantity was received by a creamery the supply locally was very deficient?—Yes, in the country district.

27205. Does your practice enable you to speak of the country district as well as of the town?—Yes, over a considerable area.

27206. Would it be a fact that the farmers themselves sometimes fail to keep a sufficient quantity of milk for their own children?—I believe that is the case in regard to small farmers.

27207. Men who would not be in very independent circumstances?—Yes, trying to make all they can for their family.

27208. But in all human probability that may be a very uneconomic and unwise disposition, because they have to feed their children, and probably they supply them with some other substitute?—Yes. Milk is such a sheet anchor for children for the first five years of their life. They cannot get on without a supply of pure milk.

27209. Do you think it wise and desirable that in districts such as you refer to the local authority should have power to provide milk depots, from which the industrial population would be able to secure a supply continually at a fixed price?—Yes. I think that would be a very wise proposal.

27210. And you think the necessities of the case are sufficiently acute as to warrant such a step being taken?—Yes.

27211. And I take it, it would also be your opinion that this would be a reproductive expenditure; that in all probability it would save a great deal of necessary expenditure in after life in dealing with disease that might be directly traceable as an improper and insufficient food in the early years of their life?—Yes. I think that in the long run it would pay. I am even inclined to recommend farmers to co-operate themselves. Take one of the institutions I am connected with—the asylum. It is supplied by, say, one farmer or two, and he, of course, has not got anything like an adequate quantity of milk to supply the institution. He will get probably eight or ten farmers to help him in giving an adequate supply. Of course that is open to very grave objection. If a case of illness broke out we have a difficulty in tracing the source.

27212. You have to deal not only with the contractor, but with the sub-contractors who supply him?—Yes.

27213. And that, of course, renders the administration of a public institution much more difficult?—It is very difficult in the case of tracing disease.

27214. Have you ever suspected the milk supply as a source of infectious disease?—Yes, we have. When scarlatina or typhoid broke out, we investigated the milk supply.

27215. And in some instances you have satisfied yourself it was the cause of the disease?—Yes; undoubtedly.

27216. And if these people were milk producers on a large scale, and if they were sending this milk into a town or into a congested district, in all probability they would widely disseminate the infection of this disease?—That is so.

27217. We have heard that recently the Sligo Rural Council has appointed an officer to enforce the provisions of the Dairies and Cowsheds Order. Up to that time no safeguard was taken by that authority to ensure that the milk would be produced under cleanly conditions?—I don't think there is any inspection of dairies at all.

27218. What are the prices for milk at the asylum?—I cannot say.

27219. With regard to your hospital experience, you take in children?—Yes.

27220. Do you sometimes find they are unfamiliar with the taste of milk?—They know when it is bad.

27221. Do you find that they don't care for it?—I cannot say that.

27222. We were told in another place that one of the difficulties in the management of an hospital was that when children were ordered milk they refused to take it?—We tried pasteurised milk from one of the creameries, but the children would not take it. They dislike it.

27223. Do you think it necessary to subject all milk to pasteurization?—I think in institutions it should be pasteurised, certainly.

27224. Is it your opinion that the pasteurization of milk injures its food properties?—I don't think it does, on the whole.

27225. But does it alter the taste?—Yes. I have frequently known children to refuse it.

27226. But if you could be quite satisfied that milk is produced in cleanly and healthy conditions from healthy stock, would that satisfy your fears regarding infection from milk without subjecting it to pasteurization?—Personally I think all milk should be boiled for children. I am sure of that.

27227. And you think it would be the safest method under which children could be brought up?—I think if we really want to suppress tuberculosis we can never do it unless milk is boiled; unless the system of eradicating the disease is so complete, we will have to boil the milk.

27228. Do you think the insufficient feeding of children in early years predisposes them to disease in after life?—Yes; I think children very often get the seeds of tuberculosis in the first two or three years, and it breaks out in after life. A child will get the intestinal glands affected by tubercular milk in early life and be subjected to tuberculosis later on.

27229. Is tuberculosis fairly prevalent in your district?—Yes.

27230. In all its forms?—Yes.

27231. Do you find much of it amongst children?—Yes, not so much pulmonary as joint disease, and abdominal trouble.

27232. That might be induced by an impure milk supply, or an inadequate milk supply?—I think more by an impure milk supply.

27233. Have you ever been obliged at either of the institutions with which you are connected to reject a milk supply because of its being sent in in an unclean condition?—Yes. There have been frequent complaints, but not recently.

27234. And, undoubtedly, the condition in which it is sent in gives cause for grave anxiety?—Yes. A great difficulty, putting aside the question of getting disease germs in milk; a great difficulty is in getting milk clean.

27235. Those engaged in the handling of milk are not always careful, and are not always above suspicion in the manner in which they keep their apparel?—I would almost go so far as to say that, with few exceptions, no precautions were taken as regards cleanliness. The boys never wash their hands; they may put them into the pail of milk. On one occasion I saw a boy with a suppurated whitlow milking cows. I mention that as an instance of the carelessness of the boys. I don't think, until the public are educated, and the children taught hygiene in schools, we can do all we want. Once the public are educated, I think they will look upon impure milk with horror, which they don't do at present. They drink milk which is impure. I nearly lost a child of my own owing to impure milk. She went to bed pretty well. Dr. Laird was with me at the time that she was seized with convulsions. When we examined the cup of milk which she had drunk we found it contained an enormous quantity of manure. Ever since that I make my patients strain milk through a fine muslin cloth, and it is extraordinary the amount of impure matter that you find.

27236. Which shows how little care is taken with the milk?—Yes. If you put milk into a tumbler, the bottom of the tumbler will show the condition of the milk.

27237. Have you thought of any scheme whereby the knowledge and danger arising from the use of impure milk can be disseminated amongst the public generally?—I think Lady Aberdeen's work, and the work of the Women's National Health Association, have done a great deal. Until they came we were not listened to.

27238. The visits of the nurse to the homes of the patients is helpful?—That is most important.

27239. Is it a useful means of disseminating this knowledge?—Yes.

27240. You have a Jubilee nurse here?—Yes, and I hope we will have two in a short time.

27241. You would be hopeful, I take it, that the knowledge they would disseminate in the homes of the poor would be the means of educating people regarding the value of milk and the necessity for keeping it clean?—Yes.

27242. Would lectures be helpful?—Yes, I think so.

27243. Unfortunately, of course, the labour of the nurse must be restricted to a confined area and will not reach the entire population?—No.

27244. Have you ever traced any outbreak of infectious disease to the milk in the institutions with which you are connected, or in your private practice?—I know epidemics that occurred which may be traceable to creameries.

27245. Would that be by the use of separated milk from the creameries, or from the butter manufactured at the creameries?—The separated milk, I think.

27246. Have you formed any opinion as to the value of separated milk as a food?—No.

27247. There is not much consumption of it by the industrial population so far as you know?—I don't think so—not so far as I know.

27248. Lady EVERARD.—Do you think that if in the schools the children were taught the value of milk it would have some effect?—Yes. I think hygiene should be taught in the schools. Teaching the dangers of impure milk would have a good effect.

27249. Have you a Babies Club in Sligo?—No.

27250. You have a branch of the Women's National Health Association here?—Yes, and a pure milk depot has recently been established. They get a certificate that the cows are free from tuberculosis, and they see that everything is clean in connection with the milk. There is no sterilisation done, but everything is scrupulously clean. I think matters have improved since the old days when they were deplorable. One could not speak too strongly of the condition of the dairies, and the filthy condition of the cows; one was accustomed to see dirty flanks and udders never cleaned, and there was no inspection of any kind.

27251. Have you much tuberculosis here amongst grown up people?—There is a fair share, I think.

27252. Do children eat oatmeal porridge?—Very little. I have been trying to get them to eat it and to take it with milk.

27253. Has any move been made in Sligo to give the school-children a midday meal in winter?—No.

27254. Is the long-tube feeding-bottle used?—The long-tube feeding-bottle is in evidence very much.

27255. And would you disapprove of it?—Very much.

27256. Do you think the mothers realise the value of milk for their children—the value of milk as compared with other articles of diet?—I think they know more than they did, but up to recently the idea was that milk was a weak food, and children were only fed on sago.

27257. Are there any goats kept in Sligo?—Not in the town. One would be very glad to see goats in the rural district.

27258. Do you think they would be an advantage?—They would be a great help, I think, to the people I have mentioned, who in the case of illness are unable to get milk.

27259. Do you know there is a breed that will kid at any time of the year?—I have heard so.

27260. The Women's National Health Association are very anxious to send out these improved breeds of goats?—Yes.

27261. The Department of Agriculture are willing to help them in any way they can, and they are trying to get up a stock of goats to send them throughout the country?—Yes.

27262. Dr. MOORHEAD.—Is breast-feeding common in your district?—I think it is common. I don't think it is as common as it ought to be.

27263. Do the people use any substitutes for milk?—Sago, and things of that sort.

27264. Do they give tea to the children?—I have heard of it being added to the feeding bottle. I came across a fine handsome married woman who complained of loss of sight. She told me she was nursing a child of a few months old and a boy of two years at the same time, and she was complaining of loss of sight.

27265. Would you say that tuberculosis is on the increase?—I would say it is on the decrease lately.

27266. And is the bone form and the joint form most prevalent?—No, I think the pulmonary form is most prevalent.

27267. What do you attribute that to?—I am inclined to look on milk as the root of the whole thing—in-sufficient feeding and the absence of good milk.

27268. Do you notice the cows in a bad condition as a rule?—I think there is a distinct improvement since your Commission came into existence, but it was deplorable for years.

27269. Do you mean the emaciated condition of the cows?—No; the filthy condition. No one ever thought of cleaning a cow before milking her.

27270. There are no visibly diseased cows?—No. There are very few amongst the Sligo cattle.

27271. If the milk is tainted with tuberculosis there must be a large number of the cows which are tuberculous?—I have no doubt there are.

27272. I suppose you would approve of these cows being inspected?—Yes; rigid inspection. I strongly think, in the case of every vendor of milk, that their premises should be strictly inspected. I am in favour of appointing an officer of health for the county.

27273. A whole-time officer?—Yes.

27274. Independent of everybody?—Yes.

27275. Lady EVERARD.—I assume you would approve of having all the by-products of milk brought under the same rules and regulations as new milk?—Certainly.

27276. At present the home-made butter is not under inspection?—No.

27277. We have had evidence by experts that butter with the tubercle bacilli in it has been found in the milk that has been churned and made into butter?—Yes.

Mr. JAMES COLLIS examined.

27278. The CHAIRMAN.—I understand, Mr. Collis, you are manager of a creamery at Collooney?—Yes.

27279. How long have you occupied that position?—About four months.

27280. Are you recently qualified as a manager, or had you experience elsewhere?—Yes, for eleven years.

27281. In what other district?—Principally in Collooney as assistant manager.

27282. You have been connected with the Collooney creamery for a considerable period?—Yes.

27283. And have later on become responsible for the management?—Yes.

27284. Is there any improvement in the condition in which the milk is being sent into your creamery during your experience?—Yes; a great improvement. It is principally due to the Department, whose inspector comes round and inspects the suppliers' cans regularly. Of course, the creamery rejects sour milk, and the manager inspects the cans two or three times a week and sees that they are properly cleaned.

27285. Do you supply any steam jet for the purpose of cleansing these cans at the creamery?—No. We got up one, but it was taking up so much time the farmers themselves objected to the waste of time.

27286. You do think that they are more careful as to the manner in which they keep their cans than they were in the past?—Yes, because we would reject any cans that would be dirty. There is no necessity during the past few years for doing that.

27287. How many deliveries of milk have you been obliged to reject yourself since you became manager?—None at all.

27288. How many have you seen rejected by your predecessor in office?—I cannot say really.

27289. I don't want you to give me the exact number, but what I would ask you is how often milk would be rejected; would it be once a week or once in three months?—Not oftener than once in three months.

27290. Is the one lesson sufficient to teach the suppliers the obligation of sending their milk in a proper condition?—I believe so.

27291. And he does not offend a second time?—No. I have known of a couple of occasions where we cleaned a can properly to show the supplier how it should be done.

27292. Independent of the can altogether, is the milk sometimes subjected to other contamination and mixed with faecal matter?—I don't think so.

27293. You never rejected it from that point of view?—No. We rejected sour milk.

27294. That is a different thing. Would you reject discoloured milk?—I never saw it come into the place.

27295. Do you think are cow-keepers careful to keep discoloured milk out of the creamery supply?—I think so. They never supply it.

27296. Do you ever sell separated milk?—We would if there was a surplus, but the suppliers have to get 80 per cent. back.

27297. Is it calculated that the elimination of the cream deals with 20 per cent. of the entire bulk sent in?—From 12 to 15 generally. There might be a surplus over, and then it would be sold to a neighbouring town.

27298. For what purpose?—For pigs and calves, and baking bread.

27299. Would it be carried away by the consumer from the creamery?—Yes.

27300. In such quantities as a gallon and two?—Yes, generally.

27301. At what price?—1½d. a gallon—1d. and 1½d. a gallon.

27302. Would more or less be available in the winter or in the summer?—There would be practically none in the winter time.

27303. Is there any increase in winter dairying in your locality?—I don't think so.

27304. We have heard from Mr. Gallagher about the operations of the cow-testing association. Do you think that would be helpful to you in increasing the yield of the cows?—Yes.

27305. Are you in favour of it?—Yes.

27306. Do you also think that many of the farmers have incorrect notions as to the milk yield of their cows?—Yes. The farmers generally are taking it up because they say it is paying them.

27307. And is likely to be an advantage to them in the future?—Yes.

27308. Your average price for the summer months is about 3-70d. per gallon?—Our average price for last year was 3-87d.

27309. For about seven or eight months?—For seven months, and it was 4½d. a gallon for the winter months or thereabout.

27310. Do you find a marked difference in the yield of butter fat from the milk produced on different lands?—Yes.

27311. Do the farmers ever have their milk tested for the butter fat of the individual cows?—Yes.

27312. Has that practice become more general?—Yes, since the cow-testing association has been established.

27313. Do you find that there is a very material difference in the yield of butter fat from the milk of individual cows?—Yes, a great difference.

27314. What would be the range; from the normal how far would it go above and below?—There would be practically one per cent.

27315. How many of the samples that you test would be below the normal standard for butter fat in pure milk?—I am sure there would be about 50 per cent. of them.

27316. Fifty per cent.?—Yes, practically. The average test for last year was about 3-5 per cent., and if a man comes in with five or six cows the average would be under 3-5.

27317. And the conclusion you would draw from that would be that the milk of half his cows would be under the legal standard?—Not under the legal standard. There would not be 20 per cent. under the legal standard.

27318. How many samples have you found that would be under the legal standard and if subjected to analysis would be certified to be deficient in butter fat?—For the past month we have 1,500 suppliers, and there would be about one hundred under the legal standard.

27319. Was that because the year was exceptional?—Yes. The wet weather had an effect on it.

27320. An excessive amount of rain and soft grass?—Yes.

27321. And the cold?—Yes. Our average test for the half-year is much below last year.

27322. Would there be much increase in the quantity of milk sent to the creamery?—There is a wonderful increase; we have an increase of 53,000 gallons over last year.

27323. But you are dealing with a larger number of cows?—Yes.

27324. Would you have any means that would enable you to compare the average of this year with last year from the same number of cows?—No, but I believe there is a great increase.

27325. Is it your experience that from the cow which is a light milker, the yield of butter fat from her milk would be greater than from the milk of the cow which gives a larger bulk?—That is the case from time to time, but at the same time I have seen cows giving a small quantity of milk of a poor test.

27326. It does not necessarily follow that because a cow is a light milker she will give a milk richer in butter fat?—It does not follow.

27327. Are the farmers exercising increased care in the selection of their cows?—Yes, they are.

27328. And they are trying to breed animals that are likely to be better milk suppliers than those they have been using?—Yes.

27329. All these things, I take it, will be helpful in the creamery industry?—Yes.

27330. I assume that it is the desire of all engaged in the management of creameries to produce the best results for their suppliers?—Yes.

27331. It has been represented to the Commission that the creameries in certain districts have been responsible for limiting the supply of milk for domestic purposes, and it is also suggested that if the creameries were obliged to sell milk retail in small quantities it would in some degree diminish the evil arising from the introduction of the creamery system. Now, I want to know from you, as a creamery manager, how far it would interfere with your work if you were obliged to sell milk, provided it was necessary in your locality, for an hour in the morning and an hour in the evening to those who might require small quantities?—I don't think it would affect us at all.

27332. You don't think it would complicate the management of the creamery to any considerable extent?—Not in the least.

27333. And you think it would not be an unreasonable condition to impose on creameries where the necessity exists?—Not if it was required.

27334. You never sold milk yet at your creamery?—No. We have never been asked for it.

27335. Nor is there any necessity for selling it in your creamery?—Not the least.

27336. And the person wanting milk there can procure it?—Yes. In fact we have suppliers selling milk in the town sending us their surplus.

27337. When they cannot get a market for it?—Yes.

27338. Miss McNEILL.—You don't insist on getting all the milk the suppliers have?—No.

27339. The CHAIRMAN.—Would the suppliers be forbidden by the creamery management to sell milk for any other purpose?—No; the supplier can do what he likes with it.

27340. There is no condition imposed on him in that way?—No. I have never known it, to my knowledge, in any creamery.

27341. What is your butter market?—Manchester, London, Liverpool, and Glasgow.

27342. What quantity of milk are you dealing with at the present time?—We had 150,000 gallons for the month of July.

27343. Is that the largest quantity you have ever dealt with at the creamery in a month?—Yes.

27344. Is there a depreciation in the supply this month?—There is. The supply is falling back for the month of August.

27345. Is that what usually happens?—Yes.

27346. And it is still lower in September and October?—Yes.

27347. But you are always able to get some milk to keep you going two or three days in the winter season?—Yes, generally two days.

27348. Is there any provision made for the storing of milk during the period that it is waiting separation?—No. It is brought in on the day of separation. We never store it until we are ready for separation.

27349. Where is it kept by the farmers during the period that it is accumulating?—In his dairy, I suppose.

27350. Do they provide a milk store in connection with their cow byres?—Some do, I think.

27351. How often is your creamery inspected by the Department's inspector?—At least once a month.

27352. And possibly two or three times within the month?—Yes, oftener.

27353. What sort of inspection does it get; is it merely a superficial inspection, or are the vessels examined and the tubes?—He examines all the vessels; all the cream cans, tanks, and everything in connection with the dairy, and also the sewers.

27354. What provision do you make for dealing with the creamery sludge?—There is a big river passing by, and we drop it in there.

27355. And it disappears?—Yes. That is all we know about it.

27356. You never got into trouble over it?—No.

27357. Is it a river that is preserved for the fishing?—It is, I believe.

27358. And the introduction of this matter has never proved detrimental to the lives of the fish?—I don't think so. Of course, the fish are never in the race.

27359. Is the sludge discharged into the river always?—Yes.

27360. Are you ever obliged when in the process of separation to stop the machinery for the purpose of cleaning the bowls?—Yes.

27361. Always?—Generally.

27362. When you are dealing with a large quantity?—Yes.

27363. Do you find that at certain seasons there is a larger deposit in the bowl of the separator than at other seasons?—Yes.

27364. You would have more accumulation of solid matter in the bowl of the separator when dealing with milk that was drawn from cattle in-fed—fed in the byres?—I think we would; but the supply would be very small. It is principally in the summer time, during the hot weather, that the milk would be perfectly fresh that we would have a larger deposit.

27365. I quite see that it is difficult to establish a complete comparison, because, in the winter season, you are dealing only with a small quantity, and every time you carry out the separation process the vessels are cleansed?—Yes.

27366. And the comparison could only be complete if you are dealing with the same quantity in winter and in summer?—Quite right.

27367. So, from that point of view, it is impossible to arrive at a definite conclusion?—Yes.

27368. With regard to the condition of the milk in the winter season, is it more often dirty than when the cows are on grass?—No.

27369. You have no reason to think that the condition in which the cows are kept in the byres increases the risk of having dirty milk?—No; I don't think so.

27370. What height do you raise the temperature to for separation?—From 140 to 180 degrees.

27371. Do you subject the whole body of the milk to that temperature?—Yes.

27372. Is it all being dashed against the heated surface; is it in motion during the time it is in the vat?—It is in motion in the heater, which holds about 25 or 30 gallons at a time.

27373. And it is continually flowing into and out of the heater?—Yes.

27374. Lady EVERARD.—You cool it after it is separated?—We never cool the separated milk.

27375. Do you cool the cream?—Yes, immediately after.

27376. Have you a refrigerating plant connected with your creamery?—Yes.

27377. And a good water supply?—Yes.

27378. The CHAIRMAN.—What temperature do you think it is necessary to raise the milk to in order to eliminate more completely the butter fat; do you think it is necessary to get it to a temperature over 140 degrees?—That is quite sufficient.

27379. And is it for the purpose of destroying the germs that may be in it that you increase the temperature from 140 to 180 degrees?—Yes. At 140 degrees the germs are probably alive, but after 152 degrees the germs are practically killed.

27380. But what I wanted to get from you is this—do you expose it to the increased temperature with the idea and desire of destroying disease germs in it?—No.

27381. And for what reason do you increase the temperature?—The temperature varies from 140 to 152 degrees, but from time to time the temperature rises to 185.

27382. How is the temperature taken of the milk passing out of the heater?—There is a thermometer fitted to the pipe, and the man taking in the milk can see the temperature at a glance. It is checked regularly.

27383. And if the temperature was not up to the normal standard for the purpose, would the process be suspended until the heat was increased?—Yes; until the heat was at least 140 degrees.

27384. Does that sometimes happen?—It has happened from time to time.

27385. Owing to the insufficiency of the pressure of the steam on the boiler at the moment?—Yes.

27386. It might happen after you began to work, and before you had a strong head of steam on the boiler?—Yes, that is so.

27387. Mr. O'BRIEN.—How many members have you in your society; it is a co-operative society?—Yes.

27388. Are all your suppliers members?—Yes, they are. There are some who are not members yet, but from whom we are stopping share capital, and after we have the allowance stopped we will ask them to become shareholders.

27389. On the basis of £1 a cow?—No, £1 shares.

Mr. JOHN ROBERT BARBER examined.

27390. The CHAIRMAN.—Are you interested, Mr. Barber, in agriculture in the Collooney district?—Yes.

27391. Are you a dairy farmer?—Partly.

27392. You carry on a mixed system?—Yes.

27393. Do you go in for winter dairying?—No.

27394. Do many farmers in your locality go in for it?—None that I know of.

27395. Do they even keep a sufficient number of cows to supply their household requirements in the winter?—Yes; and anything over they send to the creamery after feeding the calves. They give calves new milk for a month or six weeks.

27396. Is it believed that it is difficult to make winter dairying pay?—Yes, because of the price you get for the milk.

27397. What do you think would be a reasonable price to make winter dairying remunerative?—You would want to get over 6d. a gallon at any rate.

27398. In some creameries we have been told that they do give over 6d. in the winter season. We have been informed that the average price in some districts is 6d. and 7d. If you could command that price you would be likely to increase your winter dairying?—Yes, and a good many others would also.

27399. Do you think that a cow calving in the month of November would give a heavier milk yield for the twelve months than the cow that calves in April or May?—Yes.

27400. And that would be a further advantage in winter dairying, if carried out—the increased yield per cow in the twelve months?—Yes.

27401. And would go to help the profit derivable from winter dairying?—Yes.

27402. Is that fact of the winter calving cow recognised by dairy farmers generally?—Not by the lot.

27403. I quite understand. That is just exactly what I would have thought. Do you keep milk records?—Yes. I started last year.

27404. Are you interested in the Cow-testing Association?—Yes.

27405. Do you think that that is a useful scheme?—Yes.

27406. And likely to be helpful to the dairy farmers in making their industry more profitable?—I think so.

27407. How many of the farmers in your locality registered cows under the new scheme for the production of dairy bulls?—Very few as yet.

27408. Why—is it because they are not familiar with the provisions of the scheme?—Yes; and they don't know whether they would be selected or not.

27409. Do you think that the standard fixed by the Department is unreasonably high?—I don't think so.

27410. And you think it ought to be the ambition of those engaged in the dairying industry to make arrangements for having cows that will reach that standard?—Yes, I do.

27411. In fact, if the dairying industry is to survive at all, an effort must be made to increase the yield of milk?—Yes.

27412. And if winter dairying is ever to be made popular that becomes still more essential?—It does.

27413. Is any effort made to grow catch crops to supply green fodder for cows in the winter and early spring?—I don't know of any except one or two.

27414. Is that being encouraged by the agricultural instructor in this county?—Yes.

27415. Is he responsible for its introduction?—He is.

27416. Does he find it difficult to secure the co-operation of the practical farmers?—Yes; in some cases it is very difficult.

27417. I should hope that the difficulty would decrease after a little time, because it is really one of the essentials to the development of winter dairying?—It is.

27418. Would the farmers in this district be willing to undertake the increased trouble, labour and expense which winter dairying would involve if they could make it pay?—Yes.

27419. And the labour question would be no difficulty with them?—Not very much.

27420. The only thing they would need to be guaranteed would be the remunerative return for the capital expended and the labour entailed?—Yes.

27421. Would it not be possible to give a better price for milk at the creameries if there was a sufficient quantity available to keep the machinery working and the staff employed during the entire winter months?—Not in Collooney, because the expenses are very high.

27422. What I want to get from you is this—that winter dairying is handicapped by the very limited supply available for the creamery to deal with during the winter months?—Yes.

27423. And the cost of dealing with it is enormously increased thereby?—Yes.

27424. And if a sufficient quantity was available, would it not go to increase the price of what would be dealt with?—Yes.

27425. Because the cost would be lessened considerably?—Yes.

27426. Do you breed your own cows or buy them?—Sometimes breed them, and sometimes buy them.

27427. How do you find the cows you buy as compared with the ones you breed?—Sometimes as good, and in many cases not so good.

27428. When you are selecting your own heifers do you inquire as to the milk record of the dam?—Yes.

27429. Are cows ever sold at fairs with the guarantee that they come of a good milking strain?—No. There is no guarantee given.

27430. Does a buyer ever ask a seller whether he knows if the cow comes of a good milking strain?—Very seldom.

27431. He buys on appearance alone, and his own judgment?—Yes.

27432. Without a knowledge of what her dam or grand-dam has been?—Yes.

27433. Are the farmers good judges of a milch cow, as a rule?—I think so.

27434. Do you exercise your own judgment in regard to the conformation and shape of a cow when you are buying one for dairy purposes?—Yes.

27435. How often do you find your judgment borne out by the results?—In nearly every case.

27436. What price would you pay for a four or five year old cow of a good class in the fairs of this county?—At the present time £15; but any other time you would go to £20, and over it.

27437. Is there a poor demand at the present time?—Yes; because they cannot get them shipped.

27438. So that any one wanting cows at the present time could buy them advantageously?—Yes.

27439. Is it a fact that the best type of milch cows are bought by exporters at fairs?—Yes; they nearly all go away.

27440. And those engaged in the dairy industry are tempted to sell their best cows by the offer of liberal prices?—Yes. They nearly always sell them if they get a good price.

27441. And they get weaker specimens and poorer milk yielders to supply the creamery and for the home?—Yes, nearly in all cases.

27442. Is there any change in that very unfortunate and injurious custom in recent years; are the people in a better position to keep their cows now than they were ten or fifteen years ago?—They are.

27443. And is it the necessity of getting a sum of money to meet a pressing necessity that sometimes induces them to sell?—In some cases it would be.

27444. I hope the number of these cases is diminishing. Do you think it is?—Yes.

27445. What class of bull is used in your locality?—The shorthorn.

27446. A pure-bred shorthorn?—Yes.

27447. The cows you keep are the produce of a shorthorn bull and a dairy cow?—Yes.

27448. Have you any knowledge of the type of animal known as the old Irish dairy cow?—No.

27449. You don't know of its existence in your locality at the present time?—No.

27450. We heard of her occasionally, and one wonders whether she ever had any existence. You never saw her in the flesh?—No.

27451. Did you ever hear of her spoken of in your district by the older people?—Yes.

27452. And, of course, like everything antique, she was much better than the animal to be found at the present day?—Yes.

27453. In your experience has the yield of milk increased or diminished in recent years?—It has increased a little, I think.

27454. It is gratifying to get a statement like that from a practical man when we are told that everything is decadent in this country. Does any feeling prevail amongst the cowkeepers against the use of the premium bulls?—Only in a few cases.

27455. Did you ever hear of it?—I did.

27456. Have you ever bred any of the cross-bred Aberdeen Angus as milch cows?—No.

27457. Are any of them kept in your district?—No, but I saw the pure-bred kept.

27458. What was their record in milk?—Some of them were as good as the shorthorn.

27459. With regard to the quality and percentage of butter fat?—The milk was richer in butter fat than from the shorthorn.

27460. Would this be from the pure-bred cows or the cross-bred?—From the pure bred.

27461. Have you any experience of the cross between them and the shorthorn?—No; I never saw these milked.

27462. Have you much mortality in calves in your district?—Very little except from blackleg.

27463. Do you suffer much from abortion in your herds?—No.

27464. Neither of these are material hindrances to the development of the dairying industry in your locality?—No.

27465. Have you had any visit from the veterinary inspector appointed by the Rural Council in Sligo under the Dairies and Cowsheds Order?—No.

27466. Has he been in your locality so far as you know?—Not that I am aware of.

27467. You never heard of any visit being made to any cow-keeper in your locality by the inspector?—No.

27468. Who is the gentleman appointed?—I think Mr. Walsh.

27469. Is he a resident of the town?—Yes; I am not quite certain.

27470. Is there much prospect in your opinion of the development of winter dairying under the existing condition of things?—Not at present.

27471. There is no prejudice against it except the difficulty of making it remunerative?—No.

27472. Have you often heard of milk being returned from creameries in consequence of being sent in an unclean condition?—Not in Collooney.

27473. How is the milk stored and kept in the winter over the days that the creamery is not working?—Most of the people put it into cans and immerse it in a tub of water.

27474. Where is it kept?—In a dairy.

27475. Have most of the farmers, even the small farmers, some provision made for the storage of milk?—They have.

27476. All of them?—Nearly all.

27477. Even the farmer keeping three or four cows, has he his byre in a reasonably efficient state?—Yes. Under the Order nearly all keep them properly.

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27478. Have they got concrete floors?—Yes, and the places are white-washed.

27479. And there is more ventilation and more air space?—Yes.

27480. And the fact of the Order being put into force by the District Council has induced a certain amount of improvement in the manner in which the byres are kept?—Yes.

27481. Is there any inspection made during the summer season of the milking of the cows to ascertain whether or not the vessels are kept clean, or the hands of the milkers washed, by the veterinary inspector, or any other officer?—No, not that I am aware of.

27482. Have you suffered any loss from tuberculous affection amongst your stock?—No.

27483. Nor is it known in your district?—No. There are no cases of it at all that I know.

27484. Are there other districts of the county where it is more prevalent according to what you hear?—I am not aware.

27485. You have not heard of any losses arising from it?—No.

27486. Dr. MOORHEAD.—Do you ever come across a pinner at all?—No.

27487. Do you know what it is?—Yes, but I never saw it.

27488. They are not about the district at all?—No.

27489. Is the milk scarce in your district; are there any people suffering from the want of it?—No.

27490. Any of the labouring people?—No; they can get plenty of it to buy.

27491. And it is cheap?—It is.

27492. How much would they have to pay for it?—About 3d. and 4d. a gallon.

27493. There is plenty of milk if they wish to buy it at 4d. a gallon?—Yes. There is no one that wants it, practically.

27494. Do you keep milk records?—Yes.

27495. How do they turn out for you?—Fairly well.

27496. What was the best test of a cow?—I cannot say from memory.

27497. How many gallons can you get from a cow in the twelve months?—I have not the records for twelve months yet.

27498. The CHAIRMAN.—You have got some cows inspected for registration?—Yes.

27499. You are hopeful that they will qualify also under the conditions laid down for the milk yield?—I am sure they will.

27500. Are these spring-calving cows?—Yes.

27501. That would be in the month of March or April?—Yes.

27502. When these cows calve in the month of March or April, do you give them any hand-feeding?—Turnips and crushed oats. When the turnips are out they get mangolds.

27503. That would be in April or May?—Yes.

27504. Until the grass begins to come?—Yes.

27505. Do you ever give them cake or meals?—The young ones get cake.

27506. That would be when the calves would be getting off milk?—Yes, and the one-year-olds get it.

27507. What form of fat do you give to the calves as an addition to the separated milk?—Flax seed, linseed meal.

27508. Is it whole flax, boiled or ground?—Yes.

27509. Is it steeped in boiling water?—Yes.

27510. Do you think you can rear as healthy stock in that way as you did previous to the introduction of the creamery system?—Yes.

27511. And can you make as good yearlings out of cattle so fed as when you were giving the whole milk for a month or six weeks?—Yes.

27512. I am told that the feeling prevails in certain districts that the creameries are responsible for the depreciation in the character of the store stock in Ireland, and I wanted to know if you subscribe to that view?—No. The calves get whole milk until they are about a month old.

27513. And then you begin to give them separated milk?—Yes.

27514. And also something to supply the butter fat that has been extracted?—Yes.

27515. Do you give separated milk in large quantities?—No; three quarts at a meal.

27516. You give them no more separated milk than you would whole milk, if you were feeding them on whole milk?—No.

27517. If you have a surplus, it goes to the pigs?—Yes.

27518. How long would the separated milk keep fresh after being returned from the creamery?—Without turning sour you mean?

27519. Yes?—It would keep for about twelve hours on a hot day.

27520. Have you any experience of drinking separated milk yourself?—No.

27521. You never drank it?—I have taken a mouthful or so.

27522. Is it unpleasant to the palate?—I don't like it.

27523. And any one accustomed to drinking pure milk would probably be of your opinion?—I think so.

27524. Independent of its poverty, has it also an unpleasant effect on the palate; you don't like the taste of it?—No.

27525. Would that happen even with milk that had come straight from the separator?—It would be just the same I think; it would be quite hot too.

27526. Of course it is quite hot when it comes from the separator, because it is after passing through the heater then; but suppose it was allowed a sufficient time to cool, would it have an unpleasant taste?—I don't know, because I never tasted it then. I would not taste it any way when it would be twelve hours from the creamery.

27527. Is there a prejudice against its use for human consumption?—No one uses it for human consumption.

27528. Is there a prejudice against its use in this way—that people think it is a dangerous food to consume?—I don't think so.

27529. It is because it is unpleasant to the palate that they don't take it?—Yes.

27530. Mr. O'BRIEN.—They would not think it is a fit food for a human being?—No.

27531. How many cows are there on the farms that supply the creamery to which you send your milk?—The average would be about five cows.

27532. I suppose practically there is no labour employed on that farm. There is perhaps one person in a dairy, but most of the work is done by the farmer himself and his family?—Yes, but in a good many cases there are more cows than five.

27533. On an average there would be from four to six cows?—Yes, and the people do all the work themselves.

27534. And they keep enough milk for themselves too?—I suppose they do.

Mr. JAMES O'BOYLE, J.P., examined.

27535. The CHAIRMAN.—You come from Killala?—Yes, quite close to Killala.

27536. Is that a creamery district?—No; there are no creameries in North Mayo, or in any part of Mayo, I think.

27537. Is there any scarcity of milk there?—There is a big scarcity, especially near the North Coast line, away beyond Killala and right into Belmullet.

27538. All along the Atlantic sea-board?—Yes.

27539. Is it a congested district?—Yes, very congested.

27540. Is it under the Congested Districts Board?—Yes.

27541. They have been bringing in the Galloway bull into that district?—Not for six or eight years.

27542. But they were introduced?—Yes.

27543. At the inception of the Congested Districts Board's work?—Yes. When the Board were sending round bulls and boars they did not do it so much in Killala as in Connemara and Belmullet, and Bangor, but I find some of them even with a great deal of the breed at the present time.

27544. But they never did predominate in your locality?—No.

27545. What class of cow is kept in your district?—The shorthorn cross and an Angus cow.

27546. Where did the Angus cows come from?—The Angus bull was always kept in Killala and in Mayo; the majority are Angus bulls.

27547. In Mallaranny they complain of the effect of the Angus bulls on the milk supply?—Yes.

27548. The milk yield is abnormally small from the cows that are kept?—Very small; they would hardly feed their calves.

27549. Have you any recollection what the milk yield was previous to the introduction of the Galloway bull?—I believe they were milking a good deal more than at the present time.

27550. I would not be surprised, because everyone recognises that the introduction of this breed is inimical to the milk supply?—Yes.

27551. You don't think that the introduction of the fresh blood sent in by the Congested Districts Board has been helpful in increasing the milk yield?—It has ruined it.

27552. What would you suggest is the best breed of bull to send into that locality?—A pure-bred short-horn of milking strain.

27553. There is a considerable difficulty, I am afraid, in getting shorthorns of approved milking strain?—You would have no delay in getting some good cows—I have known them to be sent out of the country.

27554. Were they eligible for the herd book?—Yes; they were entered in the herd book.

27555. You think there are shorthorn cows that would yield a milk supply considerably in advance of the crossbred cows that are now in existence in your locality?—Yes, and I have seen it. I have also known that the Department has been asked to give some assistance in getting a shorthorn bull of milking strain, but they could not see their way to do so, and the party who owned them sold them to the exporter and they went out of the country. The idea was that the bull should be used for the entire district.

27556. It is rather a pity, if these were deep-milking shorthorn cows, that they were sold out of the country, because they are rather difficult to replace?—You cannot replace them. A cow yielding 1,500 gallons in the year would be an exceptionally good cow.

27557. Yes?—And they would average about 3.5 per cent. of butter fat.

27558. I think she would be a most excellent dairy servant?—Yes.

27559. And if you could get a cow from twenty-five to thirty per cent. worse than she is, she would be enormously increasing the milk yield?—Yes. I think it was the feeling of the Department not to help.

27560. Do you know the scheme introduced by the Department for the introduction of a shorthorn bull with a milk record?—Yes.

27561. Would such a bull as that be suitable for your locality?—It ought to be, if he came of a milking strain.

27562. In view of the fact that you have at the present time a number of cows in Mayo that are bred from the pure breed of the Galloway type, is it not necessary to introduce some cross?—I would not say that you have much of the Galloway; it is more of the Angus that you have, and they are a small type, that should not be at all kept; and that comes, I believe, from the crossing, over and over again, of this Aberdeen Angus.

27563. I quite agree. We had the same view put before us in Clifden, where the same result had been produced by the same method, and it has almost arrived at the stage when milk is at vanishing point?—Yes. All the animals get very rough, and anyone can know a bull in the fair of the first cross. A blind man would know it. The other cattle that are crossed over and over again, are very rough, and the hide is very thick, and they are not good for the butcher either.

27564. They command a ready sale from fifteen to eighteen months' old?—The first cross does, but not the other crosses I mention.

27565. So that, in reality, although they were improved in value up to a certain point by crossing, now, on account of the crossing, they are deteriorating?—They are.

27566. Have you any information as to what would be the milk yield from a cow in your neighbourhood?—It would be absolutely nothing at all hardly. The cow would hardly feed its calf; only very poorly. You would see a cow milked, and she would hardly give two gallons in a day, and would not keep that up very long either.

27567. And even with stimulating feeding, you would find great difficulty in extracting anything like a reasonable amount of milk from these cows?—You would have great difficulty.

27568. Do you think that the cross-bred I have spoken about, which would be produced by the Department's scheme, would be just the type of animal to introduce into your locality to get back the milk-producing quality of the stock?—I would prefer a bull of the pure-bred type from a good milking strain; but, unfortunately, it is very difficult to get that; and then they have to go back to the cross-bred that you have mentioned, and they would be much better than the Aberdeen Angus.

27569. I take it from you, and from what other witnesses have stated, that unless something is done to introduce a new milking strain in Mayo and North Galway, milk will disappear?—Yes, undoubtedly; and, furthermore, I think the Department should enforce some law to have no bulls kept but those approved of by their own inspectors.

27570. You are referring now to the ordinary "scrub" bull that is used by the small farmer?—Yes; there are a number of them used.

27571. The Department would be with you, but that could only be brought about by legislation, which might be extremely difficult to procure at the moment?—I don't think it would be.

27572. Neither you nor I, I suppose, have as much experience of carrying legislation as the Vice-President of the Department?—That is so.

27573. He is not very hopeful about having such a measure placed on the Statute Book, although I would hunger for the day it was?—At the present time the majority of the people who know anything about cattle would be in favour of it.

27574. But, unfortunately, in Parliament the majority of the people don't know anything about it?—Yes.

27575. Dr. MOORHEAD.—Is the land poor in your district?—Not around Killala.

27576. Is it poor in the congested district you speak of?—It is very poor.

27577. Would it support a good class of animal?—If they were bred in the district they would do all right.

27578. The CHAIRMAN.—Are there families in that locality that could not procure milk in the winter season?—Plenty of them.

27579. Dr. MOORHEAD.—What type of animal was in it before the Congested Districts Board interfered?—What the people call the old Irish-bred cow.

27580. Was that a milker?—Yes; it was better than the present cow.

27581. Are there any of them in existence?—Hardly. You might see an odd one.

27582. She was suitable to the district and native to the soil, and would live under conditions that the high-class cow could not thrive in?—Yes.

27583. Is not that the animal to bring back?—Yes; but you cannot get it back.

27584. The CHAIRMAN.—Are there any goats kept in the locality?—Very few, except in the wild mountains, where you would see twenty or thirty running wild.

27585. These are bred wild?—Yes. There may be an odd one that they try to tame, and it has to be tied hand and feet; it would not leave a hedge undamaged.

27586. As a rule, they don't milk these goats at all?—No.

27587. Dr. MOORHEAD.—They eat them?—Yes.

27588. The CHAIRMAN.—They don't come to be milked?—There is rather a job to catch them. A very poor man might keep one of them, and he has to keep her tied down; otherwise the goat would see the hills in the distance, and she would go for them.

27589. They would be very poor milk yielders?—Yes. I saw some that I thought would be good milkers.

27590. The district where we heard the best account of the goats was Crusheen, in Clare. They say that they have a specially good breed of Irish goats there. An effort has been made, as you are perhaps aware, to improve the breed by the introduction of new blood?—Yes.

27591. I suppose it is almost idle to ask whether in a region like that the children get an adequate supply of milk?—They don't.

27592. Some of them hardly know the taste of it?—Hardly. They become careless about the use of it.

27593. Because they are not able to procure it?—Yes. I know some people about my place and they don't have a tint of milk for their tea.

27594. And the unfortunate infants are often given tea to drink?—Yes.

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27595. And I suppose one sees a great many specimens of wasted and decrepit children?—Not as many as you would expect.

27596. Dr. MOORHEAD.—Do they use any condensed milk?—A little.

27597. The CHAIRMAN.—I suppose one cow would be the most that the majority of them would keep?—Those that would keep one cow they might sometimes keep two, but they would be bad, and the two would, unfortunately, run dry together.

27598. So that the keeping of two cows does not always relieve the scarcity?—No. Besides, the cows are not good. They buy them from 15s. to 30s.—old things. I saw a man buy a cow for 6s. or 8s.

27599. Mr. O'BRIEN.—What did he do with them?—Sent them off to Glasgow. He keeps them for a few weeks, or perhaps they would die on his hands.

27600. Dr. MOORHEAD.—Those are piners?—You would hardly call them piners.

27601. The CHAIRMAN.—Would they be always able to walk home from the fair?—They can travel very well, some of them.

27602. That is their strong point?—Yes.

27603. Those would be dealers who would buy them?—Yes. The poor people extract the last drop of milk from them, and when the dealers get them they are probably pounced on as tuberculous on the other side. They are converted into sausages, I suppose.

27604. It is very disquieting from this point of view—that they are used by these people as long as they can keep them, and they are sold only when they are on the point of dissolution?—Yes.

27605. The milk produced by cows in that state could neither be healthy or nourishing?—No; that would be my opinion.

27606. Do many of these exist?—A good many.

27607. Would you say that at a fair you would get half-a-dozen of them?—You could get a dozen.

27608. What type would they be—would they be of the Galloway cross?—They would be of every breed. There is very little of the Galloway blood now in the stock. The Aberdeen Angus is the most common. The Galloways were condemned in Mayo about ten years ago.

27609. Was it because of their depreciation of the milk yield that they were rendered unpopular?—No.

27610. For what other cause?—The English feeder condemned them more or less. There are very big grass ranches about North Mayo, and those people buying Galloway cattle and sending them away to England were disappointed with them, and the people did not buy them again.

27611. And the result was that they ceased to be bred?—Yes.

27612. Are there a sufficient number of cows available of a healthy, suitable stamp, if there were proper bulls to mate with them?—Yes; but not a lot.

27613. Unless something is done in the near future to improve the milk-yielding properties of the cow, milk will almost disappear?—Yes.

27614. Is that realised by the people who keep these cows?—They are always complaining.

27615. Has any representation ever been made to the representative of the Department or to the Congested Districts Board as to the unsuitability of the type of cattle sent into the locality?—Not in that district, except as regards the Galloway bull.

27616. Does Mr. Gallagher visit the local committee in Mayo?—Yes.

27617. And do the members of the Agricultural Committee make representation to him?—No; because the County Committee of Mayo would be nearly all shopkeepers or clergymen, who would not bother.

27618. The clergyman ought to be familiar with the needs and wants of the people?—They don't seem to take an interest in the cattle. They do in the horse-breeding.

27619. The cattle are really more essential to the well-being of the public at large, from the health point of view, than the horses?—Yes.

27620. Mr. O'BRIEN.—If you were to get selected bulls supplied by the Department from a milking strain would you advocate their also passing the tuberculin test as being essential?—Yes; it would be a very good thing.

27621. At present, I suppose, you never heard of the tuberculin test being asked for in the fair if a man was purchasing a cow?—No, very rarely.

27622. If you were going to a fair to buy a bull or a cow, would you ask to have the animal tested?—It would be no use, because the man selling the animal would know nothing about the tuberculin test.

27623. We got evidence somewhere of a person asking and getting a certificate with the bull?—A good many persons in the Dublin Show ask that the bulls be tested.

27624. The CHAIRMAN.—The application of the tuberculin test has not been insisted on by the County Committee in Mayo?—No.

27625. Mr. O'BRIEN.—Don't you think it should be?—I think very few of the young premium bulls suffer from tuberculosis.

27626. You think when they get tuberculosis that they acquire it afterwards when going with a class of cattle already infected?—Yes.

27627. The CHAIRMAN.—I take it that there are not many people in your locality co-operating with the Department in keeping milk records?—I know of nobody except myself. I only tried it with one cow, and she did well enough. She registered with the Department about 1,501 gallons.

27628. She was an exceptionally good cow?—She was. I asked several of the people round here why they don't keep a shorthorn of milking strain as a premium bull, and I asked the Department to introduce such an animal, and they could not see their way to do so.

27629. Mr. O'BRIEN.—Did they offer to buy your cow?—Mr. Gallagher spoke about it.

27630. Who is your Agricultural Instructor?—Mr. Duffy, I think.

27631. Because I rather think that the Agricultural Instructors were given orders from headquarters to be on the look-out for any heavy-milking cow?—The Department's Inspectors knew the cow well.

27632. Were these Department Inspectors?—They have got Agricultural Instructors in each county. They act as Inspectors. You have a head Inspector for Connaught, and an assistant Inspector also.

27633. The Agricultural Instructor who acts as Inspector does not inspect the dairies?—No.

27634. The CHAIRMAN.—Has anything been done to put in force in Mayo the provisions of the Dairies and Cowsheds Order?—They are only talking of it at present.

27635. What is your rural district?—Killala.

27636. And no Veterinary Inspector has been appointed in that district so far?—No.

27637. And has the prospect of appointing an Inspector been favourably discussed or otherwise?—The countrymen don't understand it.

27638. Are you in favour of it?—I think it would be a good idea.

27639. Is it your opinion that the milk is suitably stored in the homes?—It is not.

27640. And there is much room for improvement in that respect?—Yes.

27641. What became of the calves of your cow that gave that fine yield?—I sold some of them. I have one of them.

27642. Did you keep any of the bull calves?—Yes.

27643. What did you get for them?—£30 apiece at three months old.

27644. You are keeping on the cow?—No. I sold the cow that gave the heavy yield because I got disgusted with the Department, as it seemed to me that they did not want to improve the cattle in Ireland.

27645. I would be sorry to believe that?—They refused me.

27646. Refused what?—To give me a shorthorn bull with a premium. I had an Aberdeen Angus in my possession with a premium. They would not see their way to give two premiums, though I know another part of Ireland where they gave two premiums to one man.

27647. It is contrary to the rule to give two premiums to one individual. Was it because you had already a premium bull that they refused it?—The excuse was that I had one premium bull.

27648. And the net result was that you thought you would not be likely to make a profit?—I could not get a premium bull of a milking strain to send this cow to, and it was no use crossing with an Aberdeen Angus.

27649. Mr. O'BRIEN.—Did you get a good price for the cow?—Yes.

27650. The CHAIRMAN.—Was she a good type of cow to look at?—No; but she was a real dairy cow—a nice, thin, silky coat.

27651. Where did you get her?—She was bred by Mr. Fred McCormick, Summerhill. He lives in Dublin. A strange thing about her dam was that she could hardly feed a calf. Mr. McCormick bought the bull from Mr. Crawford. This was a premium bull, and the cow was sent to him, and she had this heifer calf, and she turned out to be an exceptionally good milker; but she got awfully wicked, and had to be tied when milked. She always yielded butter that was the best and deepest colour. I have seen a good many cows in England and elsewhere, but I saw none to come up to her.

27652. She was sold out of the country?—Yes; she was a herd-book cow.

27653. And with her milk record she would naturally command a good price?—Yes.

27654. How many calves did you sell from her as bulls?—Two. They were off a pure-bred shorthorn, but not of a milking strain, and they were not well-shaped.

27655. But the fact of their being the produce of a cow with such a milk record increased their price?—It did.

27656. Is there any other suggestion, Mr. O'Boyle, that you think would be in any way helpful to the Commission?—Unless you would suggest to the Department of Agriculture to do something for this

unfortunate part of the country I have spoken about. I think it would be well if a few pure-bred shorthorn bulls of a milking strain were placed in the district.

27657. In fact all Mayo seems to need an infusion of new blood?—Yes; there is too much Aberdeen Angus.

27658. Dr. MOORHEAD.—They don't go in for producing store cattle?—They do.

27659. Would they prefer a store strain to a milking strain?—You might have a milk bull that would be good for both.

27660. If, for instance, they had a thorough-bred milk-strain bull, do you think they would breed from that—the Ayrshire, for example?—They would not breed from the Ayrshire. I believe if they had a short-horn bull of milking strain you would get good heifers that would turn out to be good milking cows. I saw a good shorthorn in Ballina Agricultural Show. She was a small animal and she gave 48 lbs. of milk.

27661. Is she a home-bred cow?—She is an old Irish cow.

27662. Had she the white streak about her back?—No.

27663. Is that associated with the old Irish cow—the dull red cow with the white streak down her back?—Yes.

The Commission then adjourned to Killybegs till Monday, 12th August, 1912.

FORTY-EIGHTH DAY.—MONDAY, 12TH AUGUST, 1912.

The Commissioners met at the Foresters' Hall, Killybegs, at 2.45 p.m.

Present:—P. J. O'NEILL, Esq. (Chairman); LADY EVERARD; MISS MARGARET MCNEILL;
DERMOD O'BRIEN, Esq.

S. W. STRANGE, Esq., *Secretary*.

Mr. MICHAEL McNELIS, J.P., examined.

27664. The CHAIRMAN.—I understand you are Clerk of the Glenties Rural District Council, Mr. McNelis?—Yes, Sir.

27665. How long have you occupied that position?—For twelve and a half years.

27666. Would you kindly tell the Commission what provision has been made by your Council to put into force the provisions of the Dairies and Cowsheds Order?—The Order has been put into force since February last.

27667. What officers have been appointed?—Three inspectors.

27668. Lay or veterinary?—Lay; three sanitary sub-officers have been appointed inspectors.

27669. Have any reports been received from these officers since they were appointed?—Yes.

27670. What would be the nature of the reports sent in?—On the whole, they have been favourable. The people have been carrying out the instructions.

27671. Have they lodged any complaints as to how the byres were kept?—No serious complaints. There were some complaints about whitewashing, but that was attended to afterwards.

27672. Have the inspectors reported that they have been able to get the improvements carried out that were necessary?—Yes.

27673. And no complaint has ever been made that the cow-keepers were obdurate and refused to carry out the improvements suggested?—No.

27674. Has it been contemplated to appoint a veterinary inspector?—Well, the Local Government Board did not insist upon it in our Union, on account of there being no veterinary surgeon resident in our Union.

27675. And if the appointment were made, a person would have to be imported?—Yes.

27676. Have you veterinary dispensaries here?—Yes.

27677. Where does the veterinary surgeon reside who attends these?—One lives at Donegal, another in Strabane, and another at Falcarragh.

27678. In Donegal they have a veterinary inspector?—Yes.

27679. For what period has he been appointed?—For twelve months.

27680. When was the Order put into force?—About three years ago.

27681. Is there a scarcity of milk amongst the people in this rural district?—Yes, in parts.

27682. At what periods of the year?—Practically throughout the entire year in parts of it; in the Northern portions of the Glenties Union and in the parish of Templecrane.

27683. Would all the residents there have small patches of land of their own?—Not all of them.

27684. Some of them are engaged in fishing?—Yes, and in labour, and some migrate to Scotland.

27685. Have you migratory labourers in your district?—Yes.

27686. And they go away in the spring and remain until the autumn?—Yes.

27687. By whom is the work carried on in their absence?—By the women or the boys or girls that remain at home.

27688. What size holdings would be the average in your Union?—About £2 4s. in valuation would be the general average.

27689. And that would represent from three to five or seven acres, according to the quality?—Yes, about that.

27690. Would they have the means of keeping a cow on that land if they were able to buy one?—Yes, they would.

Mr. MICHAEL M'NEILS.—12th August, 1912.

27691. It would be possible for them to feed a cow if they had it?—Yes, on most of the farms.

27692. Do they keep cows, as a matter of fact?—Yes, in the greater part of the district, but in another part they don't.

27693. Are they poorer there?—Yes, and they have not a very good outlet for cattle. Some of them have only about an acre of land, or two or three acres of a very inferior quality of land.

27694. That would be almost barren?—Yes, rocks.

27695. You say there is a scarcity of milk all the year round?—Yes, in parts of the Union.

27696. Is it so acute there that the children are not able to procure an ample quantity?—Yes, in certain districts.

27697. Does this scarcity prevail to a greater extent in the poorer locality than in the better-to-do localities?—It does, of course.

27698. Is there a scarcity in the other district where the land is better?—No.

27699. Milk is always available there?—Yes.

27700. What would be the area that you are dealing with; what number of families would be resident there?—From one hundred and fifty to two hundred families would be affected.

27701. What proportion of that number would keep cows—one in three?—Yes. There are some of the Islands where milk is scarce and where they cannot keep cows very well.

27702. That is a particularly difficult area to deal with?—Yes.

27703. What distance would they be from the shore?—One is half a mile from Arranmore and another would be a quarter of a mile from the mainland.

27704. Do they keep cows at all?—Some do.

27705. What breed of cows do they keep in the poorer locality?—They are nearly every kind—a mixed breed.

27706. Have you any of the Galloway breed?—Yes.

27707. What has been their effect on the milk?—They seem satisfactory and appear to meet the requirements of the district.

27708. Do they continue to use them?—Yes, in the mountain districts.

27709. Why are they so fond of them?—The stock are pretty hardy and live on the mountain in the winter season.

27710. And are not much tax on the farm-yard?—No.

27711. That one quite recognises, but we have been told that wherever they have been persistently used the stock are poor milkers?—I have not heard any such complaint here, but, of course, there are a good number of Keries and Dexters. In parts of the Union some of them were introduced into the country through Major Gosselin. He also started a dairy there some fifteen years ago, and he kept about eighteen or nineteen cows himself. He started a dairy at Burtonport.

27712. What kind of success has attended the establishment of that dairy?—He gave it up about a year and a half ago. He had not time to devote to it, or something like that.

27713. To what purpose was the dairy devoted?—For the supply of milk to the inhabitants around the town.

27714. How many cows would he have kept when he had the dairy?—From eighteen to twenty-five.

27715. It must be an enormous loss to the district if he has abandoned the enterprise?—So it is.

27716. To what cause was his change of management attributed?—I don't know.

27717. It would not be for want of co-operation from the people resident in the district—do they appreciate the value of milk?—Yes.

27718. What price was charged for it?—10d. a gallon.

27719. Was it available all the year round?—It was. Of course there are others who started to keep a similar number of cows and that might have an effect on him.

27720. They have continued?—Yes. It is possible that there was too much competition.

27721. Was this estate of Major Gosselin's in a locality where the people are very poor?—Yes.

27722. And was it with the object of assisting them from a philanthropic point of view that he started this dairy?—I think so.

27723. Have you any information as to how many cows would be kept by those who have dairies still?—The number would have increased by the number that diminished.

27724. So that there would be no material change?—No.

27725. Was the milk distributed or carried away?—It was carried away.

27726. What distance would the people have to travel to get it?—Some three, or four, or five miles.

27727. Even as long as five miles?—Yes.

27728. In Killybegs is the milk supply ample?—Yes.

27729. All the year round?—Yes.

27730. Do the people appreciate the value of it, and are children given a generous milk diet?—I think so.

27731. Is there any other locality in your rural district in which there is an acute scarcity of milk other than the one to which you have referred?—No. The Rosses is the worst.

27732. Have you any knowledge of the Donegal rural district and how they stand from this point of view?—No, except of the part that joins our own district, and that appears to be fairly well supplied.

27733. Their condition is about the same as yours?—Yes.

27734. There is no crying need in that locality?—No. They have all fairly large farms.

27735. In all the other parts of the district, save and except the area to which you refer, are the farms fairly large?—Yes.

27736. Would they have thirty-five or forty acres of land?—Yes.

27737. Of course, the owners of these farms would have an ample supply for themselves all the year round?—Yes.

27738. Do they make provision to have it all the year round?—Yes.

27739. Are there many labourers residing in the district where the farms are large?—They reside near the town.

27740. Where do they get their supply?—In the town.

27741. Does the custom exist of giving milk as part of wages where a man works with a farmer?—In an exceptional case.

27742. It is not the custom?—No, they have to buy it.

27743. Would they sell milk if the labourers bought it?—Yes.

27744. There are no creameries in this county?—There are in Donegal district. There is one adjoining this Union at Bruckless, about five miles from here.

27745. Is that a co-operative or a proprietary creamery?—A co-operative creamery.

27746. How long has it been in existence?—About eight years.

27747. Is it receiving increased patronage as time goes on?—It is going on well. It is an auxiliary to another creamery in Inver.

27748. Has the introduction of the creamery had any effect on the milk supply to the working population?—No, not so far as our district is concerned.

27749. No greater scarcity exists than was in existence previous to the starting of the creamery?—No.

27750. No feeling prevails that the creameries are responsible for the scarcity of milk for domestic purposes?—They have only the one creamery.

27751. But I just wanted to know whether the same feeling prevails here as in other parts of the country—that the creameries have accentuated the scarcity of milk?—I dare say they would if they were introduced generally, because they would be an incentive to the people to send their milk to them.

27752. Is home butter-making carried on in your district?—Yes.

27753. Do they use the separator or set the cream?—They set the cream.

27754. Where do they sell?—Usually in shops in Killybegs, Donegal, and the small towns around.

27755. Have any prosecutions ever been undertaken by the Food and Drugs Inspector in your district?—Not that I have seen in this district.

27756. Does your Council insist on registration?—Yes.

27757. And all the people engaged in selling milk, no matter how small, are registered in your books?—Yes.

27758. Have you ever had prosecutions against people who failed to register?—No; they have been notified.

27759. And has that been found sufficient?—Yes.

27760. They are then registered at once?—Yes.

27761. Do the officers you have appointed report from time to time that they find certain people whom they do not find registered selling milk?—They do.

27762. Do you believe at the present time that the registration extends to very nearly all, if not all, those engaged in the sale of milk?—Yes.

27763. Are there any milk shops in the town?—No.

27764. Whatever milk is sold is carted around?—It is not carted about Killybegs. Glenties is the only town where it is taken round. In the other places the people have to go to the farmer for the milk they require.

27765. What price is charged, do you know?—2d. and 2½d. a quart.

27766. Is the price increased in the winter?—I don't think they make very much difference, as a general rule, all through the district.

27767. Are any samples of milk ever tested for adulteration?—Not that I know. Of course, we have seen cases in the Glenties, but not outside it.

27768. Is there a Food and Drugs Inspector in Killybegs?—Yes.

27769. A member of the Constabulary?—Yes.

27770. Does he ever take samples of milk?—I am not aware.

27771. You have never heard of prosecutions being instituted by him?—Not in Killybegs, but I have in Glenties.

27772. And were substantial fines imposed?—Yes.

27773. What would they amount to?—About 30s. for each offence.

27774. Have parties ever been prosecuted a second time?—Not the same parties.

27775. Do you think that has a wholesome effect in procuring the sale of pure milk?—I think so.

27776. Do you think is there an obvious injury done to the child population in this district by reason of their having limited milk food?—Not except in that particular district I have mentioned where the inhabitants are very poor.

27777. It is poverty more than anything else that deprives them of their supply?—Poverty, and the difficulty of getting it, and the difficulty of transit in regard to the food for the cattle.

27778. Do these migratory labourers bring home a substantial sum with them?—Yes. The prevailing practice is that they get their supplies from May to October and then they discharge their liabilities.

27779. Have you ever heard of one of those buying a cow on the accumulated earnings?—Yes.

27780. Is that a common thing?—Yes.

27781. They are enabled to get a cow by that means sometimes?—Yes.

27782. And if that cow goes out of profit, is she sold, and do they secure another?—Sometimes.

27783. And sometimes when they part with the cow they don't replace her?—No.

27784. Do they keep any goats in this region?—Very few.

27785. Are they kept wild on the mountain side, or as a source of milk supply?—They are kept wild on the mountains.

27786. And not milked at all regularly?—There might be an occasional one that would be milked regularly.

27787. Have you thought of any scheme whereby the difficulty that exists in this locality, to which you wish to direct our attention, may be remedied?—The only scheme that would be feasible for that particular district would be the starting of a dairy on the line of the one started by Major Gosselin, and provide milk at a reasonable price.

27788. Would you be in favour of subsidising a dairyman if he undertook to provide a certain supply of milk all the year round?—Yes.

27789. Do you think that would be a proper expenditure?—Yes.

27790. Have you ever heard of persons being ordered a milk diet and being unable to procure it?—I have.

27791. That is in the poorer locality?—Yes.

27792. But it would not occur in the better part of the district?—No; it would not occur in this part of the district.

27793. The needs would be sufficiently met here?—Yes.

27794. Does the condition of things existing in this locality call for any radical change or remedy, do you think?—No, except in the registration of the dairies and cowsheds; every person keeping a cow should be registered.

27795. You would extend the registration to all persons keeping cows?—Yes.

27796. In order to ensure that the cows would be kept in good condition, and that the persons would be careful in the handling of the milk and in keeping it clean and healthy?—Yes.

27797. What number are registered in this district?—One hundred and twenty eight milk-sellers.

27798. Is the number of milk-sellers increasing?—Yes. In the beginning they had an antipathy against registration, fearing a whole lot of expenditure. Then others were supplying milk as an "obligement" to their neighbours and not as a matter of profit.

27799. Have you known any person to abandon the selling of milk in consequence of registration being enforced?—I have been told of it.

27800. When they realised what duties the Order imposed on them, did they again take up the sale?—Yes.

27801. They were rather scared at the beginning?—Yes.

27802. And when they found the conditions imposed were not too exacting, they resumed the trade?—Yes.

27803. So far as you know, the Order has not been responsible for any limitation of the milk supply?—Not at present.

27804. When things settled down and the cow-keepers realised what the Order really imposed, they resumed their old custom?—Yes.

27805. What number of cows would be the average of those registered with you?—About three or four.

27806. From one to five or seven cows?—Yes. Seven cows would be the most, and there would be very few who would have seven.

27807. Would those who contract for the supply of milk to a hospital or a public institution keep more?—They would.

27808. How is the workhouse supplied; is it from a number of small men combining together, or from one man who keeps a sufficient number of cows to supply the contract?—It is from two or three combined men. The workhouse up to the present keep eight cows of their own.

27809. They had no difficulty in getting a supply?—No.

27810. Where is the lunatic asylum for this county?—In Letterkenny. They keep cows of their own, and get a supply from the neighbouring farmers.

27811. They augment their supply by taking milk on contract?—Yes, from adjoining farmers.

27812. Would it be your opinion that some means should be provided for advancing small loans for the purpose of purchasing cows in poor districts?—Yes.

27813. Do you think that would be an essential condition in order to ensure an adequate supply of milk?—Yes; I think it would be very useful.

27814. Have you ever known small farmers to borrow money from the joint stock banks for the purpose of buying cows?—Yes.

27815. £10 or £12, as the case may be?—They would not require so much.

27816. Are they low-priced cows?—Yes.

27817. Have you any information as to what the average milk yield would be?—One hundred to one hundred and fifty gallons in the year.

27818. That is extremely small; that is about the worst we have heard so far?—Of course, I am only talking of the cows in the small holdings.

27819. They have got to be considered?—Yes.

27820. Is that poor district to which you have been referring sold under the Land Acts?—The Congested Districts Board are negotiating about the sale.

27821. Do they advance loans to enable people to buy cows?—No.

27822. Do they advance money for the purpose of improving the cow byres?—Under the Parish Committee they give prizes of £3 to provide dairies.

27823. That is the principal development in which they are engaged at the moment?—Yes.

27824. They have paid no heed whatever to the condition of the cow-byres, so far?—If a man improves his byre it is included under the General Improvement Scheme.

27825. Has that scheme led to much improvement in this particular branch?—Yes. The only thing is that that subsidy for the dairy is not taken up sufficiently, because people think that the £3 is too small.

27826. They don't think it possible to erect an independent building for that sum?—No. If they got about £7 or £8 it would possibly induce them to do so.

27827. And they are supposed to supplement this amount by some expenditure of their own?—Yes.

27828. Do the Congested Districts Board supply them with a plan for the building they desire to have erected?—Yes.

27829. And it must conform with that plan?—Yes.

27830. The advance made would only meet about one-third the cost?—It would not meet even one-third.

27831. One-fourth, or even less?—Yes, less than one-fourth.

27832. Do they give advances for any other purpose than that?—No; they give no other advance for any other purpose. Of course, the Department of Agriculture gives advances for fishing and nets.

27833. That is under a different head and under a different Act?—Yes.

27834. Has it ever been suggested that the milk supply has been the source of an outbreak of disease?—Yes.

27835. How long ago?—About five years ago typhus fever was traceable to it.

27836. Illness broke out in a family supplying the milk?—Yes.

27837. Was any action taken to suspend the supply?—The people abandoned it themselves.

27838. Was that a recognition of the danger that might arise from the spread of the infection?—The public found it out and stopped buying the milk from this particular place.

27839. The purchasers abandoned trading with them?—Yes.

27840. Did that outbreak reach considerable dimensions?—No; it was confined to three or four families.

27841. Do your inspectors ever report that they discovered people handling milk with unclean hands or milking into unclean vessels?—No.

27842. You know that under the provisions of the Order they are empowered to look into that branch?—Yes.

27843. But no reports have been presented to the Council in regard to that?—The reports that have been presented have been all favourable in that respect.

27844. Is there much mortality amongst stock in this district?—No.

27845. You don't hear of many losses from tuberculous cows?—No.

27846. Or from abortion?—No.

27847. The stock are healthy generally?—Yes.

27848. It is the cross-bred that is kept in the poorer locality—a cross between a shorthorn and a Kerry?—Yes, or a Dexter.

27849. You have heard no complaints of the produce of the Galloway bull from the milk point of view?—No, I have not.

27850. Well, I am afraid the question must not have been inquired into very closely, because it is quite a recognised thing that these bulls are inimical to the dairying property of the cow, and in Connemara we were told that the milk was almost bred out of the stock by the introduction of this bull. The farmers don't rear their own heifers at all?—No.

27851. Possibly that might account for the absence of the complaint?—Yes.

27852. What breed of bulls are given by the Department?—Nearly all shorthorn and Aberdeen Angus.

27853. Do the people like the Aberdeen Angus?—Yes.

27854. Why?—The stock sell well.

27855. And sell early?—Yes.

27856. They, too, are a bad milk breed?—The shorthorn seems to be coming more into favour.

27857. Where do the people buy the cows when they need them?—From one part of the county to another.

27858. In fairs?—Yes.

27859. Is the whole of Donegal congested?—Yes, at present.

27860. It was not up to the recent extension?—No.

27861. Of course, one sees quite good stock in some parts of the county, but that is where the land is good?—Yes.

27862. Lady EVERARD.—Is the old dash-churn still used in your district?—Yes.

27863. Therefore, buttermilk is for sale?—There is only a little of it sold. The people keep it for their own purposes.

27864. What is used for bread-making?—Yeast.

27865. Is stirabout used for children about here?—It is.

27866. And they get milk to drink with it?—Yes.

27867. Is home-baking resorted to more than the purchase of baker's bread?—No; of late years baker's bread is more resorted to.

27868. Is there much tea-drinking here?—Yes.

27869. Are the children fed on it?—Partly.

27870. They don't get as much milk as they should?—I suppose not.

27871. Have you got a District Nurse?—Yes; we have one in Glencolumbkille and Arranmore.

27872. You have not got one in Killybegs?—No; we have a Maternity Nurse there.

27873. Would you advocate goats being kept by the cottagers?—Yes. They would be useful where milk is scarce. They would be very useful to the labourers.

27874. Would it not be well if they had the new breed of goats, that kid at all times, and kept two goats—one kidding in May and another in November?—I think that it would be a great advantage to import that breed into this district.

27875. Mr. O'BRIEN.—You say in your précis of evidence that one difficulty is want of funds to provide a cow?—Yes.

27876. Are there any co-operative credit societies in this locality?—There is a sort of loan bank here.

27877. A sort of co-operative one?—I don't think so.

27878. On the west coast, and in the congested districts, there is a number of these co-operative credit societies to which the Department supplies funds to a certain extent to start them, and they get small deposits which are lent out at a recognised rate of interest, and these would help people?—They had one in Killybegs, but I don't know whether it is in existence or not.

27879. Do they ever sell any separated milk from the creamery?—That goes back to the farmer.

27880. And they don't sell it at all?—I don't think so.

27881. Do you know if this auxiliary creamery sells milk at all?—I don't think so.

27882. If a poor person went and asked for a pint or a quart of milk, would they get it?—I don't think so.

27883. Do you know if it has ever been tried?—I am not sure. I don't expect it would be.

Mr. BERNARD GALLAGHER examined.

27884. The CHAIRMAN.—You are a resident in the Glenties District?—Yes, sir.

27885. How far do you live from the Glenties?—I live in it.

27886. Are you a member of the local board there?—Yes.

27887. Have you any difficulty in getting a milk supply for the Union?—No difficulty.

27888. Is there any scarcity of milk there amongst the working population, or the fishing population?—We have not a fishing population in Glenties, but along the shore there is, and there is a scarcity.

27889. All the year round?—It is very acute from October until March. In fact there is no supply then.

27890. None at all?—Scarcely.

27891. And the people have to get on as best they can without it?—Yes.

27892. And the children get no milk at that period?—Some neighbour might give them a little if they have some. I would say that four-fifths of the poorer people in the backward parts of Donegal are without milk in winter.

27893. If they had money to buy, they could not get it?—No.

27894. Is condensed milk used?—Yes, to a small extent. It is sold in the shops along the seaboard.

27895. Is there much trade in it?—Not much; it is too dear for the poorer population.

27896. Would the fishing population in the hamlets along the coast be able to buy milk if it were procurable?—I daresay they would make a big struggle to get milk, especially for the children.

27897. They would make a struggle to buy it, although they are not over-wealthy, I suppose?—They are not.

27898. Are they improving as time goes on?—The Congested Districts Board got some boats for them, and they are a little better off.

27899. No effort was ever made by the Congested Districts Board to deal with this question in the fishing hamlets?—Not that I know of.

27900. You know the district to which Mr. McNelis has referred—the Rosses district?—Yes; I do. The land is poor there.

27901. And the farmers are poor?—You need not call them farmers if you don't like.

27902. They have little patches of land, and go to England or Scotland for the harvest?—Yes. They average from five to eight acres of rocks—patches of land between rocks, and to call them farmers would be a misnomer.

27903. Do they keep any live stock at all, these people?—They generally keep some.

27904. A pony?—Yes; they generally keep a pony, because turf is a long distance away and they want to take the sea-weed from the shore to the land.

27905. They grow potatoes and oats?—Yes. A number of the men migrate to Scotland, and they come back about November or December.

27906. Their families are supplied out of the little shops while the husbands are away, and when they come home they pay their accounts?—Yes; that is what generally happens.

27907. What can they bring home if they are lucky and have a good season?—£8 to £10.

27908. Not more than that?—I don't think so. I am not exactly sure. In a bad season they would have nothing to bring back. The fishing has not been very remunerative in the Rosses district for a number of years. It is not the only poor part of the Glenties Union. I know parts of this district around here—Kilcar, ten miles from here, and right into Glenhead, where the people have no supply of milk from October to March. That also applies down almost to Gweedore.

27909. Do you farm yourself?—Very little.

27910. What about the breed of dairy stock available; has it improved or otherwise?—I am not very well up in stock; in our district the breed has improved. Some years ago the Congested Districts Board brought in a class of bull—that black bull, the Aberdeen Angus, and there are a good many about our part of the country, and the farmers get stock early for the market, and there are good prices. Their supply of milk went down, and there is scarcely any butter now for sale.

27911. The introduction of this breed has altered the industry to a certain extent, and less dairying is carried on?—Yes.

27912. And more attention is directed to store stock?—Yes.

27913. Because they realise more from the sale of these cattle, and it brings in money quicker than the selling of milk would?—I daresay that is the reason.

27914. These cattle are more rapidly sold than any cattle that have been hitherto introduced?—Yes; it has improved them from that point of view, but not from the milk point of view.

27915. It has altered the economic condition with regard to the stock kept, and it has lessened the milk supply?—Yes, it has spoiled the milk supply, because the old cattle were better milkers.

27916. Is there any specimen of the old Irish cow to be seen now?—Yes; in Inishowen and in our district. We keep none of the black cattle for milk.

27917. Would you tell us what the old Irish cow is like?—I cannot very well describe her. She is yellow or white, and has a fair share of horns.

27918. With a white streak on the back and a white mark on the body?—Yes.

27919. The offspring of those cows with the black bull would not preserve the characteristics of the Irish cow?—They are all black.

27920. How is the old Irish cow perpetuated now—that is what I want to know?—Usually when our farmers want cows, they go to one of the shorthorn bulls, I think.

27921. They don't use the Aberdeen Angus then?—Not for that purpose.

27922. They use the shorthorn for the milk?—Yes.

27923. Are they fairly numerous in that locality—what you call the old Irish cow?—They are. There are no black cows at all kept. There might be an occasional black cow kept, but they are not milk-producers.

27924. Is the Galloway bull used in the locality as well as the Aberdeen Angus?—I cannot say; I could not describe the Galloway bull.

27925. Would the families of these migratory labourers have milk available while their husbands are away?—I don't think so. They might have a little in the summer time.

27926. Mr. McNelis spoke of a dairy started by Major Gosselin?—Yes, by Major Gosselin.

27927. And other people went into the trade?—I cannot tell you; it is twenty miles from me.

27928. Then you cannot speak with much authority on that?—No. I should think that why Major Gosselin went out of the trade was because it did not pay him. I think the supply of milk down there would be poor and fitful.

27929. What about the quality of the milk?—I think there is plenty of water in the county.

27930. You think the water is more plentiful than the milk?—Yes. I think the cow should not be put across the stream.

27931. There is a danger from contact?—Yes.

27932. The stream might sometimes find its way into the milk cans?—Yes, perhaps.

27933. Have any prosecutions ever been undertaken for the adulteration of milk?—Yes; in the Glenties Workhouse, but not outside. I think the Dairies Order is only in force since February last.

27934. Are there many complaints of losses amongst stock in this district?—Yes; especially about Glenties there is a big loss.

27935. What is the cause of the losses—tuberculous affection?—Yes, and murrain; and another thing that is very much required is that we have not a veterinary surgeon in our district. We have one in Dernkenealy, and another is thirty miles from Glenties.

27936. Why don't you apply to the Department?—It has been tried.

27937. I would advise you to repeat it; if you can show a good case ultimately you will succeed?—Yes.

27938. Would the farmers in this district be likely to avail of the services of a veterinary surgeon?—Yes. They have been crying out for it.

27939. They are not in favour of dealing with handy men?—No.

27940. They much prefer professional assistance?—Yes.

27941. Certainly that is a tribute to their intelligence. Do you think the children in this locality suffer from the absence of proper milk food?—I do, but not so much in my own particular district.

27942. I am talking of the county generally?—Yes.

27943. How far is it from here to Glenties?—Thirteen Irish miles by road.

27944. Do you think that the children show visible effects of malnutrition and improper feeding—looking wasted, delicate, and anæmic?—We have any amount of fresh air, and only for that there would be more illness. I think the milk supply is one of the most important things that any Government should look after. You take milk from the day you are born until you die. Some years ago, at Kilcar, we had a famine amongst the people, and they had to eat sea-weed.

27945. How long ago is that?—About twenty years ago. The district is a little improved now because there is some little industry carried on there.

27946. Is any industry carried on under the aegis of the Congested Districts Board?—They help the flannels, but still the people are poor. In the backward districts, where they fish, they are just as poor as in the Rosses.

27947. Have they boats which enable them to follow the fish around the coast?—Yes, but they are too small.

27948. Have any motor boats been supplied by the Board?—Yes, and some steamers.

27949. Are these owned by the people who had hitherto used small fishing boats?—It is only a trial.

27950. To see what will be the result of their labours?—Yes.

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27951. Have they had gratifying results so far?—It has been very fair, so far as I hear.

27952. Are local men employed on these boats?—Very nearly all local men. There are two or three of the captains local men.

27953. Do you think that milk is appreciated as a food in this locality; would the people use it more largely if it were more generally available?—They would. I don't know so much about Killybegs, but generally I believe they would. There is a big difficulty for the farming class of people to get some to buy. The people who have a cow or two during part of the year will have none themselves in the winter.

27954. You think it would be desirable and necessary that some provision should be made whereby it would be possible for these people in very poor localities to procure milk at a fixed price?—I should think so, and I should think that would be a very useful work, and a work that would be appreciated by everybody—if the Government came to the rescue of these people and subsidised people, like small farmers, that would give them pure milk.

27955. You think that would be a wise and sound administration of public funds?—Yes. I think it would be a very wise thing to insist that inspectors of foods and drugs should make thorough-going examinations more regularly than they do, and have prosecutions. Another thing I should very much like is that the term "water and milk," put on the vessels, should be taken out of the Order altogether.

27956. Does that refer to sweet milk?—Yes, to sweet milk.

27957. I never heard that term before applied to sweet milk?—Perhaps it is butter-milk.

27958. I think you will find that only applies to butter-milk?—Perhaps so.

27959. Lady EVERARD.—Then you would approve of all the by-products of milk—butter, cheese, and skim milk—being put under the same rules and regulations as new milk?—Yes.

27960. You said there were some districts where people could not afford to keep cows. Don't you think goats would be very valuable there?—Yes.

27961. Especially the new breed of goats that kid at any time of the year?—Yes.

27962. Don't you think it would be a valuable thing to introduce this improved breed of goats into the district you speak of?—It would.

27963. It would be a blessing to the poor people?—Yes.

27964. What is the price of milk in your district?—The Glenties contract price is 8½d. a gallon in summer and 10d. in the winter.

27965. The CHAIRMAN.—Is it sold retail at the same price?—It is.

27966. Mr. O'BRIEN.—Could the farmers keep a cow in milk here in the winter; do they have any cows that calve in October and November and December?—Some do.

27967. How do they keep them—what do they feed them on?—On corn, or hay, and straw.

27968. Straw from the stock without threshing it?—Lightly threshed.

27969. They don't grow any winter crops?—No.

27970. If they don't have any winter-milking cows, I suppose they keep their cattle out as long as possible, and that would mean they would have a good deal less manure than if they had them in the house?—Yes. They cannot keep the cattle as they used to do; they must have proper accommodation.

27971. They cannot keep them in the dwelling-houses?—No.

27972. You have known them to do that?—Yes.

27973. The CHAIRMAN.—Are any cows kept in the dwelling-houses now?—I don't know of any in my own experience.

27974. Mr. O'BRIEN.—We have had evidence that not only the cow, but the horse and the goat and everything else were kept in the houses.

27974A. The CHAIRMAN.—That obtains in Connemara still?—Yes. It did exist here too.

27975. Mr. O'BRIEN.—I suppose you have an agricultural instructor here; have you one under the Congested Districts Board and another under the Department of Agriculture?—Yes.

27976. Do they advocate the growing of crops for the winter-feeding of cattle—crops like hardy greens, turnips and rape?—Yes.

27977. I suppose the people grow rye?—They grow very little rye. There is plenty of land that could be distributed.

27978. I suppose the Congested Districts Board is enlarging the holdings by degrees?—Not in our district.

27979. The CHAIRMAN.—Has there been no division of land there?—No.

27980. Mr. O'BRIEN.—What time can you generally get your oats saved?—In September or the end of August.

27981. What do you do with the stubble?—They let it lie on.

27982. They turn on cattle to pick up any green stuff?—Yes, or geese.

27983. Do you know any place where they till the land when the oats get stooked and put down winter crops?—No.

27984. It is a sort of thing that can be done by the small farmers who have not got to hire labour and can do it themselves, if they wish, and grow oats and green foods for their cows. One of the difficulties is even that where you provide a man with enough land, or a labourer or small farmer who has enough to keep a cow but has not enough to keep two or three cows, the cows all calve at the same time, so that the shortage of milk is always there, in spite of their having a number of cows?—That is so.

27985. They cannot have them calving in winter unless they have food for them in winter?—No.

27986. Unless they can provide food without having to buy it in the shops, I don't see how they can do that?—If they have land enough, they have the corn and hay and straw, and they grow turnips and some cabbage.

27987. Cabbage, I thought, would require a lot of manure?—Yes.

27988. But I suppose it is principally seaweed they use here?—Yes.

27989. What do they do for manure when they cannot get seaweed, because they can have very little farmyard manure if they don't house the beasts very much?—They have not the beasts to house.

27990. And then they keep hardy cattle that will stand out on the hillside in the winter?—Yes.

27991. It is very hard to see how you can get a milk supply into the country if you cannot get winter feeding?—That is it. I think the Government should subsidise small people like labourers and small farmers who are not able to keep a cow.

27992. If they have only one cow, they won't have the milk in the winter. You might assist the larger farmer?—Yes.

27993. And compel him to sell his milk at a certain price?—Yes.

27994. We found in certain districts we were in that where accommodation was given to enable people to have cows there was no binding rule on them to supply milk, and as soon as they got the land they did not supply a pint of milk to a neighbour?—Then I would not subsidise them.

27995. If you had any scheme of that sort, you would have to be careful about that point?—Yes; you would require supervision. You have the Dairies Order and we have other Acts.

27996. We have plenty of Acts?—It would be a very good thing if what you say could be done. That would be about the only way to come at the backward districts. People would buy cows if they had the money.

Mr. PATRICK O'BYRNE examined.

27997. The CHAIRMAN.—You are a resident of Killybegs, Mr. O'Byrne?—Yes, sir.

27998. And you are familiar with the villages on the coast line?—Yes, from here to Glencolumbkille, about thirty miles. In the other direction I am not so familiar with the country.

27999. You know a good deal about the fishing population?—Yes.

28000. Have they a milk supply available?—They have and they have not. We have no population here who make their living solely by the sea. They are a mixture of farmers and fishermen who have land and

a cow or two. I don't believe that in this parish there are a dozen without one cow at least, and that holds in the other two parishes also.

28001. That would be along the coast line of which you speak?—Yes.

28002. But notwithstanding the fact that they have one individual cow, there are certain periods of the year when they have no milk?—That is so; it applies to Killybegs as well as to the other villages along the shore. Milk is scarce from December to April all over.

28003. And during that period some families get very little, or none at all?—Well, I suppose so. I am one of them myself, I am afraid.

28004. It is difficult to buy it even?—Yes, and it has been very difficult recently.

28005. Is it a growing difficulty?—It did grow from the introduction of the Dairies Order either through a misreading of the Order, or from an inconsistency in the Order. A number of people who sold milk when the Order first came out thought there were insurmountable difficulties, and they did not think of registering, and they would not register; and on the other hand, when they found out that those manufacturing butter at home were not subject to inspection, they turned to selling butter, and there was certainly at that time a scarcity of milk.

28006. An increased scarcity owing to the provisions of the Order?—Yes.

28007. Has that been gradually righting itself?—To a certain extent.

28008. Are there still many who formerly sold sweet milk who are now manufacturing butter?—Yes, in a few instances.

28009. And none of these people who have a cow think of having one calving in the winter season to supply themselves or their neighbours?—I think it is very rarely that cows calve here in winter. It is generally in April and May.

28010. That prevails in other districts as well?—When a man has two or three cows he generally manages, if possible, to have one calving in winter, but if he has only one he cannot do so.

28011. A single cow does not cover the entire period?—No.

28012. Have you any knowledge of what is the milk yield of the cows in this locality?—It varies.

28013. With the land, or the treatment, or both?—With the land, the treatment, and the breed. I was inquiring yesterday, and a sister of mine has a cow of the old breed which milks twenty-four quarts in the day.

28014. Is that the old Irish breed that Mr. Gallagher told us of?—I think so.

28015. Miss McNEILL.—Does she milk for a long period?—For nine or ten months. There are several cows that only give ten or eleven quarts a day. A gentleman told me yesterday of a cow that milked twenty-eight quarts in a day.

28016. The CHAIRMAN.—One does find these cows that give a heavy supply for a limited period and then drop off. The cow that is usually found most remunerative is the cow that gives a steady flow for a longer period?—Yes.

28017. As to the quality of the milk, do you think the cows here yield milk rich in butter fat?—I don't think they do, because they don't get the food. Possibly 75 per cent. of the cattle of this district are fed solely on dry hay. There is very little hand-feeding. There are very little root crops grown here except cabbage.

28018. Cabbage is an excellent food for cattle?—Yes.

28019. But it is not grown to the extent of making it available for the dairy stock?—No.

28020. There is no catch-cropping in this district?—No.

28021. We have found in districts as wild and bleak as this that beautiful catch-crops were grown ripe for cutting in April?—That may be in some districts, but here there are sheep kept on the mountains, and there are no fences, and the sheep drop down in the winter time.

28022. Of course if there are sheep kept, and the fences are bad, it is difficult to deal with that. It is possible if a fenced portion of the land were available to till it in that particular way. Have you thought of any means whereby this difficulty about procuring milk could be met?—The difficulty, in my opinion, is not so great as you would imagine. In the country districts I believe that milk is not exceedingly scarce; the towns perhaps are the greater sufferers.

28023. That is contrary to the view that has been put before us in other parts of the country, because we were told in a great many cases that in towns it is always possible to secure milk, but that in the remote rural districts it is more difficult to get it?—The neighbours are very friendly to each other in the country districts.

28024. I don't quite know from what cause, but the fact remains that where you have a scattered population it is very difficult to get a milk supply, unless the people are willing to go four or five miles for it?—There is no district here where the houses are so sparse as that.

28025. The conditions are different in this county?—Yes, in this particular part of the county.

28026. Here you told us that the scarcity is more acute in the villages and towns than it is in the rural districts?—Naturally, because 90 per cent of the people in the towns don't keep any cattle, and in the country each person keeps at least one cow.

28027. One quite understands that the situation is entirely different in different parts of the country, but we are anxious to have information with regard to every portion of the country. Is the scarcity so acute in the towns and villages in your estimation as to demand that some remedy should be applied?—Well, the towns could use much more milk than they are using. To say that they are in absolute want would be stretching it too far, but in the winter season there is a good quantity of condensed milk sold.

28028. A considerable trade is done in condensed milk?—Yes, and very often a person has to change three times in the year from one milk supplier to another. I have known of cases where a party had to change three times.

28029. Because they could not get a continuous supply from any one vendor?—Yes.

28030. That is owing to the fewness of the stock kept—that the supply is not kept up during the winter season?—Yes.

28031. And that applied to a town resident?—Yes, in the town of Killybegs.

28032. Has much improvement taken place in the fishing population in your knowledge of them?—That would require two answers also. The fishing population is not as large now as it used to be years ago. They have better facilities now—better boats and larger boats.

28033. Are those engaged in the fishing at the present time making a better livelihood out of it than those who were engaged in it twenty years ago?—They are making an easier livelihood.

28034. Is there more money in it?—Yes, for the fish they catch, because if there is any portion of the community that the railways have benefited it is the fishermen, by enabling them to get their fish to the market.

28035. Have you ever known invalids or children to be deprived of their milk supply because of the inability of those in charge of them to procure?—I should say that in the working population in a town like Killybegs that would sometimes happen. The only thing is if a child is known to be sick, we are not so hard-hearted that they would not get milk, but it would be through sympathy and not money, but sometimes a person would rather not get it at all that way.

28036. A person may be in a position to buy it, if it were possible to procure it for money?—Yes.

28037. And obviously that would be a more satisfactory way to have the milk available?—Yes.

28038. Mr. O'BRIEN.—Is there a credit society in this district?—There is what is known as an agricultural bank, of which I am chairman.

28039. Is it co-operative?—Yes, in so far as the capital is subscribed locally.

28040. You get no grant from the Department of Agriculture?—No, nor from the Congested Districts Board. It is strictly co-operative and self-supporting.

28041. Did you make any application for a grant?—There was a grant of £50 from the Congested Districts Board in the beginning.

28042. And you paid that off?—Yes, and we are running the bank on our own hook with the local capital subscribed.

28043. And the members are quite poor for the most part, and they deposit £3 or £4?—There are some farmers who have money invested, but I would not say that they are the poorest. The poorer, of course, rather borrow than invest.

28044. They borrow for a stated purpose only, and the members of the committee see that they utilise it for that purpose?—The bank loans are given only for the purpose of buying stock.

28045. The CHAIRMAN.—Milch cows would be included, of course?—Yes.

28046. Mr. O'BRIEN.—Not for buying nets and fishing tackle?—No; there is no difficulty now in the fishermen getting nets, because the Congested Districts Board supplies them. If a man wants a small boat, all he has to do is to get two men to go security and agree to pay in instalments. The fishing in the larger class of boats is carried on on the share system. The Board takes a certain percentage of the fish caught until the boat is bought out.

28047. The CHAIRMAN.—That is the recognised system that is followed?—Yes.

28048. And it is found to work satisfactorily?—Yes.

28049. Lady EVERARD.—How is the division made?—The fisherman gets five parts and the Board gets four parts of every "take" of fish. If a fisherman is fishing on a smaller scale, and wants a boat to fish for himself, he applies for a small loan for the amount; he gets two securities for it and pays by instalments.

28050. What can a fisherman make in a good haul?—From nothing to £160.

28051. In one day?—Yes. I had experience of one boat that went out ten weeks, every night, and the

gross earnings amounted only to £3 6s. 4d., but at the end of ten weeks she got a haul worth £164.

28052. The CHAIRMAN.—Has the fishing been at all good this year?—It has not been good. The motors are the thing. The disadvantage of the sailing boats is that sometimes they cannot get to the fishing grounds, and that if they get there they cannot get home again. A question has been put to one of the witnesses about goats. There are one or two people here anxious to keep goats. There is a labourer who keeps a goat which does not give a great quantity of milk and he told me that he would be anxious to get a better class of goat. I think that possibly if a good breed of goats were introduced they would be useful.

28053. You think they would be helpful?—Yes.

28054. Lady EVERARD.—Would this man keep a billy goat?—There are not goats enough in this district for a billy goat. I know of only two or three goats in this parish. They are used for milk purposes, though.

28055. The CHAIRMAN.—Are there many mountain goats in the mountain district?—Yes, farther in.

28056. This man might communicate with the secretary of the Goat Society?—Yes; of course goats are very mischievous.

28057. Mr. O'BRIEN.—If they are short-tethered with a strap around their necks, they will do quite well?—Yes.

Reverend HUGH M'DWYER examined.

28058. The CHAIRMAN.—You are connected with the St. Columba Industrial School?—Yes.

28059. Have you parochial experience as well?—Yes, for a number of years in Ardara and Glencolumbkille.

28060. Naturally you are familiar with the circumstances in which the people in your district live?—Yes. I was raised in the country; I am the son of a small farmer, and know the conditions pretty well.

28061. Is there a scarcity of milk in the district with which you are most familiar?—In the winter and spring there is.

28062. An acute scarcity?—Sometimes an acute scarcity.

28063. Is it growing less, or is it greater than it was when you were familiar with it first?—It is growing less in my opinion. Slightly more milk is available now. In my opinion the infallible remedy for increasing the supply is to feed the cattle better.

28064. Do you think the breed of cattle in existence are suitable for milk production?—I think they are for this district.

28065. Miss MCNEILL.—Have you your own cattle at the schools?—Yes.

28066. The CHAIRMAN.—What breed have you there?—They are a mixed breed.

28067. How many do you keep?—Nine or ten, usually.

28068. Do you keep any milk records?—No.

28069. Have you any information as to what the yield of a cow would be for the twelve months?—I never kept statistics and cannot say. It would be only a guess.

28070. How long are you connected with the management of the schools?—A little over three years.

28071. Do you find much difficulty in getting good milch cows to buy when you require them?—There is some difficulty, but not so much.

28072. Nothing insurmountable?—No. The first winter I had to buy two cows, and the second winter two cows, and the last winter none. We were able to keep up our supply ourselves.

28073. Do you give artificial feeding to the cattle in the winter season?—We give them mangolds and turnips.

28074. Do you ever give them potatoes?—Yes.

28075. Any meals or cake?—No.

28076. Have you been growing catch-crops for the winter feeding of your cattle?—We tried it last year but it was rather a failure.

28077. What do you sow?—Vetches, and rape, and clover, a mixture of seed.

28078. Mr. O'BRIEN.—Was that done under the instruction of the agricultural instructor?—It was.

28079. The actual sowing?—Yes.

28080. Because people very often think they are going to do it well and they sow it too thickly?—In this case it was the instructor sowed it. We prepared the ground under his direction, but the seed seemed to have failed.

28081. The CHAIRMAN.—Did you give any artificial manure?—Yes.

28082. Do you purpose making a further experiment in catch-cropping?—Yes.

28083. It would be extremely useful in a county like this if the milk yield could be kept up in the winter season?—Yes.

28084. Do you keep the old Irish breed of cow?—Yes.

28085. Do you think it is a distinctive type of animal?—I don't know about that. I have no expert knowledge. It is the one I have been accustomed to all my life.

28086. Is the same type of animal with which you were familiar as a boy still to be found in the country?—Yes, the ordinary type of cow, and the polled cow as well.

28087. Have you any experience of the cross with the polled cow?—The yield seems to be lighter in quality. Some of the crosses with black cattle give slightly more milk, but the quality is lighter.

28088. The produce of the Aberdeen Angus and a cross-bred cow?—Yes.

28089. Your experience is that the yield of milk is heavier but the quality poorer?—Yes.

28090. Do you know anything of the Galloway bull; is that generally used in your region?—No; the short-horn and the polled Angus are generally used.

28091. We all know that the Aberdeen Angus cross is extremely profitable for store cattle, but extremely bad from the milk point of view?—Yes.

28092. You would not think that the yield of milk from a cross-bred Aberdeen Angus cow would be as heavy as from the old Irish cow?—No.

28093. And do they milk for a shorter period?—I think that depends on the period.

28094. You can keep them going if you stimulate them?—Yes. Any cow that is well fed and the feeding kept up, will keep milking for a longer period.

28095. Very little provision is made by the farmers for the production of root crops?—It is increasing every year.

28096. Is the county instructor advocating root production?—Yes.

28097. And has he met with a certain amount of co-operation and success?—Yes, from what I remember as a boy. There is a great deal more grown now than there used to be.

28098. And one would be hopeful that this would help in some degree, at all events, the milk supply?—It would, and is, helping it.

28099. Do you know the district to which the attention of the Commission has been directed by Mr. M'Neil; he referred to a poor district in the Rosses?—I know the district, but I don't know it intimately.

28100. Is there any increase in winter dairying, do you think; are the farmers aiming at the production of milk in the winter season?—A number of them are.

28101. So that would indicate that they appreciate the value of milk as a food, and would desire to have it available for their children?—Undoubtedly.

28102. Do you find evidence of the children not being properly nourished?—Yes.

28103. Would you attribute this delicacy in some degree, if not entirely, to the absence of milk as a food?—I cannot say that. In our school we get pupils from different places.

28104. I am not talking of your pupils, but of the children in the district?—The children who get milk are always healthier. I know as a boy at school long ago, and ever since, that children are more weakly and anaemic where the people have not the cattle.

28105. Of course, human beings who are ill-nourished would be more likely to contract infectious disease if it was in the country, or much more likely to break down under the strain of exertion, than those who were properly fed?—Unquestionably.

28106. And much more likely to become victims of tuberculosis?—Yes.

28107. Is there much tuberculosis in this district; are there many people suffering from it?—Yes. I have known quite a number of families practically wiped out by it.

28108. Do many returned Americans who have contracted the disease in the States come to this county?—I have seen some of them coming home to die.

28109. We have heard in other counties that they not only come home to die, but they kill their families. We have heard of a case where a member of a family came home to die suffering from tuberculous affection; he spread it amongst the members of the family and decimated them?—I should not be surprised.

28110. The Americans are kind enough when they find their citizens contracting tuberculosis to deport them to the land of their birth?—They can do it immediately after the person lands, but if he is a citizen they cannot deport him.

28111. Many of them don't take out their naturalization papers?—No.

28112. And they have no claim on the Government then?—No.

28113. Do you find that some children in your school are delicate?—Quite a few of them are.

28114. Is there any tendency to tuberculous affection?—Yes.

28115. Glandular swellings?—Yes.

28116. Bone disease?—Yes.

28117. Miss McNEILL.—They are supposed to be fairly healthy when you get them?—Yes, but they often have inherited tendencies, or congenital diseases.

28118. You don't get delicate children?—We do. We had to send one away already, and possibly we shall have to send one or two more, as unfit for industrial training.

28119. The CHAIRMAN.—Do you find that you can improve their physical condition by kind treatment and good feeding?—Yes.

28120. Are there many goats kept in your locality?—Very few. I don't remember to have seen many about this particular locality, but I remember as a boy quite a few being kept in Glenties.

28121. Would the introduction of the new breed of goat be in any degree helpful, if the people took up the keeping of goats?—Yes. I think it would be helpful on the labourer's plots.

28122. They don't keep goats as a rule?—No.

28123. Nor cows?—No.

28124. Do you know any of the occupants of the labourers' cottages who keep a cow?—I cannot say that I do.

28125. In some localities they do where the land is particularly rich?—When I left Ardara the labourers were only being put into the cottages then.

28126. You do think that the introduction of goats would be beneficial?—Yes.

28127. The foreign goat, we are told, is much more useful from the dairy supply point of view than the ordinary Irish goat, because the latter only milk in the summer season?—I have seen a good number of goats milked in Italy. I have seen the Neapolitan goats, and they give quite a copious yield of milk, and I have seen the Swiss goats too.

28128. Some of the male goats of the Swiss breed have been introduced, and the offspring of the cross between them and the ordinary Irish goat partakes of the character of the foreign breed; they come to profit at any season of the year, and are, therefore, much more valuable for the cottier than the ordinary Irish goat?—Yes.

28129. Are you ever obliged to buy milk for your school?—No, we keep up the supply ourselves. We cannot very well depend on any source of supply about here, as far as I understand.

28130. None of the farmers keep up a continual supply for the entire year?—Not so far as I know.

28131. They might keep it up for a limited period?—Yes, but we could not think of depending on them for a supply for our school.

28132. What price is paid for that Irish cow; is it in the Innishowen district it is bought?—No; they are available at all the fairs about.

28133. Are they a uniform colour?—Principally reddish and yellow and white. There are white spots here and there on the body.

28134. And sometimes a white streak on the back?—Sometimes. They are rather light animals, and the head is small and the horns cocked and sharp.

28135. Light in weight?—Yes.

28136. What price would they make?—It would depend on the market a good deal. An ordinary cow in her calving would fetch from £8 to £10.

28137. Would they go up to £14?—Yes. I have seen them go up to £12 or £14.

28138. That does not seem a ruinous price to pay for them if they are moderately good milkers?—They are.

28139. If there was a fund available, it would be possible for small land-holders to borrow for the purchase of a cow. Would that be helpful in increasing the number of cows kept by the small farmers?—Yes, because these agricultural banks, wherever they have been established, have been availed of for that purpose—at least according to the reports. I have no personal experience of them.

28140. Are there any in your locality?—No. There is one in Killybegs.

28141. You are not quite so familiar with the conditions prevailing here?—No.

28142. Is there a bank at Glenties?—I am not aware. I know there is one in Inver.

28143. You don't know what patronage it has merited?—I know it has been patronized.

28144. You don't know much about creamery management?—No.

28145. Is there any feeling that the creameries have been in any way responsible for the limitation in the milk supply?—I have heard that, and that the farmers send them all their milk, and that the cottiers cannot get milk. I have heard complaints close to Derry.

28146. Did you hear it said that the farmers even don't keep enough of milk for their own children?—Yes.

28147. It seems awfully unwise that intelligent people should deprive their children of the best food it is possible to give them?—Yes.

28148. And they stupidly spend money on other food which is less nutritious?—Yes.

28149. Is there much oatmeal porridge used?—Yes, but not so much as used to be. In my native place, the custom was for the people to grow their oats and have them milled; some forty or fifty years ago there were a large number of these mills which have fallen into disuse.

28150. One sees a large number of them going to ruin?—I remember distinctly as a boy tea was only used very seldom.

28151. Now it is on tap always?—Yes.

28152. And they stew the leaves for hours?—Yes.

28153. And that is really a most injurious drink for them to take?—It is.

28154. We have also been told in other localities that they give infants an infusion of that kind?—Yes. They give it to everyone in the house.

28155. Lady EVERARD.—Evidence was given to us in Limerick by the local instructor as to the growing of catch crops, such as hardy greens, which were sown

in September. They got fifty tons of green fodder to the acre off it. I think you might ask your agricultural instructor about the growing of these catch crops, because you would find them useful for winter feeding?—Yes.

Mr. THOMAS MURRIN examined.

28156. The CHAIRMAN.—You are a resident in Killybegs?—Yes, in the neighbourhood, about three miles from the town.

28157. Are you interested in agriculture?—Yes, I have been at it all my life.

28158. Do you go in for dairying at all?—Well no; not very much.

28159. Only what you require for your own household?—I have a little more at some seasons of the year.

28160. Do you sell new milk, or convert it into butter?—The women manage to get it churned and sell the butter.

28161. Is there milk available for the working population in your locality?—Well, in the summer season I may say all of them have a sufficient supply of milk, and a number of them have more than they require.

28162. That would be from May to November?—Yes, or from May on to Christmas, but from that on, during the spring and until May again, it is generally scarce.

28163. Is that because the people do not arrange to have cows calving in that season of the year?—That is about the meaning of it. Some may purchase a cow who can afford it, and have food for it, and some cannot do that.

28164. And they have to do without milk?—Yes.

28165. Is there any extensive labour population in your locality?—Yes. Every farmer works on his own land.

28166. I mean men having no land and who live by their own labour—there are not many such in your region?—No, very few. There are members of the farmer's family and they take work.

28167. But there is no head of a family entirely depending on labour?—No; not in my district.

28168. Do they migrate to Scotland?—The young people go to America mostly.

28169. Do any of them go to England or Scotland for the harvest?—No; a few of them go to the iron works in Glasgow.

28170. Do they remain continuously, or do they come home at the end of the harvest season?—Some remain six months, and others for years.

28171. Some of them settle down in Scotland?—Yes.

28172. With regard to the milking qualities of the cow, do you keep the old Irish cow?—Yes, generally.

28173. Is that the one you keep yourself?—Yes.

28174. Do you ever breed them?—Yes. There are bulls in our district that are supplied by the Congested Districts Board.

28175. Are they the Shorthorn or Aberdeen Angus?—Both kinds.

28176. Do you ever breed your own heifers—do you ever rear them to cows?—Yes.

28177. Do you ever keep for milk production the produce of the Aberdeen Angus?—No, we never had a black one.

28178. It is the cross of the Shorthorn with the Irish cow that you depend on to produce the heifers that will grow into the cow for milk?—Yes.

28179. Do you keep milk records?—No.

28180. What would be the yield of a cow for twelve months?—It varies very much. I have seen cows that would milk for six months of the year twenty-four quarts a day. On the same grass I have seen cows that looked as good that would not milk half as much.

28181. Is the Irish breed you speak of a better milch cow than any you know of?—Yes.

28182. Are they available at several fairs?—I believe you would get them in almost every fair—an odd one here and there.

28183. What colour are they?—Yellow is the principal colour.

28184. A light red?—The cross-bred ones are grey.

28185. That would be a cross with the black bull?—No, but the Shorthorn, I think.

28186. That would be a roan; red and white mixed?—Yes.

28187. Are the produce of the Shorthorn with the Irish cow as good milkers as the original mother of the heifer when you rear them to maturity?—They are, generally speaking.

28188. Has the milk yield in your opinion diminished or improved?—I think it has rather improved.

28189. That is gratifying, because we have been told in a variety of places that the milk yield was steadily going down?—I don't think so.

28190. Are there any Galloway bulls in this neighbourhood?—That is the black bull?

28191. Yes?—There are none of them now.

28192. They were introduced by the Congested Districts Board in the early stages of their work?—There is one in this neighbourhood.

28193. Do any of the farmers keep the produce of these bulls for dairy purposes?—I don't think so. They keep them for stores.

28194. They sell very well as stores?—Yes.

28195. And that is why they are popular with the farmer?—Yes, and because they are hardier in the winter time.

28196. Mr. O'BRIEN.—Do you come from this immediate neighbourhood?—About two miles from the town.

28197. Do the farmers use seaweed as manure?—Some do.

28198. Have they any farmyard manure at all?—They have.

28199. How do they get it?—The cattle are all housed in the winter time.

28200. How long?—From November to May.

28201. What sort of houses have they—are they a decent sort of house; are they not afraid that their premises will be condemned if they sell milk?—Some of them may be, indeed, but they don't sell milk.

28202. Are these cattle properly housed as a rule?—I think they are housed all right.

28203. The CHAIRMAN.—Are there any cows kept in the dwellinghouses?—No.

28204. Mr. O'BRIEN.—You never saw any tuberculous cattle here?—I don't think I did.

28205. No piners?—None that I remember.

28206. Have the farmers farmyard manure?—Yes.

28207. And I suppose they can grow a certain amount of crops?—They use the manure for crops.

28208. For cabbages?—Yes, and for potatoes, and for top-dressing the meadows.

28209. The cattle in the winter are mostly fed on hay and a certain amount of oat straw, with a certain amount of the grain left?—Yes.

28210. Very few cows are timed to calve in the winter?—Very few, but those who can afford it manage to have one calving in the winter when the others are going dry. Some of the people cannot manage that easily.

28211. Is it your experience that the cow that calves in the winter produces a larger quantity of milk during her period of lactation than the cow calving in the spring?—That would depend on how she is treated. If she is well treated she would be better.

28212. And the calves would be healthier too?—Yes.

28213. Is there much mortality amongst the calves?—No.

28214. You don't suffer from white scour or black-leg in this district?—Not lately. I remember when I was a boy that calves used to die regularly, but I think that they are better treated now. Very few of them die now.

28215. Is there abortion to any extent amongst the cattle—do they sling?—No.

28216. There is no abortion amongst the cattle?—No, there is not.

28217. One would gather that the cattle were generally healthy but not producing a large quantity of milk on the whole?—They are all healthy enough, generally speaking, and where they have a good soil they have a fair quantity of milk too. A great deal of this part of Donegal is a poor soil, and that is the part for which it is most difficult to make any plan for the supply of milk.

28218. I suppose in the poorer districts the farms are all very much the same sort of size; you would not get one farm of thirty or forty acres of decent land?—You would get some of them having more than that.

28219. I don't mean sheep-runs on the mountain, but land that you could till if you wanted to?—Very few of them have that much land that they could till.

28220. So you cannot get one farmer to go in for dairying and supply the neighbourhood with milk?—I daresay I would. I know a farmer who keeps eleven or twelve cows, and he churns the milk and sells the butter.

28221. Are they not asked for the milk?—I think they are not asked for it, and they are not living much further from the town than I am. I believe if there was a great want in the neighbourhood they would give milk if they wanted it.

The Commission then adjourned till the following day to Londonderry.

FORTY-NINTH DAY.—TUESDAY, 13TH AUGUST, 1912.

The Commissioners met at the Guild Hall, Londonderry, at 10 o'clock, a.m.

Present :—P. J. O'NEILL, Esq. (Chairman); LADY EVERARD; MISS MARGARET MCNEILL; ALEC. WILSON, Esq.; DERMOD O'BRIEN, Esq.; and Professor A. E. METTAM, B.Sc., P.R.C.V.S.

S. W. STRANGE, Esq., *Secretary*.

Reverend JOHN BOYLE, P.P. examined.

28222. The CHAIRMAN.—Father Boyle, you are Parish Priest of Falcarragh?—Yes; locally called Cloghaneely. Raymunterdowey East is the ecclesiastical name of the parish.

28223. What sort of agricultural holdings are there in your locality?—They vary in size from five to fifteen acres; in our parish we have 1,100 holdings, varying from five to fifteen acres, chiefly reclaimed bog. Two acres would be devoted to potatoes, one-and-a-half to oats, half an acre to turnips and cabbages, and the balance consisting of moor and moss for grazing stock. I should tell you that all the land in that country is reclaimed bog.

28224. Has it been sold under the Land Purchase Acts?—Only one townland, consisting of fifty families, but we are waiting for the Congested Districts Board to deal with our landlords, who are very willing to sell.

28225. And are you hopeful that purchases will be effected?—Yes. Within the last month I have had a letter from Sir John Olphert, who is the chief landlord in the district, on the subject. Cloghaneely forms one-third of the Dunfanaghy Union. From "Agricultural Statistics of Ireland" for the year 1909 it appears that there are in the entire Union 2,999 holdings, and the number of milch cows is 4,809. That means one cow to each holding. A family confined to one cow means the family is without milk for at least ten weeks each year.

28226. What breed of cattle is kept in your locality?—A small mountain breed. One who is not an expert does not like to venture an opinion on that question. They are a small breed and perhaps suit the country. The average quantity of milk per head per animal is 400 gallons, I understand, for all Ireland. In Donegal we don't expect more than 250 gallons, and we would regard that as a big average.

28227. We have heard it stated that in a locality not far from yours it is very much below 250 gallons?—Yes.

28228. Have you got in your district what is known as the old Irish cow?—Well, I am afraid I cannot answer that. Our cattle are a small hardy breed that stand the cold and feed on pasture that a decent cow could not be supported on.

28229. They are animals that would yield a very small price if offered for sale in the fairs?—Yes.

28230. £8 or £10?—Rarely beyond £10. We had a meeting of the people and this matter was discussed by tenants, merchants, the veterinary surgeon, and the medical officer, and we concluded that not more than one-fifth of the people enjoyed such a supply of milk as would enable them to have milk for their tea and a "drop" for the younger members of the family for supper. I wish to say also, in regard to this milk question, that things will go fairly well with us in years such as last year, when the crop of potatoes is abundant, and when they would be used for dinner and supper the milk would not be missed, but when the potatoes become exhausted the people are obliged to take tea at all the meals, for porridge without milk is not a palatable dish.

28231. Has any effort been made by the Congested Districts Board to improve the breed of the stock?—Yes, continuously. Sometimes we hear by way of complaint that the whole tendency of the live stock market is in the direction of producing beef, and that very little attention has been devoted to the matter of producing a milk-supplying animal. That is what the people say.

28232. We are quite familiar with that view; we have heard it repeated over and over again in different localities where the operations of the Congested Districts Board have been in existence for some years, and they attribute the depreciation in the milk yield of the cow to the introduction of the Galloway bull, which is recognised as a non-milk producing breed. Has that been the experience in your locality?—Yes. The same thing has occurred in the case of horses. We had a breed of horse in Donegal that enjoyed a very good reputation. The Board tried their hand at improving it and did not succeed. We have been introducing of late years a Scotch heavy horse and people in small holdings are taking that horse. They say they get a bigger price for the animal, but it costs more to maintain it.

28233. With regard to the feeding of the cattle, that is a matter of considerable importance in reference to the question of winter dairying. Unless some provision is made for winter feeding, in all probability the production of milk will be largely handicapped. What I wanted to know from you is this, has any effort been made to deal with that difficulty by the growing of catch-crops?—Efforts may have been made, but they

have not been successful. The deficiency of the milk is attributable largely to the small breed of cattle, and they are kept small because of the wretched grazing.

28234. They are stunted in their growth because they are not well nourished?—Yes, and the people are not in a position to feed a good class of cow. The house-feeding consists of hay in the winter and perhaps turnips. The cattle used to get Indian meal, but the price is now prohibitive so far as the poor people are concerned.

28235. Have you a migratory population in your district?—Yes. My parish would have about 6,500 people and we calculate that something like 2,500 of our people migrate every May.

28236. To England and Scotland?—Yes, and into the large farms between Letterkenny and Derry, and Strabane and Derry. We have very few boys and girls there at present. Our children leave home as early as nine years of age to go to service. Our servant girls are everywhere. They are very excellent girls. The city of Derry is full of them. At the age of twenty or twenty-one they go to America and leave us. Our young men from sixteen to twenty-five go to Scotland. After that they go to America. The young ones from nine to fifteen and sixteen would go to the Lagan district and serve their period of six months herding cattle or working with the farmers in that country.

28237. The poverty of the home life, in the first instance, is the factor that produces this result, I take it?—Yes.

28238. It is very lamentable and very regrettable?—Yes. We have been striving to encourage industries, but we have not been always successful. We did start home-spinning in the hope of keeping our girls at home, but when it was going on for a time it collapsed. It is a misfortune that we should send our children abroad, though I do not wish to convey the impression that they are unkindly treated abroad. I think their masters and mistresses are kind to them, and take a kindly interest in them. There are some aspects of the question that make it very deplorable that our young girls should go away. It is one of the things that distresses our people. We have reason to complain of it, and all of us lament it. In other respects their masters and mistresses are kind to them. The school life then suffers. We will have as many as one hundred and thirty children in the schools in the winter time, and in May they all leave us, and our school attendance suffers. That condition of things is improving of late; the people in the county Donegal have perhaps improved more in twenty years than any other part of Ireland. Many of our people were evicted twenty-five years ago, and they were very poor.

28239. Mr. O'BRIEN.—On what estate?—Sir John Olphert's, between Glenveigh and the sea. That was in the lifetime of Sir John's father. Sir John himself is a humane landlord, and considerate with his tenants. I am only pointing out the changed condition of the people. In those days we had partial famines, due to failure of the potato crop, and in the month of April we had to supply some of these people with seed-potatoes—money given us by the Bishop and other people. There was also great difficulty in getting Indian meal for them at that time. They had to go to the shopkeepers and get the meal on credit, and the money was paid when the children came home from service. Now all that is changed. They have become in their own limited way independent.

28240. The word "independent" is only a relative term?—Oh, yes. The fishing has been developed all over the coast.

28241. Has the administration of the Congested Districts Board been useful in that direction?—Very much so.

28242. Have they done anything to improve the breed of cattle, other than the introduction of these bulls, which seems a doubtful blessing?—The work of improving breed of cattle has been in the hands of the Department for several years.

28243. Are the people themselves anxious to continue the use of these bulls?—No alternative has been offered them so far.

28244. Because it is quite a recognised thing that if they continue to breed from these bulls with stock that have already been crossed from the same strain, ultimately the milk yield will decrease to such an extent as to be almost valueless from the point of view of sustaining the infant population, and the growing children?—Yes.

28245. We have had evidence of that in Connemara where the same policy is in operation, and what I wanted to know is, has any desire been manifested by these people for the introduction of another strain of blood which would be more useful for dairying purposes?—Yes. At the meeting at which I discussed the evidence that I was to give before this Commission that matter was discussed, and the people complained that they did not know what the remedy was to be.

28246. But at all events they feel that their interests are imperilled by the use of these animals, and that it ought to be possible for those in authority to introduce another breed that would be more beneficial from the dairy point of view?—One of the objects of this Commission will be to fix the minds of the people upon that and upon cognate subjects. I really think our people don't value milk as a food for the young. The medical officer told us that he had seen young children given condensed milk and black coffee. The people, I understand, did not really see where the injury came in. I have no doubt that when the proceedings of this Commission appear in the papers people will recognise the importance of feeding their children with milk.

28247. It is obvious that they need education on that point?—Yes, on many points. The progress made has been largely due to the amount of information they have got during the last twenty years from the Congested Districts Board, and the Department of Agriculture. Our people are a conservative people, and new ideas percolate slowly into their heads. There was an objection against the spraying of potatoes at the start, but yet the people are beginning to adopt it.

28248. They look with distaste on novelties when introduced into the district, and they think that the methods adopted by the fathers and grandfathers are quite good enough for them?—That is very much their attitude of mind.

28249. Happily the school-master has been abroad, and that prejudice has been overcome?—Yes, very much so.

28250. I would like to refer again to that question of the growing of catch-crops, because the Commission has had evidence before them by an instructor who was engaged in dealing with land no more fertile than even the poorest part of Donegal is, and they have seen luxuriant crops growing in the month of April which provide an admirable milk-producing food for milch cattle. I hope that efforts will be made in Donegal until it is seen what particular crop is most suitable for the soil and district, and I can assure you, from what we have heard and from what we have seen, that there is no doubt that an enormous amount of good can be done by the introduction of this system?—I have no doubt of it.

28251. We have seen in the wildest part of the Kerry mountains, on the shores of the Atlantic, beautiful luxuriant crops which afforded the very best food for stock in that locality, when nothing else was available. Of course there are no creameries in your district?—No, and no dairies, and no milk sold, or practically none.

28252. Whatever milk is exchanged between farmers would not be for money but through good feeling and good nature?—Yes, that is one thing that is a very striking feature of our people. I gave you evidence, that for two months, or ten weeks, people depending on one cow would be deprived of milk, yet they manage to get along largely through the charity of their neighbours.

28253. Have you much tuberculosis in that region?—Unfortunately a good deal. The movement of Lady Aberdeen has done a great deal of useful work. Years ago you would not find a ventilated room, or a window raised. The people did not know the value of it. There is not a house now that does not know the value

of ventilation. The whole country has been stirred up to the importance of it. If the people had the information they would act. In that respect there is a great change over the country.

28254. Are goats kept in that locality?—In the entire Union there are only forty-two goats.

28255. That does seem strange. Are these utilised for milk-production, or are they running wild?—They are running wild. A man told me the other day that he had six goats, and years ago he had thirty. There is a strong prejudice against the keeping of goats. I have been pressing upon people the importance of looking into this question of milk supply, and looking even to goats to supply it. There is a large section of my parish, and of all the parishes I should say along the western sea-board, where goats could be kept at very little cost. The holdings adjoin the mountains, and these goats would give very little trouble. If there was a good class of goat introduced, I don't see why the people should not take to them, and the fact that they do not is very much a matter of pride. Our people don't like keeping goats, because it indicates poverty. They are a proud people.

28256. It may be of interest to you to know that a Goat Society has been established in Dublin for the purpose of introducing a new breed, whose habits are different from the ordinary Irish goat, and they have this great advantage over the native breed, that it can be so arranged that they can be in milk in the winter season?—Yes; that is important when dealing with a goat.

28257. And if you were at all interested in the question, a communication to the secretary of the Goat Society in Dublin would provide you with all the available information with regard to these new breeds of goats?—Yes.

28258. With regard to the quality of the milk, is it poor in butter fat?—I don't think so.

28259. The quality is fair?—Yes.

28260. The quantity is the biggest difficulty?—Yes.

28261. Has any representation ever been made to the Department of Agriculture or to the Congested Districts Board, as to the undesirability of introducing this breed when it has been discovered that the produce of the beast is a very bad dairy servant?—We have a County Committee dealing with that subject, I am not a member, but I know the members are very active, and from the proceedings reported in the press I see they are discussing that matter at all their meetings. It seems to me that although they are very earnest that they are groping in the dark. Our members are merely talking of it, they have no experience of anything else but the existing condition of things.

28262. The Department have embarked on a scheme for the purpose of providing bulls of a milking strain, that would be likely to improve the yield of milk from the dairy cows in districts where it has run low, and in all probability the introduction of bulls of that kind into your district would be an enormous advantage to the people. Would it not be possible to have a few of these bulls introduced into your locality for the purpose of improving the milk yield of the dairy stock already in existence?—Yes.

28263. If you had an opportunity of mentioning the matter to the members of your Committee it might be beneficial and useful to them to know that such a scheme is in existence, and that it is possible for them to co-operate in it. Do the farmers in that locality talk of what we have heard described from time to time as "the old Irish cow"?—No; I don't think I have ever heard the word.

28264. For my own part I would be rather inclined to think that it is a sentimental idea that is fostered in some peoples' minds, and I was anxious to know how the older people had got this belief with regard to this mystic animal known as the old Irish cow?—They are more inclined to talk of horses.

28265. Lady EVERARD.—Have you ever heard of sheep giving milk?—Yes.

28266. Do you think it would be possible to get a billy goat in your parish?—I don't see why we should not. We are well situated for introducing a good breed of goats.

28267. The Women's National Health Association has taken the matter up and are most anxious to introduce these breeds, and the Department are helping them in every way possible; in fact the Department wish the goats to be distributed through the Women's National Health Association?—If the proposition was made to me I would take an interest in it, and see that someone would be found to take charge of the animals.

28268. I am a member of the Goat Society and I will bring the matter forward. Do you find that the people feed their children on strabout?—Yes; if they had milk. That is one of the evidences of prosperity with us. I have been back in that parish for four years. Fourteen years ago there was no oatmeal porridge, but since I came back I have been very much struck by the change. I wrote to the Congested Districts Board to establish a mill in the district, where the people could have their own corn ground. The people are taking to porridge. Last year they had a plentiful supply of potatoes. They have the old potato still, and the conditions are such that they can take the potatoes for dinner and supper.

28269. We had evidence in Enniskillen of children being fed on potatoes from a month old?—I saw that in the newspaper.

28270. We had evidence in other parts of the north of Ireland that children going into the hospital in one district where there is a good deal of tuberculosis absolutely did not know the taste of milk?—In some of the places they don't mind about having milk for the tea. In Tory Island they don't, and they don't seem to care much about butter in Tory either.

28271. The CHAIRMAN.—I can quite understand their contempt for fish, but with regard to butter I cannot understand their attitude?—It is such as I have stated. They never use condensed milk.

28272. Lady EVERARD.—Does the domestic economy instructress work in your parish?—She was working there a few years ago.

28273. Not lately?—No.

28274. Did you find her useful?—Yes, not only useful for those who were remaining at home, but for those who were seeking service abroad. The people took to the instruction.

28275. Have you got a Jubilee Nurse or a Lady Dudley Nurse in your parish?—No. I have been talking to Lord Frederick Fitzgerald about that matter; I made an application to him and to his association, and he wrote back to say the funds were not abundant. We are endeavouring to get a nurse for Tory Island. We had one for three years and she left us, and we are now exerting ourselves with the Congested Districts Board and the Commissioners of Irish Lights to have a permanent nurse on the island. There is no doctor on the island and there is no chance of getting one; we are pressing that upon the attention of the Congested Districts Board and the Commissioners of Irish Lights.

28276. The CHAIRMAN.—What would be the population of Tory Island?—Sixty families.

28277. From 200 to 300 people, I suppose?—Yes.

28278. Lady EVERARD.—Have you free dinners or luncheons given in your schools?—No.

28279. In some places they have been found a great benefit to the poor?—Yes. We were speaking of how to meet the deficiency in the milk. In Lord Leitrim's district he supplies milk to the country-side. He sends out his cart to the country. We have in Donegal no one else doing that. I have suggested in my summary of evidence as a remedy for the deficiency in the milk supply the extension of tillage, production of more abundant supply of home-grown feeding stuffs for winter feeding, enlargement of holdings, where possible, draining, fencing, artificial manures. I know large tracts of unreclaimed bogs in our district—between 30,000 and 40,000 acres in my parish alone. Looking over the evidence given before the Commission appointed in 1858 to inquire

into the destitution in this part of the country we are dealing with now, I find that Mr. Sharman Crawford was strongly in favour of extension of the holdings. He said that in Donegal there was something like 150,000 acres improvable for cultivation, and 250,000 acres improvable for pasture. We have between 30,000 and 40,000 acres of that in our parish. It will be, I presume, the work of a Home Government to see that these lands are turned to best account for the people, that they are helped to drain and fence them, and make them available for grazing purposes, or for the raising of food stuffs. I do not wish to convey that the landlords are not willing to meet the demands of the tenants for these out-lying lands, but it is really a matter of capital, and if the poorer tenants living near these untenanted lands were assisted it would be a very great matter.

28280. Mr. WILSON.—I just missed, Father Boyle, the figures you quoted from the Agricultural Statistics of Ireland. You say, in your summary of evidence, there are in the Dunfanaghy Union 2,999 holdings, and that the number of milch cows is 4,809. Is that a misprint?—No; it is correct.

28281. That means much more than one cow to each holding?—Yes. You have 1,100 families in my district. In the district of Dunfanaghy for instance, the

people are better, and it is there the cattle are. They have not them in Gweedore and the Rosses and Cloghaneely. There would be in the districts on the western seaboard about one cow to every family and a fraction over.

28282. Because that particular solution has been pressed on us in several places as the ideal solution of the milk supply problem—that no family should be without a cow?—Yes.

28283. That may improve matters, but it by no means solves the whole problem?—It does not.

28284. Do you find that there is much variation in the individual cows in the matter of yielding milk?—There would be. In the neighbourhood of a mountain you cannot expect a large supply. The yield of milk would very largely depend upon the feeding of the cows. Our cows are not bad milkers if they were well fed.

28285. One of the various suggestions that was made to us was that instead of introducing the new breeds of cattle into such districts as this the test should be made of the animals native to it and the breeding should be from these?—I have seen that.

28286. You think that that would probably work favourably?—I think so; of course it would work slowly.

Mr. D. FLETCHER examined.

28287. The CHAIRMAN.—You are Executive Sanitary Officer in the Borough of Derry?—Yes, sir.

28288. Would you be good enough to tell the Commission what steps have been taken by the local authority here to enforce the provisions of the Dairies and Cowsheds Order?—The local authority here have appointed a veterinary inspector. They have also appointed one of the sub-sanitary officers to look after the inspection of milk-shops. They also keep a register of all the names of cow-keepers and purveyors of milk in the city.

28289. Is registration rigidly enforced?—It is.

28290. And the executive sanitary officer finding a cow-keeper selling milk who was not registered reports him to the Council?—Yes.

28291. Has it been found necessary to institute prosecutions with a view to enforcing registration?—Not for two years.

28292. How long is the Order in operation in Derry?—Since 1909.

28293. Are reports presented by the veterinary and other inspectors to the Council monthly as to the condition in which they find the byres and the stock kept therein?—The veterinary inspector reports monthly and the sanitary inspector fortnightly.

28294. Has any improvement taken place in the keeping of the cows in the byres?—A vast improvement.

28295. Have prosecutions ever been undertaken for the purpose of enforcing the improvements considered necessary by these officers?—Yes; several prosecutions have been instituted.

28296. And with satisfactory results?—Yes.

28297. What proportion of the milk consumed in Derry would be raised outside the municipal area?—A very large quantity.

28298. What number of cows are kept in the city?—There are eighty-eight cow-keepers, with a total of about three hundred and fifty cows.

28299. What is the population of Derry?—42,000.

28300. Three hundred and fifty cows would not be a large number to provide for such a large population, but I take it milk is sent in by rail?—Not by rail, but by carts from the country.

28301. From the entire area surrounding the city?—Yes. We have coming into the city fifty-two vendors.

28302. Is any supervision exercised over the condition in which the milk is vended by these outside suppliers?—We have no supervision from the borough.

28303. The borough exercises no supervision over the condition in which the milk brought in from outside centres would be distributed?—None whatever.

28304. Are samples taken by the Food and Drugs Act Inspector to ascertain whether or not the milk is adulterated?—Yes; regularly.

28305. Have prosecutions been ordered on his reports?—Yes.

28306. What sort of penalties have been imposed?—In case of buttermilk the penalties have reached £5 and costs.

28307. Have prosecutions been undertaken for the adulteration of new milk?—Very few. We get very few city milk samples adulterated. Our city milk is of an excellent quality as a rule.

28308. And the main trouble is the buttermilk?—Yes.

28309. Is the buttermilk also taken from the outside area and sold on the streets?—Yes.

28310. And are the tankards those that one sees in large centres of population?—They are the old wooden churns.

28311. For what purpose would milk of that kind be used?—Buttermilk in Derry is the staple food of the poor.

28312. Do they use it with porridge?—Yes.

28313. And make bread from it?—Yes.

28314. Is it largely used in that way?—Yes, very largely.

28315. Is there a regular market or is it sold promiscuously throughout the city?—From door to door.

28316. Mr. O'BRIEN.—It is buttermilk, not separated milk?—It is buttermilk.

28317. The CHAIRMAN.—Is there any separated milk sold?—Very little.

28318. Are there any creameries near Derry?—No.

28319. Is there any scarcity of milk in the city?—No. 28320. Milk is always available for those having money to buy?—Yes.

28321. Is milk appreciated as a food by the working population, and do they provide as much as their means enable them to do for the nourishment of their children?—They do.

28322. So that, from your point of view, there is a happy state of things prevailing?—Yes.

28323. Have you ever heard of infant children being fed on tea?—No.

28324. Happy Derry, which is immune from that crime against humanity which prevails elsewhere. Regarding the condition of the milk shops, are they regularly inspected?—Yes.

28325. And do you find that care is exercised by those engaged in the trade in order to keep the milk clean and free from contamination?—Yes, every precaution is taken.

28326. Is milk kept in uncovered vessels?—Yes.

28327. Are prosecutions ever ordered for breaches of the Order in that way?—When the Order was put into force at first there were a number of prosecutions, but not lately. We have got them into it.

28328. When the standard was being fixed, and when the dealers recognized what is required from them, you find they are willing to conform with the regulations?—Yes.

28329. You are familiar with these regulations?—Yes, I am.

28330. Do you consider they are too exacting or impose unreasonable obligations on those engaged in the trade?—I don't know, but I find the people conform with them very well now.

28331. Now that they understand the regulations, you don't often hear complaints as to the imposition placed on them?—We have none in Derry.

28332. Do milk vendors ever seek to evade inspection by saying that they have no milk to sell when they would have milk concealed in other portions of the habitation?—Not to my knowledge.

28333. Has any outbreak of infectious disease ever arisen owing to the milk supply?—Yes.

28334. And what action was taken by the local authority under these circumstances?—Immediately when the case was traced, the local authority had the sale of milk stopped.

28335. And they suspended the sale until a certificate was given by the medical officer in charge of the case that it was safe to have milk sold from that habitation?—Yes.

28336. Do you find that those engaged in the trade are willing to conform with the requirements laid down for the protection of public health?—They do.

28337. And they also are willing to carry out whatever improvements may be considered necessary by officers of the urban authority for keeping their cows in a clean and proper condition?—They do.

28338. Is supervision exercised over the cleanliness of the people engaged in the handling of the milk and the milking of the cows?—Yes, constantly.

28339. Are the cow-owners obliged to provide a convenience for washing the hands of the milkers?—Yes.

28340. Do they wear overalls milking?—No.

28341. Have they laid down concrete floors in the byres and provided effective drainage?—The majority of the byres are concreted and properly drained.

28342. What size dairy herds would you find in the city kept by one man?—The highest would be fifteen cows.

28343. Mr. WILSON.—Inside the city?—Yes; I am talking now entirely of inside the city.

28344. The CHAIRMAN.—Have you any knowledge of the milk yield of these cows?—I have not.

28345. You have heard no complaint of the deterioration of the milk-producing qualities of the cows of the present day?—No.

28346. Where are they usually bought?—In the neighbouring markets.

28347. Are these cows inspected by a veterinary inspector?—Yes.

28348. Has your veterinary inspector ever reported that he has found in the dairy herds of the city cows that he suspected were suffering from tuberculous affection?—Not to my knowledge.

28349. Lady EVERARD.—Do you think it would be an advantage to the city authorities to have power to inspect the area from which the milk supplied to the city comes?—I consider it would be a great advantage to the city if they could inspect the dairies outside.

28350. You don't think it fair to have the milk sent in to the city when you have no power to inspect the conditions under which that milk is produced in the country?—No.

28351. Do you consider that the by-products of milk should be placed under the same rules and regulations as new milk?—I consider they should.

28352. What is the price of milk in Derry?—In the summer 10d. a gallon, and in the winter, 1s.

28353. Professor METTAM.—Retail?—Yes.

28354. Lady EVERARD.—Are the dairy cows kept in the city in winter grazed outside the city in summer?—No; there are fields inside the city area.

28355. Of course these cows are inspected during the summer?—Not in the fields. They are not inspected in the fields. Some of them are milked in the fields, and some brought into the byres.

28356. Do you consider that licensing would be more advantageous than registration; do you think it would work better to have dealers licensed than registered?—I consider that the registration, so far as we are concerned in Derry, is very satisfactory.

28357. Mr. WILSON.—You give us a figure of approximately three hundred and fifty as representing the number of cows that are housed within the city area?—Yes.

28358. And about fifty-five outside farmers send in milk to the city?—Fifty-two I think I said.

28359. Approximately what would these outside farmers average in the number of cows to the herd?—I cannot answer that question.

28360. Do you know how much milk they would send into the city on an average?—I cannot tell you.

28361. I was trying to work out from the approximate average what the supply available in Derry would be per head or per thousand?—I have no idea. I have no way of obtaining that information.

28362. And I suppose the inspection system does not include any kind of estimate of the bulk passing through the street?—No.

28363. Would it not be desirable that that should be estimated?—Yes; I agree that it would be desirable.

28364. You referred to the prosecutions for adulterated buttermilk. Have you fixed for your own purposes a standard for buttermilk?—Twenty-five parts of water to one hundred of milk.

28365. You fixed that?—No, that standard was decided by the King's Bench Division as a fair proportion of water.

28366. It is not a legal standard?—No. We had a lot of law in connection with it ourselves.

28367. I have seen the Derry cases reported pretty fully?—The people have got a label on their churn stating that it is sold as "milk and water; purity not guaranteed."

28368. You don't attempt to interfere with them?—We do. We take samples, and we see that they do not adulterate it with 50 per cent. of water.

28369. Have you any idea what quantity of milk a workingman's family in Derry would buy in the course of a day or a week?—There are some I think would not buy very much.

28370. Why is that; is it because they don't understand it, or spend their money on other things?—They spend their money on other things.

28371. Mr. O'BRIEN.—I think you said that the milk is mostly sold through the streets here in carts?—Yes.

28372. From door to door?—Yes.

28373. In wooden churns that they dip into?—That is the buttermilk; the sweet milk is sold in the ordinary cans.

28374. With a tap?—Yes.

28375. You think that a good scheme?—Yes.

28376. That is brought into the streets from the byres?—Yes.

28377. In that case there are no regular shops, or very few of them?—We have one hundred and eighty-eight milk shops in the city.

28378. They get the milk from outside?—They buy the milk from these carts and retail it out.

28379. They buy in bulk and retail it?—Yes.

28380. Is there much milk coming in from the outside farmers to supply these milk shops?—We have fifty-two coming in from farmers.

28381. Not by train?—No; we get no milk by rail that I am aware of.

28382. Are these shops for the most part well kept?—Yes.

28383. They don't mix the milk up with paraffin oil and dry fish?—No; they must conform with the Order. The apartment in which they keep the milk must not be connected with the living room.

28384. Do you think it would be an advantage to the town generally to have regular milk depots run by the town; do you think it would be any advantage in enabling you to ensure a cleaner and cheaper supply of milk?—I am of opinion that our present system of milk supply is very good.

28385. Professor METTAM.—In what sense do you mean the milk supply is good?—As to cleanliness and as to being kept in proper vessels.

28386. Now, as to cleanliness, are samples taken from time to time of the milk examined as to cleanliness?—No; not as to cleanliness. It is not analysed with regard to cleanliness.

28387. Is there any bacteriological examination of it made?—None.

28388. And you don't know whether it is contaminated with manure or other things?—No.

28389. The analyses that are made are chemical analyses with regard to butter fat?—Yes.

28390. And do I understand you to say as regards the milk shops that they keep nothing else in the shops but milk?—These are small shops that sell groceries and other commodities, but they have a separate place to keep the milk in.

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28391. A separate shop?—A separate apartment.
 28392. Has it a separate entry?—No.
 28393. And people who serve out groceries and other things hand out the milk when it is required?—Yes.
 28394. You can enter these places at any time, I suppose, to make an inspection?—Yes.
 28395. Are the vessels which contain the milk covered?—Yes.
 28396. You can insist on that?—Yes, and we do insist on it.
 28397. Then as regards the milk that comes in from the country, you have no control over that?—No.
 28398. Your veterinary surgeon has no power to go into the country to examine the conditions under which the cows are kept?—No.
 28399. Consequently, the cattle that are kept in the town are examined by the veterinary inspector, and you have them under control?—That is so.
 28400. But the cows in the country are not inspected by the veterinary inspector, and you have no control over them?—No.
 28401. Do you think it would be wise if you had power to go into the country and make an inspection of the cows and byres?—Yes, it would be a great advantage to the city to have outside byres inspected.
 28402. Is there much butter made in the country around Derry?—Yes, I think there is.
 28403. The CHAIRMAN.—You are familiar with the provisions of the Order?—Yes.
 28404. Do you think that the provisions of the Order cover all that is needful to secure a clean and healthy milk supply?—In my opinion, there is one defect in the Order—that is, the cows go out to the grass in

May. The farmer may go to a neighbouring market and buy a tuberculous cow. That cow is grazed in this field and the farmer sells the milk, and the veterinary inspector cannot go out to inspect the animal. The Order should be extended to enable the veterinary inspector to go out and inspect the cattle while grazing in adjoining lands.

28405. Mr. O'BRIEN.—Do you mean he has not power to do that?—He has no authority.

28406. Professor METTAM.—Do you think it would be a good thing, supposing the cows themselves were licensed; I mean in this sense, that every cow providing milk should be registered in some way, so that she could be identified?—I think it would be a very good thing.

28407. The CHAIRMAN.—Is there any other weakness in the Order that has struck you as an intelligent administrator of the Order? You have told us that you think it would be desirable that an urban authority should have the right to send its officers into a district in which milk is raised that is sold in the town. Is there any other provision that you would like to add to that in order to ensure the safety of the public health?—I don't think of any other, except the examination of the cattle while being grazed.

28408. These are two points that you have directed our attention to—that the veterinary surgeon should have the same power of examining the cattle outside his bailiwick as when they are within, and to go out and ascertain the conditions under which milk is produced in the outer areas that send a supply into the town?—Yes.

Mr. JOHN HOWATT, M.R.C.V.S., examined.

28409. The CHAIRMAN.—You are a practising veterinary surgeon, resident in Derry, Mr. Howatt?—Yes, sir.
 28410. And you hold an appointment under the Corporation of Derry which enables you to make an inspection of the dairy cows kept within the city?—Yes.
 28411. How long have you held that position?—As cowsheds inspector, I have been over two years engaged in that work—since the Order was put into force.
 28412. Would you be good enough to tell the Commission what is the general condition of the cows that come under your observation?—The cows are all in good health. I examine the cows generally for health and for cleanliness, and for the udder and teats.
 28413. Have you ever subjected any of the animals to the tuberculin test?—Yes, several, and we always do where there are doubtful symptoms—wasting or coughing.
 28414. We would be very glad to have your experience as to the application of this test?—I examined several cows and got no reaction from the test.
 28415. In no single case did you get a reaction from the application of the test?—None whatever.
 28416. And even where the symptoms were distinctly suspicious, and where the test was applied with care and intelligence, there was still no reaction?—No. I reported a case to the Department.
 28417. Would you be good enough to tell the Commission what symptoms excited your suspicion?—A dry coat, and unhealthy appearance, and a cough.
 28418. Wasting?—Yes, and unhealthy looking, but not showing decided symptoms of tuberculosis.
 28419. Have you ever seen cases where there was tuberculosis of the udder?—No, not in the city byres.
 28420. Consequently, from what you have told us, you have never found it necessary to order the slaughter of any animal supplying milk?—No.
 28421. If the tuberculin test had confirmed your suspicion with regard to these cows which attracted your notice, would you have recommended the Council to order the slaughter of these animals?—I would have recommended isolation, watched for further symptoms, and prevented the use of the milk. Isolation would be the first step I would recommend.
 28422. Do you apply the test often; I mean, have you found it necessary to confirm or refute your suspicions in many cases?—No.
 28423. How many times within the year would you apply the test?—Only four or five times altogether in two years. The stock in the city here are very healthy.
 28424. Have you ever, in your private practice, been asked to apply the test?—Yes.

28425. What is the result of these cases? I don't want to know anything that would be in the nature of private information between a professional man and his clients. I don't want to know the name of the clients, but I would like to know the result of the application where you have applied it in the case of private clients?—I would have five or six reactions out of twenty-five cows.

28426. That would be somewhere about 20 per cent.?—Yes, and some of these cows are the most healthy cows in the byres, so far as appearance goes. There would be no clinical symptoms of disease or of the udder being affected.

28427. What would become of the reactors; would they be continued as milk suppliers?—They have been kept on and no bad results have followed.

28428. Have you ever had any bacteriological examination of the milk of such beasts to ascertain whether or not it contained tubercle bacilli?—We have not any such examination in this city. If there were any symptoms of a tuberculous udder we would have the cow destroyed. If there was anything like an indurated or hard udder, or a tuberculous udder, the milk is stopped.

28429. In your private practice, have you ever suggested to have a cow that you examined suspended as a milk supplier for the family?—I always do.

28430. Do you happen to know what provisions are made in the outside area for the inspection of cows?—The rural districts are under the supervision of the medical officers.

28431. And not under the supervision of the veterinary surgeons?—No, there are three medical gentlemen who have the supervision of the byres under the Cowsheds Order.

28432. That seems rather an unusual form of administration—to appoint medical doctors to make an examination of the live stock?—Under the Order at that time it was specially mentioned that if the veterinary surgeon could not be got that the medical officers would be qualified.

28433. Are the veterinary surgeons so scarce in the locality?—No, it is all a matter of fees.

28434. Does the question of economy come in?—Yes.

28435. Is the salary given to the medical officers less than what the veterinary inspectors expect?—I think it is not right for the medical officers to do the work.

28436. What has brought about this; is it a fact that the work can be more cheaply done by a medical officer than by a veterinary surgeon?—Yes.

28437. Then I take it the number of medical practitioners is in excess of the number of veterinary surgeons?—Yes, I think so.

28438.—Do you hold any appointment for any other public body than the Corporation of Derry?—I have the inspection under the Contagious Diseases Act for Inishowen Union, the City of Derry, and Londonderry Union.

28439. What provision is made by these local bodies for the enforcement of the provisions of the Order?—I carry out the Order as far as practicable.

28440. Do you make an inspection of all the cows that are yielding milk for these three public bodies?—Yes, once a month under the Cowsheds Order.

28441. Are there dairy farmers in these districts supplying milk to creameries?—Outside the area of seven miles, almost all the milk goes to creameries.

28442. Do you make the same diligent inspection there as you make within the city of Derry?—I have no power to go outside the city under the Cowsheds Order.

28443. Have you any public appointment that enables you to carry out in these districts the same duties you discharge in Derry?—I am appointed outside under the Contagious Diseases Act.

28444. You are not an officer appointed outside under the Dairies Order?—No.

28445. Is there any veterinary surgeon appointed in any of these three districts?—No.

28446. And the milk is sent into the city from cows that are subject to no inspection whatever—there is no inspection of cows as to their health?—No.

28447. Do you think that is a desirable state of things?—No.

28448. Would you be in favour of having a veterinary surgeon appointed in each rural district for the purpose of making the same examination in that area that you make within the city area of Derry?—I would, certainly.

28449. And you think it is necessary in order to secure a healthy milk supply, and to safeguard the public health of the district, that such provision should be made?—Yes; that all the cows should be examined periodically as to their state of health.

28450. Are any milk records kept by those engaged in the milk trade in the city?—Not that I know of.

28451. Have you formed any opinion as to the probable milk yield of the cows that are in the city dairies?—A big milker would give twenty-five quarts a day.

28452. It would be more interesting if you could give us the probable average in gallons for twelve months, or during the lactation period?—I have no figures.

28453. Do you think that any of the dairy owners keep records?—I know one, Miss Gibson, of Molenan Dairy, keeps a record by weight. That is the only one I know.

28454. Have you ever heard from her what is the average milk yield of her dairy stock?—No. I have seen the book often.

28455. Do you think the milk yield of the cows of the present time is as good or better than it was when you were familiar with them, say, ten or fifteen years ago?—I don't think so. Where there are three or four cows in a byre which are good milkers, the milking strain ought to be kept up. We have been going in too much for points, but for the farmer's sake, and for the sake of the public, we ought to go in more for milk. If the Department would send a bull of a milking strain it would be a great advantage. I know four or five cows in every byre that would be splendid milkers, and the rest of the cows would not pay for their feeding. If these farmers were encouraged to breed for milk it would be a great benefit.

28456. That is where the advantage of keeping the records would come in?—We go by quarts.

28457. I do not care what measure you use, provided you have an intelligent conception of the yield?—We go by pounds weight and quarts.

28458. The keeping of the records will enable the farmer to know which animal is paying him, and which is a pensioner on the farm?—There are very few milk producers that keep a record—only two or three that I know; it costs money to do it.

28459. It costs a little trouble?—And they see nothing to be gained by it.

28460. I am afraid I cannot accept that as an intelligent idea. You have told us yourself that in each herd there are perhaps five or six good milkers, and a number of others that don't pay for their keep. If these were driven out of the dairy herd, and if good milkers were supplied to replace them, would it not make the dairyman's trade more profitable?—Yes.

28461. Would not that be an advantage to be derived from the records?—Yes.

28462. And if the people engaged in the trade approached the consideration of the question from that point of view, don't you think they would be convinced that there would be an advantage in keeping records?—Yes; but it would require time.

28463. All educational problems do require time to develop them, but if people start with a prejudice against what it is proposed to adopt, the difficulty of effecting improvements is considerably increased?—Quite right.

28464. Are you aware that the Department have embarked on a scheme for the purpose of breeding dairy bulls with milk records in their dams?—Yes, we have not got one here.

28465. That might not be entirely the fault of the Department, because such animals are available. Do any of the cow-keepers in Derry co-operate with the Department in keeping records to ascertain whether or not their cows would be qualified under this scheme?—I have not heard.

28466. Would you be in favour of the application of the tuberculin test to all animals supplying milk?—Yes, if it was practicable, but it is hard to know what is to be done with reactors.

28467. Have you ever had post-mortem experience that would enable you to determine whether or not the application of the tuberculin test was reliable in order to confirm a diagnosis?—I know two cases where there was a post-mortem examination and there were no visible symptoms of tuberculosis.

28468. There were no lesions in any of the organs?—No.

28469. And these animals were reactors?—Yes.

28470. And was the test applied in a careful way?—Yes, by myself.

28471. Under normal conditions?—Yes.

28472. And you got a distinct reaction, and notwithstanding the fact that you followed up these cases to post-mortem examinations, no lesions were found on any of the organs of the body?—No. They died after calving. They were tested with tuberculin about four months before that.

28473. And they were distinct reactors?—Yes.

28474. Leaving no doubt whatever, so far as one could learn from the record of the application, that tuberculous lesions might be found?—There were no visible symptoms on the post-mortem examination.

28475. Was the post-mortem examination carried out with care?—Yes, by myself.

28476. Because you were anxious to see how far the application of the test was reliable?—These two cases I took a note of.

28477. How long ago was that?—Four or five years ago.

28478. Was that the only case in which you followed up the animal to the post-mortem examination?—Yes; they were the only ones that I had a chance of doing that with.

28479. There is always a difficulty about that. That was the only case in which you ever had an opportunity of going to the last possible examination?—Yes.

28480. Notwithstanding the unsatisfactory result you still think that the application of the tuberculin test would be a help and a safeguard?—Yes in stamping out tuberculosis, if it could be made compulsory.

28481. Where do you think the greatest difficulty arises?—What is to be done with reactors? The best milch cows, and the most healthy-looking animals may react. Are they to continue milking, or be destroyed and compensation given to the owner.

28482. Would you be in favour of having the test applied two or three times to such animals as these?—Yes, if the owners are willing, but the owners are not willing to have their cows charged with tuberculin.

28483. There is rather a prejudice against it?—Yes.

28484. Professor METTAM.—What would be the use of applying the test on subsequent occasions if you got a reaction in the first instance?—There would be no necessity if you got a reaction.

28485. The CHAIRMAN.—You got a reaction in two cases and the post-mortem examination did not reveal any tuberculous lesions in the body?—None whatever.

28486. It would, in some degree, shake one's faith in the reliability of the test?—You cannot consider it very reliable. We have no better test.

28487. Yours is not an isolated experience from that point of view, because we had evidence in Belfast that a professional man there, with an experience similar to yours, found not only a contradiction from one

point of view, but from another also—that whereas some animals that did not react, were found on post-mortem examination to be filled with tuberculous lesions, the contrary was also found. We had that statement made before the Commission in Belfast?—Yes.

28488. Lady EVERARD.—I think you said that power should be given to municipal authorities to inspect cows and byres in the outside areas from which milk is supplied to the city?—Yes.

28489. That you should have power to go outside and inspect the cows?—Where there is any suspicion, the local inspector should, along with the medical superintendent, have power to examine the stock.

28490. I think if there was an outbreak of disease you have that power?—We have got no power whatever over the milk that is coming into the town.

28491. Don't you know where it is coming from?—The cows are never examined. They are not attended to as to washing their udders or teats.

28492. That is in the case of the milk coming into the city?—Yes.

28493. Do you consider that the by-products of milk should be placed under the same rules and regulations as new milk?—If it was practicable. All milk cows ought to be thoroughly examined.

28494. Professor METTAM.—How long have you been inspector here?—Under the Contagious Diseases Act since 1877.

28495. And under the Cowsheds and Dairies Order?—Since the Order came into force about two or three years ago.

28496. Is tuberculosis common or not in the cattle of this district?—We see very often in the slaughter-house two or three a week of old worn out cows.

28497. Then your slaughter-house experience does not conform with your clinical everyday practical experience?—No.

28498. With regard to these two cows that you subjected to the tuberculin test, you said that the tuberculin test was the best we have for diagnosis?—It is the only one we have.

28499. Would you be surprised to hear that the tuberculin test is satisfactory in 98.5 per cent. of the cases?—I believe in it myself. I have seen cows tested with tuberculin very often and on examination afterwards found tuberculous lesions, but I have given you two cases of my own experience where there were no lesions found.

28500. In other words you failed to find them?—It may have been in the bone. I made an ordinary examination.

28501. That seems to be the general experience—that it is not because the lesions are not there, but you failed to find them?—Yes.

28502. Is it possible that the lesion may be so small that it would be very difficult to find it?—Yes.

28503. You may have a tuberculous lesion the size of a pea?—Yes; I believe in the test myself.

28504. As regards the case where there was no reaction, is it not the experience that these cows are clinically tuberculous?—Yes.

28505. That any one may see they are tuberculous?—Yes. If a beast is affected with tuberculosis she will react.

28506. In some instances there are very bad cases of tuberculosis where there is no reaction to tuberculin?—Yes.

28507. Is it not a fact that these cows are clinically tuberculous?—Yes.

28508. What kind of inspection of the udder is made in these suspected cases of tuberculosis; do you trust entirely to a clinical examination?—Yes.

28509. There is no bacteriological examination?—No. When we have any cause of suspecting tuberculosis we cease to have the milk sold.

28510. What do you do with the cattle?—They are isolated, and fattened off.

28511. And they come into the abattoir and are slaughtered?—Yes.

28512. What was the result?—I had not the opportunity of following them up.

28513. A detailed post-mortem examination of these animals was not made?—Not by me. It is very hard to follow up an animal that way.

28514. Mr. O'BRIEN.—Can you ensure their being isolated?—Yes. When there is an indurated udder the owner is ordered not to use the milk.

28515. You don't take charge of the cow to see that she is isolated?—No.

28516. You have to depend on the owner to isolate it?—Yes; they are quite willing to do that. I have no case of tuberculous udders or suspicious udders, except as showing unhealthy symptoms. When there is a tuberculous udder or hard udder, or anything wrong with the teats, the milk is stopped at once.

28517. Professor METTAM.—Is it an easy or a difficult thing to form an opinion as to a particular disease of the udder; is tuberculosis of the udder, for instance, an easy thing to diagnose?—I distinguish it by a hard and painless swelling of the udder and by the weighty and firm appearance of it. It has a very weighty feel.

28518. How do you know it is tuberculosis of the udder?—I have never gone to testing the milk. I have never gone so far. It is not necessary where you have the symptoms of tuberculosis.

28519. Quite true, but supposing you have got the symptoms of udder disease, don't you think the rational conclusion would be to follow it up to see if it was tuberculosis?—Yes; we would have to have a bacteriologist.

28520. Do you think medical officers do much examination of cattle?—I cannot say positively, but I think the medical officers don't examine the cows.

28521. Do you know if these medical officers have the power of bringing in a veterinary surgeon?—I never heard of it.

28522. You don't know whether they have the power to do so if they wish for help in their examinations?—I have never heard of it.

28523. As to these reactors, you say that the difficulty is the question of getting rid of them?—Yes.

28524. Might I suggest that they might be fattened off?—Yes, but that costs money. The cows are bought as milkers, and they are in full milk, and if a cow does not fatten what is to be done with her?

28525. If she is dry she will fatten?—Yes, but you must dry her first. She might not go dry for months. If you could compensate the owner you could stamp out tuberculosis, but we have these cows in full milk, and they will not fatten as long as they are milking.

28526. Mr. O'BRIEN.—Could a cow not be dried off artificially?

The CHAIRMAN.—Her period of lactation could be restricted. You cannot dry up a cow in full milk with safety in less than four or five weeks?—I see in testing stock with tuberculin it is sometimes the best milkers and the healthiest looking cows that react. What is to be done with an animal like that? The owner will say "I will milk away and sell my milk and no one will stop me."

28527. Professor METTAM.—You have the power to stop the supply of this milk?—Of a reactor?

28528. Yes?—I have the power to stop a reactor; what is to be done with her?

28529. That is not the question I am putting to you; have you not got the power?—I don't know.

28530. If an animal is giving tubercular milk, have you not the power to stop it?—If I have a healthy looking cow I have no power.

28531. The CHAIRMAN.—A further step would be to have the milk subjected to bacteriological examination?—There would be no power where you have not a tuberculous udder. If you have a healthy pliable udder and the cow showing all the other symptoms of health, there is no fear of tuberculosis.

28532. Professor METTAM.—Do you know that a cow which might have a perfectly normal udder might be infected with tuberculosis?—Certainly. But not so dangerous as a tubercular udder.

28533. That is the conclusion of the Royal Commission on Tuberculosis?—How did it convey the tubercle?

28534. By the blood stream to the udder or the excrement?—How would it come?

28535. From the lesions?—When there are no lesions?

Mr. R. SHIER examined.

28536. The CHAIRMAN.—You are superintendent, I understand, Mr. Shier, of the Derry abattoir?—Yes, sir.

28537. You have handed in to the Commission a table giving the number of animals slaughtered at the abattoir since 1907?—Yes.

28538. And showing the number of animals that were sent in, and the number that were affected with tuberculosis?—Yes.

28539. Unfortunately the number affected with tuberculosis coming under observation seems to be rather on the increase?—It does.

28540. Would you tell the Commission whether the increase is in the cows that are slaughtered at the abattoir or in other stock?—Principally cows.

28541. Is there any post-mortem examination made by a veterinary inspector for the purpose of ascertaining whether or not the meat slaughtered at the abattoir is fit for food?—Yes, certainly.

28542. Who is the officer?—Mr. Howatt when necessary, and the medical officer of health.

28543. They are not, I take it, expected to examine every carcass that is slaughtered; it is only when their attention is directed to a suspicious case that they make a minute examination?—That is so.

28544. But who is to determine what is the suspicious carcass, and the one that is to pass unchallenged?—I am.

28545. Have you any professional qualifications?—Only what I have acquired.

28546. Nothing except the knowledge that you have acquired from experience and observation?—Yes.

28547. Do you find that your judgment is confirmed in the majority of instances when you direct attention to the condition of an animal?—In almost every case.

28548. The men engaged in the slaughter themselves, I take it, acquire a certain amount of experience, and they call your attention to these suspicious cases?—That is not the case, I regret to say.

28549. You have to make the inspection yourself?—Yes, I have to inspect every cow that is killed, and before it is killed.

28550. Do you direct more of your attention to the cows than to the other stock?—Yes.

28551. Because you find that a larger number of the cows relatively would be affected with tuberculous lesions?—Yes, that is so.

28552. Have you ever seen any cow brought in for slaughter that would exhibit clinical symptoms of tuberculosis?—Yes. I have seen cases of the udder, and other cases where the hide and the hair of the beast are standing and dry looking, and that attracts my attention.

28553. Exhibiting an unhealthy appearance?—Yes.

28554. And you make an inspection before slaughter, and if the appearance rouses your suspicion you make an inspection afterwards?—Yes. I watch the animal when she is killed.

28555. There has been a more or less progressive increase in regard to the figures you have handed in. The average number of animals slaughtered would be somewhere about 5,000 per annum during the last six or seven years?—Yes.

28556. And of those in 1907, two cows were found to be suffering from tuberculosis; in 1908, 25; in 1909, 30; in 1910, 32; in 1911, 32; and in 1912, 36?—Yes.

28557. These are the last figures available for the full period. For the broken period from the 1st April to the 10th August, 1,784 cattle have been slaughtered and 17 have been found suffering from tuberculous affection, which would run the percentage above what it has been in any other year?—Yes. The figures since March, 1907, are fully set out in this table.

YEAR ENDED	Number of Cattle Slaughtered.	Number of Cattle affected with		Number of Cattle Sound.	Number of Cows affected with Tuberculosis.
		Tuber- culosis.	Other Diseases.		
31 March, 1907,	4848	2	2	4844	2
" 1908,	5085	26	3	5056	25
" 1909,	4598	31	1	4566	30
" 1910,	4896	32	5	4859	32
" 1911,	4994	33	—	4961	32
" 1912,	4900	38	2	4860	36
From 1 April, 1912, to 10- Aug., 1912,	1784	17	2	1765	17

28558. Do you find tuberculous lesions in any other carcasses except those of cows?—In pigs, occasionally.

28559. Do you find a bull or heifer brought in to slaughter which has been fed to maturity suffering from tuberculous lesions?—Yes. Not so very long ago I found a bullock costing £15 10s., and it was a very bad case.

28560. And exhibiting no clinical symptoms of tuberculosis so far as you could see?—It was a splendid beast so far as I could see.

28561. And fat?—Yes, and three weeks before that I had a bull, a splendid animal, which was also a bad case.

28562. Who was at the loss of the carcass?—The buyer.

28563. And has he no redress against the person who sells?—Sometimes they get back half.

28564. But, of course, there is no guarantee?—I think that as a rule they get no guarantee, especially if they know the beast is going to the slaughter-house.

28565. Are all the beasts that are slaughtered for consumption in Derry killed in the abattoir?—Yes.

28566. There are no licensed slaughter-houses in the city?—No.

28567. What becomes of the carcasses of the animals that are condemned?—They are sent to the bone company and destroyed.

28568. And there is no fear that they go into human consumption?—No; the sanitary officer follows the carcass.

28569. What condition would the cows be in that show tuberculous lesions when slaughtered as regards flesh?—They are generally thin.

28570. And they are sold out because they are exhibiting symptoms of ill health?—As a rule, I think not. I think they are pretty cautious about bringing in to the slaughter-house cattle which they think are affected.

28571. I quite follow, but at the same time they are sent to the abattoir as a means of ascertaining whether or not they are fit for human food, and they are got rid of?—Yes, to the buyer's loss.

28572. Did he realise that they had to be got rid of, and it is as convenient to send them to the abattoir as elsewhere?—Yes.

28573. He knows that no risk will be incurred because the flesh will be examined, and there is no fear of the public health being endangered?—Yes.

28574. Would these be all cows that have been in the dairy herds in the city that are in the abattoir, or would they come from the outside area?—They are bought in the markets around the country.

28575. What distance would cattle slaughtered in your abattoir be purchased?—From Omagh, Strabane, Dungiven, and all the fairs around the country.

28576. Mr. WILSON.—Have you formed an opinion, or heard any opinion expressed, as to why the percentage of tuberculous cows should be increasing; is it due to a more strict examination?—Since 1906 it appears it is. In 1906 there were only two.

28577. The explanation may be that the examination has become stricter?—Yes.

28578. The CHAIRMAN.—Your appointment was in 1906?—At the latter end of that year.

28579. You have examined about the same number one year as another?—Yes, I never varied.

28580. Mr. O'BRIEN.—You say that there are no private slaughter-houses attached to the butchers' shops in the city?—There are not.

28581. Are they not allowed to have them?—No.

28582. Has a butcher any right to slaughter an animal of any sort on his premises?—He has not; he renders himself liable to a penalty, I think, of £5.

28583. And that rule is never broken?—Not that I am aware of.

28584. You have not had such a case?—I would not have a case.

28585. You would have heard if there was such a case?—Yes.

28586. Prof. METTAM.—These thirty odd animals that were condemned for tuberculosis, were they condemned as being unfit for human consumption?—Yes.

28587. What is your standard of condemnation; what do you consider to be the necessary point for an animal to attain in order to be condemned?—My test is if I find that the peritoneum is covered with tubercle or the sides. I lock the beast up and send for Mr. Fletcher.

Mr. R. SMITH.—18th August, 1912.

28588. So therefore the amount of tubercle that you consider sufficient is relatively a large lesion?—Yes, in the case of tuberculosis.

28589. You don't condemn for small lesions of tuberculosis?—I do if they are general.

28590. Suppose you find an odd nodule of tubercle or two, do you pass that carcass?—I do.

28591. And it is only when the lesions are extensive that you consider it necessary to condemn it?—I would not say extensive. If the carcass is fairly well marked I lock the beast up.

28592. Must the lesions, to justify condemnation, be in both cavities of the body?—As a rule they are.

28593. Are there many swine killed in the abattoir?—We kill on an average about twenty or thirty a week.

28594. Do you find tuberculosis common in swine?—No.

28595. Do you make a careful examination of these also?—Yes, as well as I can. I don't think I have power to cut off the head.

28596. Taking the viscera generally, you don't find tuberculosis numerous in swine?—No.

28597. Not as numerous as some people believe?—I have not found it.

28598. Is there any inspection of flesh brought into the city. I suppose there are butchers in the country who kill animals and send them into the city?—I don't think so.

28599. Is there any dead meat market here?—No.

28600. Is any meat brought in by train?—Some get meat from Glasgow.

28601. Is that inspected at all?—Not that I am aware of.

28602. Then it is quite possible that meat may come into the town and be purveyed by the butchers of the town that has never been inspected at all?—I suppose so. I really don't know.

28603. There is no dead meat market in connection with the abattoir?—No.

28604. They are not in the habit of sending in meat from the country to your abattoir before being sold in the city?—No.

28605. Do you ever come across cases of advanced tuberculosis in the case of animals that are fat?—Yes. 28606. All these cases of tuberculosis are not necessarily animals that are very thin?—No, certainly.

28607. They may be animals in prime condition?—Yes. I got a splendid cow that the owner paid £17 for, and she was unfit for human consumption.

Mrs. STEELE HANNA examined.

28608. The CHAIRMAN.—I understand, Mrs. Hanna, you are the Honorary Secretary of the Eglinton Branch of the Women's National Health Association in County Londonderry?—Yes.

28609. Will you kindly tell the Commission to what part of the work of this association your colleagues are devoting most of their attention. Have they taken up the question of the milk supply for the children?—No; I am afraid they have not very much.

28610. And their observation and the knowledge they have gained of the way in which children are nourished did not suggest to them the necessity of taking action on this matter?—No. This is a very scattered district that we have, and we have only attended to the children in the school by giving them proper nourishment.

28611. What form does that nourishment take?—Gruel, vegetable soup, cocoa, and things of that sort.

28612. Do you provide them with a midday meal?—Yes, during the winter. The children take their turn in bringing a vegetable, and it is cooked in the school-room; a demonstration is given, and they get the cooked article.

28613. By whom are the demonstrations given?—By the school teachers.

28614. Have they got special qualifications to enable them to give these demonstrations?—I don't know, but I know they give cookery lessons.

28615. Schools under the control of the National Board?—Yes.

28616. Do you know whether or not any of the teachers in these schools have got any qualifications from the domestic economy point of view—whether they have gone through any special course of training?—I don't know, except that they have to get it as part of their appointment.

28617. I am afraid it is not incumbent on them to get a domestic economy course. Do you find school-managers co-operating with you?—Yes, very strongly in our district.

28618. And they give you all the facilities necessary?—Yes.

28619. From what source is the expenditure met; is it out of the funds of your local branch?—No; not very much. The children sometimes pay a little; they bring a pennyworth of barley and other things and then in some cases the Governor's wife provides the gruel or cocoa. Our funds have been used for the clothing of children.

28620. Rather than for the feeding?—Yes. We started the matter of the feeding and it was afterwards taken up by the school managers.

28621. Mr. WILSON.—What district are you speaking of?—Of the district about six miles away, between Derry and Limavady.

28622. Is that an agricultural district?—Yes.

28623. These will be children of the labouring classes?—Yes.

28624. The CHAIRMAN.—Have you got a Jubilee or district nurse?—No.

28625. Have any of the officers ever reported to your branch that they found children who were wasted and needing a milk diet and were unable to procure it?—We ask for reports once a month of the sick people in the district from the three different clergymen and the doctor; they send in names and reports of the illness and requirements, and at our monthly meetings we do our best to meet the requirements of the patients. Each thing is given out by vote of the committee.

28626. Is milk an article of diet that is often suggested in such cases?—Yes, and eggs.

28627. Have you any difficulty in procuring the milk in the winter season?—Not so much as some years ago. It is improving, and more goats are kept. Since the labourers have been supplied with cottages they have more facilities for keeping goats, and they are more independent. Farmers, as a rule, have not cared for goats, and now the labourers are able to do it themselves.

28628. And that is helping the milk supply?—Yes, decidedly.

28629. At what price would the milk be bought that might be purveyed by your branch?—2½d. a quart at any period of the year.

28630. That is not a prohibitive price?—No, not by any means. It was only last year—I speak as a large milk vendor—that the price was put up to 3d. a quart.

28631. That was in consequence of the dry season?—Yes, and one thing and another.

28632. Prof. METTAM.—Have you kept the price up?—Well, not absolutely. In some cases we have.

28633. The CHAIRMAN.—You spoke of being a large milk vendor?—Yes.

28634. Do you find the yield of milk of your cows improving?—We are always changing our stock. Our idea is to get new milkers into the byre.

28635. Fresh calving cows?—Yes, and we have a system by which we have so many coming every month. We keep forty in full milk in the winter and twenty-five or thirty in the summer.

28636. Do you provide food for the winter feeding of your cows?—Yes, green crops.

28637. Do you send milk into the city?—Yes.

28638. By rail or road?—By road.

28639. Your milk is sent round the city?—Yes.

28640. Do you supply the industrial population?—We supply the workhouse and the barracks. I think ours is the only cart allowed into the barracks. At one time there were three or four contractors allowed in, but there was a rigid inspection, and ours is now the only one allowed in. We are absolutely responsible for the quality of the milk we supply. We have to get a pass every year from the barracks.

28641. Is any inspection made of your stock previous to the issue of the pass by the military authorities?—Our dairies are inspected once a year by an inspector. The stock are not inspected by any official.

28642. By no professional man?—No. There is no necessity for it as we have the cows tested ourselves.

There was once a little outbreak of something in the barracks, and an inspection was made of our premises, but everything was found all right.

28643. Professor METTAM.—Who made that inspection?—The military people came out, and also the medical officers.

28644. The CHAIRMAN.—What Union are you in?—No. 1 Rural District of Derry.

28645. I wanted to know whether any inspection was made by any officer of a local authority?—No; only by the medical officer of health.

28646. Professor METTAM.—The doctor only inspects the byres?—Yes. He comes with a tape measure and sees if it is large enough, and whitewashed, and if the ventilation is right.

28647. He makes no animal inspection?—No, not at all.

28648. The CHAIRMAN.—Have you read the provisions of the Order?—Yes, at the time it was issued, to see what I should do.

28649. As one having a practical knowledge of the management of such an industry, do you think there is anything in this Order that is unduly harassing?—No; I welcome inspection; it should be a more rigid and more independent inspection. As I stated in Dublin, it is more than can be expected that a local man could give evidence against his own interests—against his bread-and-butter.

28650. Your view would be that it would lead to a more efficient administration of the Order if the Officers appointed were independent of local feeling?—Yes. I don't see how it could be carried out otherwise with any good result. The inspector should be in an independent position.

28651. That seems quite apparent; and there appears to be a consensus of opinion amongst the witnesses examined before us that the persons carrying out the Order should not be dependent on those against whom the regulation should be enforced?—Certainly not.

28652. Do you think there is any scarcity of milk in your district amongst the working-class population?—I don't think so now. The milk supply has improved very much in recent years. There is no creamery within miles of us.

28653. Does the custom exist of giving working men a milk supply?—Yes.

28654. It is the universal custom?—Yes, both for sweet milk and for buttermilk.

28655. Do you notice that the school children are delicate and exhibiting symptoms of insufficient nourishment?—I think they are very well attended to in our district.

28656. You have not heard of children being fed on tea and black coffee as has been given in evidence to the Commission elsewhere?—Well, I think that tea drinking is not so bad as it was.

28657. Miss McNEILL.—You think the children are getting more milk?—Yes.

28658. The CHAIRMAN.—And the people are getting a better appreciation of the value of milk as a food?—Yes.

28659. And make a more vigorous effort to provide it?—Yes, and I believe even with the goats they are able to give the children more milk. There is more home baking carried on as the people have some opportunity of getting buttermilk.

28660. Mr. WILSON.—There is an increased production of milk in your neighbourhood?—Yes. People used to come to me four or five miles to get a pint or a quart of milk, but for the last two or three winters they did not come so much.

28661. Mr. O'BRIEN.—Is that because you raised the price?—No.

28662. Professor METTAM.—They have been able to get it nearer home?—Yes; one or two neighbours were members of our association, and they made an effort to supply people in their own districts with milk. This matter came up at our meetings, and I told them where the children who used to come to me for milk came from.

28663. Mr. O'BRIEN.—Can you tell us at all what amount of milk is taken in for a family of four or five. Take, for instance, your own labourers. You give them so much milk as part of their wages?—No. We don't give it as part of their wages. We give them the bulk in money, and at the end of the week they pay so much for the coal and the milk. They take on an average a quart a day—I am speaking of our

own people. I have only one family taking a pint a day. I cannot even say that, because they often come for an extra pint.

28664. The family that take a quart a day, have they to feed a few children as well as colour the parents' tea?—Yes; two or three children, on an average.

28665. You would prefer to see that each child had at least a quart of milk a day?—Certainly.

28666. Do you think that the people could not afford it, or that they don't feel that they get sufficient food value for the money?—They use a good deal of buttermilk. They get nine quarts of it for 3d.—I mean my own labourers. I charge 1d. a quart to outsiders. The buttermilk is used entirely for porridge and baking, and they drink it with their dinner. I know how some of the other people quite close to me work, and I think that where they work on our system it is better; the people feel they have more money, and put it to better use.

28667. Lady EVERARD.—Do you consider the mothers appreciate the value of milk as a food for their children?—Well, I don't think that as a rule they do, but I think that now in our own district, since we have had so many lectures, and given them so much instruction, they are beginning to realise it.

28668. Mr. O'BRIEN.—Do the mothers feed their children?—To a great extent.

28669. For the full period of nine months?—Yes; in fact, I think more, sometimes.

28670. Lady EVERARD.—Do you consider that all the by-products of milk should be placed under the same rules and regulations as new milk?—I do, most decidedly.

28671. Mr. WILSON.—The improvement in your district seems to be largely due to the work done by the members of the Women's National Health Association?—Not entirely. Instruction has been given in fruit-growing, poultry, cooking, laundry, and butter-making. I think the instruction in butter-making and cookery has done more than anything else. There is a very strong society, called the Faughanvale Gardening Society. The people are visited and special prizes are given, where the windows are kept open, and other precautions taken to stamp out tuberculosis. This is written down on the schedule.

28672. That is a voluntary society?—Yes.

28673. And you have competitions?—Yes; visits are paid to the houses and prizes are given according to the number of points under each section.

28674. Has that been going on for any length of time?—Yes, a good number of years, and it is improving every year.

28675. I gather from all that you have said that the building of these labourers' cottages does not seem in your district to have given rise to any friction between the labourers and the farmers?—No. For a long time the labourers seemed to fight shy of going into the cottages, but now I believe they are all occupied. I think they would rather have the money and pay rent and have their independence. The houses they had been in were old, and they had no pride in looking after them.

28676. We were told that in some places where the labourer got his independence, the employer did not continue to supply him with milk; that does not seem to have occurred in your district?—I don't know that it has occurred.

28677. Mr. O'BRIEN.—In this scheme of giving instruction in cookery and then utilising the food for the feeding of the children, who gives the instruction?—The National School teacher.

28678. Is she paid an extra grant for that?—I don't know.

28679. Who washes up?—The children.

28680. The parents don't object to their children being kept from home to wash up?—I don't think so. I think it is done in the luncheon time. Certain children will bring the ingredients one day, and others will wash up the vessels.

28681. The school-teacher or manager does not make any objection?—No.

28682. Because down in the south we found that the school manager is very apt to object and say that it is adding to the work of the teachers, for which they are not adequately paid, and, therefore, they object to it?—They do not do so here.

28683. The managers say that the teacher's first business is to provide instruction in certain things, and that their teachers are provided for that and not for cookery

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classes?—I think the first instruction for a country child should be cookery. Are not they paid to give cookery lessons once or twice a week.

28684. It is optional, I think; it depends on the manager?—I have known where the teacher has come in and taken a course of lectures in order to teach the children.

28685. They may do that, but it is not obligatory on them to do so?—I see. I am speaking now of four schools within three miles of my own house, where I know they get cookery lessons, and at three of them they get gruel and soup at mid-day.

Dr. GEORGE B. McCAUL, J.P., examined.

28690. The CHAIRMAN.—You are a medical practitioner, Dr. McCaul, resident in Derry?—Yes.

28691. And have you any experience of factory operatives here?—Yes; I have two thousand of them under my care.

28692. Would you tell us what condition you find them in. Are they boys, or girls, or men?—Almost entirely girls.

28693. At what age do they go into the factory?—At fourteen.

28694. And they remain how long?—Some of them for a life time.

28695. Is their occupation unhealthy?—No, not under modern conditions.

28696. Is the general health of the factory operatives reasonably good?—Particularly good.

28697. Do you think they are properly nourished for the occupation in which they are engaged?—Yes.

28698. Do you find any exceptions to the rule?—When a girl comes from the country, and has not been brought up to the business, she would find it difficult to live by the shirt-making.

28699. What wages would girls who are adepts make at the shirt-making?—From 12s. to 18s. a week; some of them are very nimble. Generations before them acquired the trade. Of course, there are others again earning only 4s. or 5s. a week.

28700. If a girl is at all tractable, in a short time the return from her labour will increase?—Yes. She would get to be a manager or superintendent.

28701. And then would get an increased wage, of course?—Yes.

28702. Do they take a meal in the factory?—Those who come from a distance four or five miles do.

28703. And they would come that distance?—Yes, as far as four miles.

28704. You attend them in their homes as well as in the factory if they should be ill?—Yes.

28705. Provision is made by the factory owners?—Yes.

28706. What sort of food do they get at their mid-day hour in the factory?—They used to take tea, but I recommend buttermilk if they cannot get sweet milk.

28707. With bread?—Yes. They used to endeavour to take the mid-day meal as the principal meal of the day, but I told them not to do so.

28708. Do they ever complain of the scarcity of milk?—No.

28709. Do they appreciate the value of milk as a food, or do you find it necessary to inculcate that knowledge?—I find it necessary to be always at it.

28710. Which shows that they don't start with the inherent knowledge of the value of milk as a food?—Yes.

28711. Which, I take it, you regard as unfortunate?—Yes.

28712. Do you think matters are improved from that point of view?—Yes; greatly improved.

28713. And no complaint has been made by any of these that they find it impossible to provide themselves with a milk diet?—No; there is ample milk, and good milk, in Derry. I know that from being a member of the Corporation and from the analysis of the milk. The farmers about Derry have a knowledge of farming and of cattle.

28714. Do you think they are careful of the manner in which milk is handled?—Yes, latterly. We have not had a case of infectious disease from a milk supply for four or five years, so far as I know.

28715. You attribute the absence of infection from milk to the improved care taken in the handling of the milk?—Yes.

28686. By gruel, do you mean oatmeal porridge?—Yes. They really prefer the soup to anything else, even to milk.

28687. Is it purely vegetable soup?—Yes. I think it is well to bring under the notice of parents that good soup can be made from vegetables and water.

28688. I suppose none of the labourers take soup?—No; not that I know of.

28689. You have not got so far in their education as that?—No. I am afraid only the tea is taken to the field; it is taken to them by their children in cans.

28716. Have you many cases of tuberculosis amongst your factory operatives?—Yes.

28717. Is it diminishing or increasing?—It is diminishing. They all appreciate the value of fresh air.

28718. Professor METTAM.—What form does it take?—Generally pulmonary.

28719. The glandular is more common than the pulmonary?—Not amongst the factory operatives.

28720. The CHAIRMAN.—Is it your opinion that amongst the factory operatives tuberculous affection is on the decline?—Yes; I am sure of it.

28721. Wherever it does develop, do you find you have much difficulty in ensuring that reasonable precautions are taken to prevent the spread of the infection?—We have no difficulty in the city. We have such a staff of nurses, and from the initial stages they are constantly visiting. The district nurses have made a vast improvement here.

28722. Professor METTAM.—There is no sanatorium?—No.

28723. The CHAIRMAN.—Would they be willing to go to a sanatorium if it was available?—Yes. All appreciate the value of the sanatorium treatment; it is educative as well as curative.

28724. Is it your opinion that a local authority such as the Derry Corporation should have the right to go into the rural area for the purpose of ascertaining the conditions under which milk is raised and handled by those who send it into the city for consumption?—I think that would be a great advantage.

28725. And would tend to be helpful in preserving the public health?—Yes, very materially.

28726. Which, after all, is the prime consideration of every local authority?—Yes.

28727. Professor METTAM.—Suppose there is an outbreak of diphtheria in Derry, and you have reason to suspect that it is milk-borne, have not the authority the power to go to the outside district?—In these circumstances they have.

28728. The CHAIRMAN.—And if the persons purveying the milk do not wish inspection, it is necessary for them to get a Magistrate's Order?—Yes.

28729. That was the trouble in Belfast?—Yes. The ordinary sanitary officer is no good for making an investigation like that.

28730. Such an examination should be carried out by a professional man?—Yes.

28731. It is quite apparent that there could be no sympathy of administration if one local authority sends out a non-professional man to a district in which a professional man is in charge?—Yes.

28732. It is perfectly clear that there would be no helpful co-operation amongst two such officers?—No.

28733. Have you much knowledge of the conditions under which children are fed—have you any practice amongst the industrial population in their own homes?—Yes.

28734. Do the mothers as a rule appreciate the value of milk as a food for their children?—They do.

28735. And are quite willing to expend as much as their means will allow in order to provide a milk diet for their children?—Yes.

28736. Do you find that some of them are too poor to provide a proper milk food for their families?—Some of them are.

28737. Where you would have a large family, and only one earning?—Yes. Where the child gets sick, the sick nurse steps in and supplies them.

28738. So in a fairly thickly populated district like this, hardship is not so likely to occur as in districts where the population is more scattered?—Yes.

28739. Have you experience of rural districts?—Yes.

28740. Have the people there a reasonably adequate supply?—I allow to my own men three pints of milk and as much buttermilk as they wish to take.

28741. Does that custom generally prevail in your district?—Yes.

28742. Do you produce much milk now?—No, but I used to in former years.

28743. What I want to know from you is this: do you find that the milk yield of the cow has diminished or increased?—I think it is not increasing, but the quality of the milk is improved.

28744. Do you consider that to be consequent on the improved treatment of the cows?—Yes, and improved feeding. The quality of solids in milk in our neighbourhood is 12.5 and 3.5 of butter fat. Buttermilk is also fairly good. It is .25 to .75 per cent. of fat; 8 per cent. of solids, and while I am on this subject I would like to refer to the value of milk in contradistinction to porter. Nursing mothers sometimes think that porter is the best article to sustain them, and I would like to say that there is no comparison in the value of the two articles of diet—milk and porter. The solids in porter vary from 6 to 7 per cent; alcohol, 5 to 7 per cent. Chemistry says there is no food value in alcohol, or stimulants such as tea. I have told you that the solid constituents in sweet milk are 12.5 per cent. and 3.5 of fat and 9 per cent. of solids.

28745. The comparison you have given us between porter and new milk is very useful, because one realises that an overwhelming amount of ignorance prevails on that point?—Yes. I would like to mention also that you will get a quart of buttermilk for $\frac{1}{4}$ d., and a quart of porter would cost 5d., so that buttermilk is much better and a cheaper food, and much healthier.

28746. The workingman does not take the porter as food?—He does.

28747. It is quite a common belief that porter is nourishing and that it enables them to get through their laborious occupations?—Yes.

28748. Is there any other point, Dr. McCaul, to which you would like to direct the attention of the Commission?—I need not tell you the number of tuberculous cattle there are in the country.

28749. Do you think that is increasing?—Not lately, but there seems to be a tremendous amount of it. There are 1,680,000 tuberculous cows in Great Britain; and according to Professor Wilson, of Edinburgh, who has made tests all over the country, 40 per cent. of the cattle are tuberculous.

28750. Is that Ireland?—No; it is Great Britain.

28751. The CHAIRMAN.—I am glad to be able to tell you that this Commission has had evidence from a professional man who has had practice on both sides of the channel in two or three districts in which dairying was largely followed in England, and in a district in Ireland, where one would not look for the most healthful conditions, and by comparison Irish cattle seem to be more free from tuberculosis than the English cattle?—I am glad to hear it. Seeing that there are such numbers of tuberculous cattle in the country, my idea is that there is a great need of more veterinary inspection to stamp out tuberculosis. The cattle should be examined by really qualified veterinary surgeons, and the tuberculin test applied. This would tend to reduce tuberculosis.

28752. You would be strongly of opinion that it is desirable that there should be uniform administration with regard to the inspection of cattle and the standard of health that should be maintained, and the standard of efficiency so far as cleanliness and healthy surroundings are concerned?—Yes, it is most desirable.

28753. And you think if it imposed an additional burthen on the rates or taxes that it would be well expended?—Yes; and particularly the veterinary surgeons to apply the tuberculin test.

28754. And to see that these cattle were kept in a condition that would be likely to enable them to produce a milk supply for the population, and particularly for the children?—Yes. Of course, we have that in the city.

28755. But what I wanted to know was whether you would not desire to see the same provisions that are in force in Derry applying universally; because one recognises that although a high degree of efficiency may be exercised in one place, the results may be nullified if

there are other districts in which the conditions are not so satisfactory?—Yes. I would also like to recommend the appointment of a medical officer in every county.

28756. Lady EVERARD.—A whole-time officer?—Yes.

28757. A veterinary surgeon and a medical officer?—Yes.

28758. The CHAIRMAN.—Have you had any personal experience of typhoid carriers?—I have had no personal experience; but I know that their existence is universally held now. The bacilli of typhoid have been found in the system of a patient having that disease four or six years afterwards.

28759. Lady EVERARD.—You said that you thought that an urban district ought to have the right to go outside their area to inspect the condition in which the milk that is sent into the city is produced?—Yes.

28760. Under the Tuberculosis Prevention Act of 1908, Section 19, the local authority has power to apply to the Local Government Board?—Yes; but that is roundabout.

28761. You don't want to have to apply to the Local Government Board?—No.

28762. What is the price of milk in your district?— $2\frac{1}{4}$ d. a quart.

28763. I take it, from your evidence, that you approve of the buttermilk, skim milk, and butter—all the by-products of milk—being placed under the same rules and regulations as new milk?—Yes.

28764. Is the long-tube feeding bottle used in your district?—We are trying to get the people to give it up. It is troublesome.

28765. It is very dangerous?—It is, certainly; and particularly in this season of the year.

28766. In fact, don't you think that its use ought to be prohibited by law, as in France?—Yes.

28767. Mr. WILSON.—I gather that the greater part of the factory operatives are women?—Yes.

28768. What happens to the men?—There are some men employed as clerks, but the workers are all women.

28769. In other words, the women are largely the bread-winners?—Yes.

28770. The CHAIRMAN.—Do they continue in their factory occupation after marriage?—Yes, unfortunately, they do. I have women in the factory with ten or eleven children. There is lots of work for women in the city, but not for men. They cannot get enough women in Derry.

28771. Is there any weaving done?—No. It is only manufacturing shirts.

28772. Is that a developing trade?—Yes.

28773. They manufacture not only for a home trade, but for an export trade?—Yes, they export all over the world. They are providing shirts and collars for the world.

28774. Mr. O'BRIEN.—The fact that the women are being employed in the factories means that they bottle-feed the babies instead of nursing them?—Yes.

28775. For that, do they get a good supply of pure milk?—Yes.

28776. A sufficient quantity, do you think?—Yes.

28777. They will pay readily to get a full supply of pure milk for the infant baby?—Yes; it is the cheapest food they can give it.

28778. People don't always realise that?—These people do.

28779. Mr. WILSON.—What is the infantile mortality rate in Derry?—I don't exactly know. It is low in comparison with other places.

28780. Mr. O'BRIEN.—What do the women do with their babies when they go to work; are there any crèches or babies clubs?—Some ladies in Derry started that, but I don't think it worked very well. The working women prefer to get old women to look after their children.

28781. Is the babies club in existence still?—I don't think so; it was not patronised. That did well enough for one baby, but it would not work in the case of three or four children.

28782. The crèche would have to take the whole family of children?—Yes.

28783. And the father is not much good looking after the family?—Some of them are trained to look after the house very well, too.

28784. Miss MCNEILL.—I think you said there were a good many district nurses in Derry?—Yes.

28785. Do they take an interest in babies?—They instruct the mothers in the care of infants.

28786. They do the work largely done by the babies clubs elsewhere?—Yes.

28787. How many nurses are there in Derry?—Seven.

28788. How is the money provided?—Voluntary subscriptions. They are most valuable in the town.

They have educated the people to keep their houses clean, and do not hesitate to point out all defects that they see in the house, and they instruct the mothers in the care of their children.

Major Sir NICHOLAS GOSSELIN examined.

28789. The CHAIRMAN.—You have been interested in agriculture to some extent, I understand, Major Gosselin?—Yes.

28790. You are a member of the County Monaghan Agricultural Committee, and a land-owner in different counties in the province of Ulster?—Yes, in Donegal and Monaghan.

28791. We heard incidentally yesterday at Killybegs of your interest in the milk supply in the Donegal region. You undertook some dairying in recent years for the production of milk for the industrial population?—Yes.

28792. Would you be good enough to give the Commission the history of that enterprise and how it has resulted?—I got a farm there from the Marquis of Conyngham, and I saw that there was a great want—that the people did not understand what a good cow was. I also thought I would show them a cow that would be profitable, and that they could feed with advantage to themselves, so I bought Dexter cattle, and I started a dairy with about sixteen Dexter cows. I sent a girl to the Glasnevin college for training, and she managed the dairy for me until she got married. I got another girl and she got married also, and I got quite tired of sending any more.

28793. It improved their matrimonial prospects?—Yes. After running the dairy for nine or ten years the supply of dairy-maids began to get exhausted.

28794. It was more difficult to provide dairy-maids than dairy cows?—Yes. When I had the Dexter cows there, the men thought that the calf was not good enough for the market, so I bought eight bulls altogether. I bought two bulls first.

28795. What breed?—Polled Angus. I bought two Polled Angus, two Red-Polled, one Jersey, one Kerry, and two Dexters—eight in all, and strange to say the only descendants of the animals that went there are those of the Jersey—absolutely the last one you would think of. When the women got hold of a half-bred Jersey they would not part with it.

28796. Was it the quantity or the quality of the milk that appealed to them?—The quality. Notwithstanding the poverty of the soil there, you still found that the Jersey cross-bred cow yielded rich milk.

28797. Milk rich in butter fat?—Yes, and the descendants of that animal are there to-day, although it is fifteen or sixteen years ago. The difficulty you have to deal with is that no matter what bull you bring into the country, the produce will be sold unless you can stop it. You get the best milking strain bull in the world and you let him to the people, but the moment his produce is ready to be sold the people are hard up for money and they will sell it. I am at this thing for twenty years and I have looked at it very closely. I have got to the very bottom of it, I think, and I don't think there is any question connected with the milk that I am not able to speak to you about with knowledge.

28798. We were told yesterday at Killybegs that other people profited, I take it, by the example you showed them in undertaking somewhat of a similar experiment in regard to the milk supply in the Donegal district. Did you hear anything of that?—No.

28799. We were told that farmers devoted more attention to the produce of milk, and to the sale of milk, in consequence of what they had seen accomplished?—Yes, they did it in my district. There are several milk-sellers there now.

28800. That shows the enormous advantage there is in having one who is willing to make an experiment in order to convince people by practical experience that certain theories can be carried into effect with economic profit. Do you know what class of cow is usually kept in that district?—I am beginning probably at the wrong end, but the improvement of the cattle in the byres of Donegal in late years is really most remarkable. I assure you you could pick, say, in the fair of Dungloe, though it is a very poor district, a very fine train load of cattle.

28801. Has any improvement been brought about in the dairy cattle in that district?—Except in my own immediate district, I don't know of any improvement.

28802. And the introduction of the Galloway and the Aberdeen Angus, although very helpful from the economic point of view of making more money available from the sale of store cattle, has not been helpful in regard to the milk supply?—I would not say that altogether about the Polled Angus. At first there was a great dislike to the Polled Angus from the milk point of view, but the Polled Angus bull I brought from the West of Scotland left fine milkers.

28803. The cross between him and the common cow?—Yes. My son has one of his progeny, I have another, and there is another in Donegal, and they are good milkers.

28804. Are they black cows?—Yes.

28805. You might have been fortunate in getting a bull of a good milking Aberdeen strain?—Yes, and there are bulls of that strain.

28806. One quite recognises that, but taking the ordinary type of Aberdeen bull they are not bred for milk stock?—No.

28807. And the result is if they are indiscriminately used amongst cows that are needed to produce heifers that will subsequently be the milk suppliers of the district, the results will not be satisfactory?—Certainly not.

28808. We heard yesterday something about what the people describe generally as the old Irish cow. Have you any knowledge of the existence of such a beast in your locality?—I have. The first cow I ever bought was in the town of Glenties and she was described as an old Irish cow. She had some streaks of brindle, and she was a very low cow—a big cow on short legs, and she had an enormous capacity for the digestion of food.

28809. A splendid appetite?—A splendid magazine. She was a fair milker and produced good calves. I kept her for nearly ten years.

28810. Are there any such in existence now?—I don't think so.

28811. They are bred out?—Yes.

28812. Do you think they were a distinctive type?—No.

28813. They were an accidental product?—They were probably the survival of the fittest.

28814. You have known specimens of that particular cow so long as you remember cows at all?—Yes. I remember my mother had a cow which was supposed to give forty gallons of milk, but I thought a great deal of that was froth, but at any rate she was a good cow.

28815. If there was a little fiction attached to the record she was still a good milking cow?—Yes.

28816. No milk records are kept by cow-keepers in the Rosses?—No.

28817. We heard a very low estimate at Killybegs as to the milk yield in that region. One witness stated that the yield would not be above 120 gallons in twelve months. That would be extremely small?—If you put them all together and take the mountain cows and the ordinary cows in the low-lands, I think that estimate would run very close to the mark.

28818. You would not think that that was an underestimate?—I would have put it down to 160 gallons or 170 gallons.

28819. What do you attribute the small milk-yield to; is it to the breed of cattle kept, or the manner in which they are reared?—Yes. They have a disease called "Crupon," which means that the animal has been fed on bad heather or bad hay, and she cannot digest any more and she dies. The produce of that cow is weak, and her produce is weak, and they go on deteriorating. At the present time the people are turning their attention more to the beef.

28820. Even although the circumstances are unfavourable, one might hope that it would be possible to bring in some infusion of blood that would be useful from the milk point of view?—Yes. The moment they are satisfied that it is a decided advantage to them—not

an advantage away in the distance, but an immediate advantage—they will grasp it. Let me give you an instance as to how quickly they grasp a good thing. Before the introduction of the poultry reformation, I had come across a breed of ducks which I thought were marvellous. I had a very good shooting in Donegal and I thought I would get on good terms with the people. I sent down a lot of eggs of these ducks. The people went to my keeper every day for the eggs, and that showed how they appreciated them.

28821. Provided you can show them an immediate advantage they don't need much instruction?—No. Look at the eggs of Ireland at the present time—they are something extraordinary. You go down the street of Cootehill, and the eggs you would see there would astonish you. It is astonishing the amount paid in one market day for eggs in the month of May. If you could get the Irish women to so quickly take up the poultry industry, why not get them to take up the keeping of a better cow? About my place in Monaghan, if I had some of these Dexters, not a woman about the place would not have her name down for a Dexter calf. I sold a little Dexter two years and two months old and a countryman gave me £13 18s. for her at an auction.

28822. Quite a good price?—Yes.

28823. For a small beast?—Yes.

28824. That shows appreciation?—It shows you how much they are able to appreciate a good thing.

28825. We will deal with the Donegal area for the moment. Have you thought of what would be the best type of bull to introduce into that region in order to improve the milk yield of the dairy stock?—I have, and I wrote to the Donegal Council about it, and they never had the manners to answer me. My impression is that a Kerry bull would be the best.

28826. A pure-bred Kerry?—A Kerry. It is not so far away from the country cow. His breed is nearer to the country cow.

28827. Not a violent cross?—No.

28828. Do you disapprove of a violent cross?—Yes, for perpetuation.

28829. For the ground-work you consider it bad?—Yes. If you use a Kerry, all his heifers will partake a good deal of the characteristics of the country cow, whereas if the cross is with the Polled Angus, it is a pure-bred Polled Angus calf. The Kerry is hardy, and is easy to feed, and he is not a great big animal who will eat a great deal. I thought at first of a Dexter, but he was too small, but I think if they paid attention to crossing a Kerry with some of their best cows, and keep the best heifers, that in a very short time they would produce a breed suitable both for the mountain and the plain.

28830. And one that would be suitable for the surroundings in which it would have to live, and the food with which it would be nourished?—Yes. I have thought this thing out.

28831. I can quite understand that. Would the people be disposed to patronise such an animal if he were placed at their disposal?—I think so.

28832. With regard to the sale of the male animals that would not be required, how would they compare in value with, say, the Aberdeen or the Shorthorn?—I think they would drop £1 or so.

28833. They would probably be worth £1 less than the produce of another breed, but the increased production of milk would more than compensate for that loss?—Yes, and you would be building up a herd suitable to the wants of the county Donegal.

28834. Is there any branch of the question relative to this particular district of the Rosses, to which you wish to direct our attention other than the introduction of a bull suitable to mate with the cows that are in existence there?—You gave it as your matured opinion that the Kerry is the best bull to introduce?—I did.

28835. Have you ever heard of any complaints in that region that the persistent use of a Galloway bull had diminished the milk yield from the cow so bred?—I have, but to tell you the truth I don't believe it, because I went to the places where I heard the complaints and made an investigation.

28836. We had rather a consensus of opinion on that question along the whole western seaboard over which the Congested Districts Board have been operating for fifteen or twenty years, and the opinion was expressed

very positively and definitely that the persistent use of bulls of this particular type had almost bred out the production of milk, and that it became almost a pure black breed, because of the persistent use of the same breed of bull on the cross-bred heifer?—Were you in Sir Richard Musgrave's, between Killybegs and Glenties?

28837. No, but I was relating the evidence we had of the Connemara district, and I had reason to know that the same policy had been pursued by the Congested Districts Board over all that western sea-board. I know it was the custom of that Board to introduce the Galloway bulls, because of their hardness and their ability to forage for themselves in the mountain pasture, and we heard the result of that at Clifden and elsewhere, that it had almost raised a breed which was useless for milk production?—I examined into one or two cases where a complaint of that kind had been made about the Galloway, and I found the facts were not as stated.

28838. You keep a shorthorn herd in Monaghan?—No, I don't. I keep a mixed herd. The foundation of my herd, I may say, was a Jersey cow, and I have this minute what you don't often find—a cow that gives 1,130 gallons of milk, and I have a heifer two years and five months old which gives about 1,100 gallons.

28839. How was that heifer bred?—They are all bred by the Red-Polled.

28840. A pure-bred?—Yes. I have imported Red-Polleds from Norfolk for two or three years.

28841. Have you bought them from herds in which milk records were kept?—Yes.

28842. Mr. WILSON.—You stuck to the one man's herd all the time?—I have.

28843. The CHAIRMAN.—With regard to this very generous milking heifer and cow, is the milk poor in quality?—No; on the contrary, it is very good.

28844. Rich in butter fat?—Yes, very rich.

28845. You did keep a shorthorn at one time?—Yes.

28846. Have you ever known a shorthorn to come up to that cow you mentioned in the matter of milk yield?—I had one great shorthorn cow; she got milk fever, and after that she was no use.

28847. Had you a heifer calf from her?—Yes.

28848. What type did she turn out?—The worst I ever saw—absolutely the worst. I kept her heifer calf on purpose to see how she would turn out, and she has all the appearance of a good milker.

28849. She has not developed yet?—No.

28850. It would be interesting to know if the characteristics of the grand-dam would be reproduced?—I have kept her for that purpose.

28851. Professor METTAM.—How old is she?—She is about a year-and-a-half old.

28852. The CHAIRMAN.—You are keeping her for the purpose of ascertaining whether the milk-producing qualities may not be reproduced in the second cross?—Yes.

28853. Do you ever cross the Red Polled with the shorthorn?—I have done it now.

28854. You have not yet had enough experience to enable you to know what the result would be?—No.

28855. Do these cows nurse their own calves?—No.

28856. You don't keep milk records regularly?—Yes.

28857. Do you think it would be helpful to the dairy farmers if they got into the habit of keeping these records?—I said a while ago that I was beginning at the wrong end, because you must have the cow first. Unless you turn your attention to getting a bull from a proper milking strain you will not have a cow.

28858. Professor METTAM.—How can we find out that without keeping the records?—You must go to those who do.

28859. The CHAIRMAN.—You went to the herd where you knew the records were kept?—If you want the milk records you have the creamery at your doors.

28860. That is quite true in a certain measure, but it does not enable one to generalise from this point of view; the main object of the keeping of the records is to convince a cow-keeper that certain animals in his herd are not profitable to keep, and to enable him to determine which are profitable and unprofitable. If it can be established that a certain cow is not profitable to keep, the elimination of that cow from the herd and the substitution of a better milker must increase the milk yield and thereby make the milk more plentiful?—I grant that. It is self-evident.

but coincident with all this you must do something to enable the man to get the substitute. What I wish to emphasise is that you must not rely altogether on one thing, because as a man becomes skilled and more intelligent and goes to look for his substitute, where is he to go?

28861. But you think the keeping of the records is helpful?—Yes. The great difficulty we have about us is the small farmer. The unfortunate animals are starved, and the lands are going to waste because they won't farm them. We have in Ireland as many cows as we want. There are four and a half millions of people and a million and a half of cows, and you have to calculate what one quart of milk per day will do.

28862. What one does aim at is the increase in the yield. Do you happen to know whether the working population about your residence get enough milk food?—They do, because they are nearly all cow owners.

28863. But the ownership of a cow does not necessarily entail that the person owning it will have a continuous supply of milk all the year round?—They have not.

28864. Three or four months in the year they are practically without it?—Yes. They come to us then for milk and no matter how low our supply is, the people always get milk.

28865. Professor METTAM.—When do your cows calve—all the year round?—Yes. The farmers all try to have April and May calves. They don't go in for winter dairying at all.

28866. The CHAIRMAN.—Do you grow any catch-crops?—Yes.

28867. Do you find them helpful in developing the milk yield?—Yes.

28868. The farmers don't realise the enormous amount of food they can get from a small quantity of land?—You can hardly press it into their heads. When I came there first they said I was mad because I said I would grow wheat, but now by the force of example many have wheat, and the same thing applies in the case of cabbage. They are growing it on a larger scale now as food for their stock.

28869. And most excellent food it is?—Yes.

28870. Lady EVERARD.—We had evidence in Limerick from the county instructor that he had been trying to persuade the small farmers to grow catch-crops, and he said he was successful. He spoke of hardy greens. The crop was cut in December for the first time and again in April, and he got fifty tons of green food to the acre?—I tried the same thing and was wonderfully successful; they grew to a great height.

28871. He sent us a photograph of the crop in April, and it was well above an ordinary man's height, and it had been cut in December?—Mine was not fit to be cut in December, but his land was perhaps better.

28872. Mr. WILSON.—Do you still keep to this method of winter-cropping?—Yes.

28873. The experiment has been successful?—Yes.

28874. And have some of your neighbours taken to that also?—Yes, in a very tentative way.

28875. The CHAIRMAN.—When they realise the value of it they will go in more for it?—There was a man in my house yesterday looking for cabbage seed.

28876. Mr. O'BRIEN.—Do you think that the farmers here can cut their oat crop sufficiently early off the land to be able to till it to put down one crop of green food such as hardy greens or rape?—In a good season, yes; in a bad season, no.

28877. I suppose they don't get very much frost on the west coast?—No. They get what is just as bad—an extremely high cutting wind. If a strong westerly gale sets in, it cuts everything down.

28878. What do you grow—rape?—In Monaghan?

28879. Yes?—I have not grown it for the last couple of years, but I did grow it.

28880. You have not tried putting down basic slag with your turnips to get rid of the finger-and-toe?—Yes, and though it has been helpful it has not eradicated it. I go in more for strong lime.

28881. If you cannot grow the turnips what do you grow?—Cabbage and early greens and mangold.

28882. The thousand-headed kale, do you grow?—Yes.

28883. Do you find it useful for milk production?—There is nothing to beat it. I will give you an idea; last year when we commenced the girl told me that the butter was up eight lbs. I could hardly put it down to the cabbage; after two months I stopped the cabbage and substituted mangolds, and when I went to see the girl again, she told me that the butter had gone down twelve lbs.

28884. The CHAIRMAN.—That was a very striking result?—Yes. I kept the cows ten days on the mangolds before I tried them, and the butter went down.

28885. Mr. O'BRIEN.—Did it go up when you put them on the cabbage?—Yes, but it was late and it was not so high as before.

28886. What do the small farmers about you feed their cows on in the winter if they are keeping them in milk?—Hay.

28887. And a little threshed straw?—An odd one would have unthreshed corn, and if they have it they give bran and Indian meal.

28888. Do they grow barley for their own use in that way?—No.

28889. Is not the soil good enough to grow it?—It is a crop that requires a great deal of care, and, besides, it is not a suitable soil for barley.

28890. Because it makes an excellent food and a cheap food, if you grow and grind it yourself?—I don't think it would be cheaper than if they grew oats. They can grow most excellent oats.

28891. Mr. WILSON.—I see that you are quite definitely of opinion that of the two types of cattle trade dairying is the more valuable from the point of view of the country?—I could preach you a sermon on that. A man had sold a bullock for £33, and all the farmers were talking of the price he got. I said I had a cow that gave more than that in butter alone, besides rearing her calf, and there was the calf and the cow in the country, whereas the bull was gone. There is a great danger to the milk supply of this country at the present moment, namely, that the United States and Canada are almost worked out for beef. Therefore, the raising of the beef in this country will become more valuable and become a danger to the milk. I am speaking from knowledge.

28892. The cabbage that you fed your cattle on, was that ordinary cabbage?—No; it was thousand-headed cabbage.

Dr. H. S. MORRISON examined.

28893. The CHAIRMAN.—I understand, Dr. Morrison, you are medical officer of health of Aghadowey district?—Yes.

28894. And coroner for the Coleraine division?—Yes, and president of the Aghadowey co-operative creamery.

28895. Is that in the Coleraine rural district?—Yes.

28896. What steps are taken there by the rural council to put into force the provisions of the Dairies and Cowsheds Order?—They have a veterinary surgeon appointed, possibly two, and they inspect the dairies, and the milk shops, and the byres, and report to the Board.

28897. How long has the Order been in force?—Since it was promulgated.

28898. Has the Council ever instituted prosecutions for breaches of the Order?—No.

28899. Nor have they ever found any necessity for doing so?—I think not.

28900. Have you, as medical officer of health, ever been called upon by a subordinate officer to investigate the conditions of certain places and to report thereon?—Certainly.

28901. Constantly?—Yes.

28902. Speaking generally, is the condition of the dairies in the locality satisfactory?—Yes.

28903. And it is also part of your duty to inspect the cow-byres?—No.

28904. You have nothing to do with the byres?—No.

28905. In some districts the medical officers inspect the byres. Do you happen to know under what circumstances this is done?—In some districts perhaps they are inspectors appointed under the Order.

28906. I never heard that they were appointed inspectors under the Dairies and Cowsheds Order, but we had evidence where a lay inspector was appointed and a veterinary surgeon was not, and that the

medical officer undertook some of the duties in regard to the byres?—There is nothing like that in the Coleraine union. It is left entirely to the veterinary surgeon. If there was a case of infectious disease the medical officer of health would, of course, look into the byres incidentally.

28907. Have you ever suspected the milk supply as a source of infection?—No; I have never been convinced that it was the cause.

28908. You have suspected it from time to time?—Yes; we are always on the look-out for it.

28909. In such circumstances do you make an examination of the conditions in which the milk is stored and the cows are kept?—Yes; we would order them to stop supplying milk.

28910. You are also president of a creamery?—Yes.

28911. Is that a large creamery?—We have a turnover of £13,000 a year.

28912. Is that in the milk trade alone, or is it a co-operative society?—It is dealing with milk and butter.

28913. And selling nothing but milk products?—No.

28914. Do you sell new milk in your creamery?—No.

28915. Were you ever asked?—We sent it once to Belfast.

28916. Have you ever been asked for a small quantity by local people?—No.

28917. Have you any auxiliary attached to your central creamery?—We have three.

28918. Have you had reason to complain of the condition in which the milk is sent in, in regard to cleanliness?—Occasionally it happens that it is not what we would like.

28919. What happens?—The manager returns the milk.

28920. Is it taken by another creamery?—No. It is taken home and disposed of by the owner.

28921. Because we have been told in other districts that if milk is refused by one creamery it is taken to the next and received there without question?—I don't think that is possible, because the creameries are so far apart, but what probably happens is this, that if we refuse a man's milk he takes his whole supply to another place.

28922. Do you think that the condition under which milk is sent in has improved in recent years, and do you think the enforcement of the Order has been helpful in that direction?—Well, I don't know that it has done very much, but the people are getting educated, and the necessity for cleanliness is dawning on them.

28923. Becoming more apparent as they grow older?—Yes.

28924. Has the Coleraine authority ever instituted proceedings for breaches of the Order, to your knowledge?—I don't think they have. If any recommendation is made it is complied with.

28925. You don't find them contumacious or obdurate?—No.

28926. And the improvements suggested are usually carried out?—Yes.

28927. Have you a practice amongst the children of the industrial population?—Aghadowey is a rural district.

28928. It is not a large town?—No.

28929. How far from Coleraine is it?—It borders on Coleraine. It has a population of about 5,000.

28930. Is there any factory work carried out in the district?—Yes.

28931. How are the factory hands off for a milk supply?—They have no trouble. They can buy as much as they like for a penny a pint.

28932. That is a reasonable price?—I think it is.

28933. Do they appreciate the value of milk as a food?—Yes. The children are well looked after.

28934. Sufficiently nourished and fed?—Yes.

28935. Healthy and vigorous?—Yes; the only trouble we have is from children that are fed on bottles. The average woman needs a good deal of instruction and education before she can feed a child on the bottle.

28936. Lady EVERARD.—They use the long-tube feeding bottle?—Yes.

28937. And never clean it?—They do.

28938. Miss McNEILL.—As well as they can?—Yes, but no matter how well it is cleaned it is not satisfactory.

28939. The CHAIRMAN.—You cannot keep them in the condition that you would like to see them kept?—No.

28940. Are any of your patients ever deprived of the treatment you order them by reason of their inability to procure milk?—No.

28941. You have heard no such complaint?—No; they can buy milk for a penny a pint.

28942. And there is no objection to sell?—None.

28943. Do the farmers who supply milk to the creameries retail small quantities if asked?—Yes; to their own neighbours or employees, and usually as a compliment. It is a troublesome matter.

28944. But the trouble does not prevent them retailing it?—No.

28945. Is the milk of a good quality?—It is about 3.5 in butter fat.

28946. Do you sell any separated milk at your creamery?—No.

28947. The separated milk is always returned to the farmer?—Yes.

28948. Do you know whether that separated milk is used for drinking purposes?—No; it is used for calves and pigs.

28949. Have you any knowledge of the taste of separated milk?—Yes.

28950. Is it unpalatable?—No.

28951. Does it go sour speedily?—I think it would. It would go sour quicker than ordinary milk.

28952. What is the temperature to which your milk is raised in separation?—170 degrees.

28953. Do you pasteurise your cream subsequently?—Yes.

28954. All the cream?—Yes, and the cream is raised to 200 or 210 degrees.

28955. Professor METTAM.—How long is it kept to that temperature?—I am not quite sure.

28956. Is it pasteurised by the flash method or by the holder method?—I am not even acquainted with the method.

28957. Is the milk passed rapidly through?—It is kept in an immense big heater, but for how long I cannot say.

28958. Mr. WILSON.—As far as I remember this creamery, it has a large tank with steam pipes that pass through it with a circulating motion?—You are thinking of the refrigerating plant. The heater is a round circular thing.

28959. The CHAIRMAN.—Is it live steam?—It is steam from the boiler.

28960. Miss McNEILL.—Is the milk kept in motion while it is in the heater?—Yes. The heater has been supplied to us with a guarantee, and the manager assures me that it works perfectly, and fulfils the purpose for which we spent the money.

28961. Mr. O'BRIEN.—Perhaps you would know whether the thermometer takes the heat of the cream as it comes out?—I think that is what it does. The thermometer is fixed in some way that you can see it outside. I have tested it myself repeatedly in the creamery and it is always above 200 degrees.

28962. The CHAIRMAN.—Do you invariably pasteurise your cream?—Yes.

28963. Is your butter sold with a guarantee that it is made from pasteurised cream?—It is sold under the Control Scheme of the I. A. O. S.

28964. That does not convey a definite meaning to me from the point of view I am putting the question. What I want to know is this—do you get any enhanced price for your butter because you guarantee that it is made from cream that is pasteurised?—I do.

28965. Mr. O'BRIEN.—This is one of the conditions of membership under the Control Scheme?—Yes. Through the Butter Control Scheme of the I. A. O. S., which is adopted in Aghadowey, we have secured the pasteurization of our cream and have voluntarily submitted ourselves to the discipline of rigorous inspection, and we find it pays. Other creameries will have to fall in or take smaller prices, or die, so in the end the grading up of Irish creameries, already well started, will go on and become universal. The manager, who is very skilful, and the inspector of the I. A. O. S., also told me that the cream is really pasteurised.

28966. The CHAIRMAN.—With regard to the milk supply from the cows that are kept by dairy farmers, have you any knowledge as to whether that is increasing or diminishing?—It is diminishing. It has been diminishing for the last four or five years.

28967. Steadily?—Yes.

Dr. H. S. MORRISON.—18th August, 1912.

28968. To what cause do you attribute that?—I think the falling off is due to the introduction of the shorthorn, grown chiefly for their beef and not milk-producing qualities.

28969. Mr. WILSON.—Can you give us any figures as to the reduction of the milk yield?—No, but I can tell you that our supply of milk dropped from 17,000 to 18,000 gallons. I don't know that you can depend on that.

28970. The CHAIRMAN.—Was that last year?—No; last year we had 20,000 gallons of an increase. I think that is due to better management and better prices.

28971. To a larger number of cows being kept?—I don't think so.

28972. Are you getting a larger proportion of the milk-produce?—We are.

28973. And consequently less is kept at home for the use of the family?—I think they keep what they think they require.

28974. But have they rather parsimonious ideas of what they consider enough?—I think they are rather close.

28975. The desire to increase the monthly cheque overbears the desire to keep the children well fed?—I would not say that. I don't think any one in the parish would deny the best food to their children in order to increase their cheque.

28976. That has been represented to us in other districts?—Many things have been represented that are not true. I don't think in my district that it would be entertained by any farmer for a moment.

28977. You have never known children suffering from maladies who you believe were not properly nourished?—Yes, but not owing to the absence of milk. It is very common to have children going wrong when they begin to eat, when they nibble at potatoes and bread and eggs.

28978. That is want of knowledge?—Yes, that and bottle-feeding children with dirty milk. These are the causes of the mortality in the Aghadowey district.

28979. Mr. O'BRIEN.—You have not got rid of the long-tube bottles?—No, but the people are being educated.

28980. The CHAIRMAN.—What bull do you suggest would be more useful from the milk producing point of view than shorthorns?—I don't think you can have better than the shorthorn if he is chosen for his milk-producing qualities.

28981. But your complaint is that no heed is paid to that?—Very little. The Department have been paying attention to it, but little good has been done so far.

28982. They have been endeavouring to bring in bulls from herds where records were kept and where the milk-producing qualities of the dam are on record. Are there any shorthorn herds kept in your district?—Yes.

28983. Pure-bred shorthorn cows?—Not many. I have, at my own expense, introduced milking shorthorns, and am slowly getting a small herd together.

28984. Are you keeping records?—No.

28985. You have got some pure-bred shorthorn cows?—Yes.

28986. With the idea of rearing bulls?—Yes, and introducing good milking cows into the district.

28987. Would not the keeping of milk records be the first essential to prove that they were good milch cows?—They are rearing their own calves.

28988. In these circumstances you could not measure the quantity of milk?—No.

28989. Have you in the purchasing of these animals endeavoured to buy them from herds where records were kept, and where the milk standard has reached a certain standard of efficiency?—These came from Lord Rothschild's herd.

28990. Is there any increase in winter dairying in your district?—No, and we don't think it would be practicable, and that it could be made a success.

28991. Has it been experimented on?—No; except in the creamery, where we have given special prices for winter milk.

28992. What price do you think would pay for the production of winter milk?—Sixpence a gallon I think would pay.

28993. With the return of the separated milk?—Yes.

28994. How many days in the week in the winter does your creamery work?—Three.

28995. It never works on Sunday?—No.

28996. What happens to the Saturday night's milk and the Sunday morning's milk?—The farmers churn it for their own use.

28997. Professor METTAM.—Is there sufficient milk in the winter time to supply every home?—There is a deficiency with the farmers themselves, much less the labourers.

28998. The CHAIRMAN.—Is there a greater difficulty for the labourers?—Yes.

28999. Professor METTAM.—When do the cows calve?—The end of January and the 1st February, and it is over by April.

29000. So there is a great flush of milk in the spring and early summer?—Yes.

29001. Is there much loss from abortion in your district?—Not much.

29002. Have you ever known an epidemic of it amongst the cows?—No; I know it happened in the Coleraine union.

29003. Is there much loss from tuberculosis amongst the dairy stock?—Very little.

29004. Have you ever heard of the veterinary surgeon advising his council to order the slaughter of a beast he suspected of being tuberculous?—I don't think so, because if he found a tuberculous beast the farmer would dispose of it.

29005. How would he dispose of it?—I was told, for instance, that a bull of mine was suffering from tuberculosis, and I shot him and put him into a hole.

29006. Did you have a post-mortem examination?—No; I took the veterinary surgeon's opinion.

29007. From the reaction?—No; the animal had given symptoms of wasting disease, and the veterinary surgeon said he had no doubt it was tuberculosis, and that the only thing to do was to destroy him.

29008. What age was he?—Three years. It was one of a number of bulls that I paid £40 for.

29009. Did you buy these bulls subject to the tuberculin test?—No.

29010. Would you think it desirable, in the light of the experience you had, to buy such animals subject to the application of the test?—It would be a protection.

29011. Some protection, at all events, that you might be buying a sound beast?—Yes.

29012. Mr. WILSON.—Was it you or the veterinary surgeon first spotted anything wrong with the animal?—I saw there was something wrong. He thought it was flux and he gave him a remedy for it, but that failed.

29013. The CHAIRMAN.—How long had he been in your possession before you noticed him?—A year.

29014. And he had not been exposed to any rough treatment?—No, but I think it was infected while in my possession. A neighbouring farmer sold me a cow which did badly and ultimately she was shot too and was put into a hole, and the bull was standing close to her, and I think he was infected in that way, and I heard that in the farm-stead from which this cow had come that there was a large number of cattle that died, but it was before the Order was put into force.

29015. Mr. WILSON.—Would you look upon a bull of that kind as dangerous to the cows that would come to him?—I would not.

29016. The reason being, you don't think the cows would take the infection?—I don't think they would.

29017. And the calves would not probably either?—I don't think so.

29018. Professor METTAM.—It would all depend, of course, where the tuberculous lesion was?—Certainly. I think the risk in that respect is practically nil.

29019. The CHAIRMAN.—With regard to the inspection of creameries, do you think the inspection existing at the present time is sufficiently comprehensive?—Well I think that disease might generate very rapidly about a creamery. It might be taken there and develop to a very serious extent and spread, and it would be a very serious thing for that district. I think the ordinary sanitary officer has not a sufficient expert knowledge to qualify him for detecting the defects that would be likely to cause that, or even the average medical officer of health. I know a little about creameries, but the average doctor knows less, and I would not feel called upon to give an expert opinion about that, much less a man who has no knowledge of creamery work at all. I think it would be a wise thing if there were expert inspectors to point out any defects that were existing and see that they were corrected.

29020. Holding the creamery committee or manager responsible for the condition of his premises, and for the carrying out of whatever improvements might be pointed out by the person appointed in the way you indicate?—Yes.

29021. Professor METTAM.—In other words, you would recommend that creameries should be licensed?—No.

29022. Don't you think you would gain what you have been advocating if they were licensed?—Yes, but who would license them?

29023. The CHAIRMAN.—I would be sorry to give them the authority to say whether a creamery should be licensed or not.

29024. Don't you think some central authority should have power to grant licences and withdraw them?—No; it would be ruinous.

29025. It is only following up what you have been suggesting?—That is only a limited authority, and you suggest that the whole creameries of Ireland should be under the whim of a man in Dublin who would have only a theoretical knowledge. That is the very thing that the creameries are dreading.

29026. It is always an excuse if a man makes a suggestion that he is only a theoretical man, not a practical man.

The CHAIRMAN.—What qualifications would you insist on the officer you indicate possessing?—I think he should be a man who would be familiar with all the pipes, and would be able to tell whether the pipes and branches were properly kept.

29027. What further scientific knowledge would you require?—I would not ask for a man of science, but for an ordinary inspector that would be going around.

29028. But I think the ordinary inspector they have going around should be equal to that.

29029. Mr. WILSON.—You think there should be one or two provincial inspectors for Ulster who would be continually on the move?—That would meet my suggestion. The ordinary medical officer of health does not understand pipes, and the average sub-sanitary officer is not a cute chap and knows nothing about them. Your suggestion of one or two inspectors with special knowledge who would be able to deal with the question is good, and instead of licensing, if they violate the law I would prosecute them instead of putting them under the heel of a Dublin Board.

29030. Professor METTAM.—There must be some central authority to do it directly?—These men are subject to the Agricultural Department.

29031. The CHAIRMAN.—You would make them officers subject to a central control, of course?—Yes. Professor Mettam would give them the power of granting or refusing licences. I would not go so far as that.

29032. Professor METTAM.—I think I may take it that Dr. Morrison and I agree. It is only a question of detail?—Certainly not. I am particularly strong on that point.

29033. The CHAIRMAN.—At all events we won't speak of what authority, but you do contemplate that these officers to whom you refer should be responsible to some central authority, who would control their work and give them specific instructions as to what they should do?—I would go that length.

29034. You would not leave them to their own sweet will?—No.

29035. Professor METTAM.—I knew that we could agree?—We are very far apart.

29036. The CHAIRMAN.—I quite understand what is in your mind, Dr. Morrison. You spoke of the milk yield of the cows having diminished owing to the introduction of the shorthorn bull. Is there any other breed of bull that would be more effective in improving the milk supply than the shorthorn?—No. I think the shorthorn will fulfil the two qualities if properly selected—beef and milk. I am afraid that they will sacrifice the milk to the beef.

29037. That view has been brought under the notice of the Commission frequently—that the milk qualities have been sacrificed to the beef-producing qualities?—Yes.

29038. Are the creameries efficiently managed from the point of view of cleanliness, as far as your observation goes?—Yes.

29039. And sufficient care is taken in order to secure that the product of the dairy will be dealt with in a healthy fashion?—Yes.

29040. What steps have you taken for the disposal of the creamery sludge?—We put it into the river.

29041. You have not been prosecuted in connection with it?—No.

29042. And the sludge is not detrimental to the fish?—No.

29043. There are no fish in the river?—No.

29044. The disposal of the sludge has given you no trouble?—No.

29045. Mr. WILSON.—Of course you are no great distance from the Bann?—No, but the sludge flows into a little stream before it goes to the Bann.

29046. The CHAIRMAN.—What I am referring to is the disposal of the matter left in the separating bowl?—That is put into a refuse heap.

29047. That never got you into trouble?—No.

29048. You are only talking of the drainage water that runs off from the floors of the creameries?—Yes.

29049. Do you do any trade in cream?—A little. We sell it in little jars, and sometimes we would send it in eighteen or twenty gallon cans across the water.

29050. Is that trade increasing or diminishing?—Latterly the manager is going in for it more.

29051. Is it more remunerative than making butter?—He thought selling it in eighteen or twenty gallon cans was not more remunerative; and lately he has gone in for the little jars, as he thinks it is more profitable.

29052. Professor METTAM.—Is there a demand for it?—Yes.

29053. The CHAIRMAN.—Where is it sold?—To shopkeepers in Belfast, Derry, Coleraine, and Portrush.

29054. How is the summer population in Portrush provided with milk?—Locally.

29055. And people make arrangements to provide it?—Yes.

29056. And there is no difficulty in getting it?—No; they get plenty of milk, and pay good prices for it.

29057. Do any of the residents in your locality send milk to your creamery?—No; we are too far away.

29058. How far is Portrush from you?—Twelve miles.

29059. And none of your auxiliaries are nearer?—No. Ballyrusheen Creamery is nearer to Portrush than we are.

29060. It is your opinion that winter dairying won't pay?—Yes.

29061. Professor METTAM.—It never has been tried?—Except a particular farmer might try it.

29062. It is then merely a pious opinion?—I have tried to get it done. We have subsidised our suppliers in the hope of making it remunerative, and it has failed, so it is more than a pious opinion.

29063. They won't do it?—No.

29064. The CHAIRMAN.—If they gave it a really legitimate trial—not one or two persons, but a number of people, by going in for the growing of certain crops that are likely to be beneficial for the production of milk they might find that it would pay?—That would make a great difference.

29065. Do they also recognise that the cow calving in October and November is likely to give a heavier yield than the cow calving in March or April?—They have been told that.

29066. Is that your experience?—No; the people don't feed their cattle well in the winter.

29067. If the cow is not properly fed, and if she is allowed to start and maintain in her flush period a low yield, that cow is not likely to compare favourably with the April or May calving cow; but if she is properly fed, and provision is made for providing her with succulent food that is milk-producing in itself, you will find that she is a better dairy servant?—You have to balance that with the extra trouble involved. You have the cow on the grass, and she is no trouble.

29068. And you have also to balance this—that with the existing system you have only an income for a limited period of the year, whereas in winter dairying you have an income for twelve months?—We wanted the Department to carry out some experiments with us and they would not do it.

29069. I think it would be far better if the farmers carried out the experiments for themselves, and proved that they could accomplish these things. That would be much more beneficial?—Yes. I think they are ready enough to adopt anything that they find pays.

29070. What is the difference in the price of winter butter as compared with summer butter? What is the last month's price for milk in your creamery?—It was settled last night, and I cannot recall the figures. 4.20d. was the average price last month.

29071. What would be the winter price?—Probably 5d. a gallon or 5½d.; but I cannot trust my memory for figures.

29072. Because we have been told that in other districts the difference is very much greater between the summer and the winter prices, and that in some places the winter price went up to 6d. and 7d.?—Yes.

29073. Mr. O'BRIEN.—That would be for only one month in the year or two months.

The CHAIRMAN.—You think that 6d. a gallon would pay for winter milk?—I think that would enable them to go in for winter dairying.

29074. And do you find by the price you can get for the butter that you could not afford to pay 6d. a gallon in the winter season?—There is an increased expenditure on the small quantity of milk dealt with. We considered a plan by which the expenditure over the whole year will be equalised.

29075. We have heard in another place that the custom was to charge in the winter season only the same price per gallon as is charged for the larger quantity dealt with in summer?—That is what we are thinking of trying. Up to now we had tried to give £80 or £40 more on the month's milk than we were justified in doing.

29076. Even that did not bring it up to the standard that would make it profitable?—No.

29077. Lady EVERARD.—What guarantee have you that the cows supplying your creamery with milk are perfectly healthy?—We have no guarantee.

29078. Do you think that these inspectors that you speak of should visit your creamery and inspect the cows too?—No; I would leave that to the local authority.

29079. Do the local authorities do it now?—Yes; their inspectors go round, and look at the byres and examine the cattle.

29080. Does not that give you a guarantee?—A certain amount of guarantee, but no one would vouch anything for that superficial inspection.

29081. The CHAIRMAN.—At all events, it is better than nothing?—Yes.

29082. One recognises that with the most careful supervision something will escape?—Yes.

29083. Mr. WILSON.—I see you say in your summary of evidence that you do not approve of goats in your neighbourhood?—I do not. The district that is not able to carry cattle or the poorer class of cow should be depopulated, and let out, and the people provided with land elsewhere.

29084. Yours is not that class of area?—No.

29085. You are able to keep a decent class of cow?—Yes.

29086. And you think that the goats are a nuisance?—Yes.

29087. Would that apply to the better class of goat—the four or five quarts a day goat?—If she would yield that quantity, and not eat the hedges.

29088. The CHAIRMAN.—No guarantee will be given about the hedges?—The Ulster people will not have anything to do with an animal that would destroy their fences.

29089. Lady EVERARD.—Why not tether the goats?—Life is too short to tether goats. Goats in our neighbourhood are not popular, and we don't want them.

29090. Mr. WILSON.—I see you also say in your *présis* of evidence that there is no injury to the public health in your district due to the scarcity of milk; that farmers willingly sell the labourers and artisans milk at a penny a pint, and that it can also be had at the creamery for this price?—We would give it to anyone at the creamery if an application was made to us.

29091. If they came along with their penny, they would be able to get it?—Yes; sterilised if they liked.

29092. Or new milk if they choose?—Yes.

29093. As a matter of fact, that trade has not been developed?—No; there is no demand.

29094. Do you know how the labourers, particularly those living in the union cottages, get their milk?—They get it from the adjoining farmers. There is no friction between the farmer and the labourer, and there are three hundred of these new cottages in our district. They get the milk the same as the men working in the farmer's house.

29095. Have you happened to notice any change in the market to which you send your butter and cream? Is there more of it used in Ireland than there used to

be?—There is a great deal used about the homes where they never thought of using it. Even the labouring class will buy butter at the local shops, who are provided from the creamery.

29096. So, from what you see in your own district, there is more milk being used in the form of butter now than there used to be?—Yes.

29097. That appears to be what we have heard practically everywhere?—Yes.

29098. With regard to the discipline of rigorous inspection under the Butter Control Scheme, how does it affect your creamery?—We had to put in this pasteurising plant, and we have to guarantee all the butter. You have to take a sample of the butter, and keep it for a week. We have a sample of every day's manufacture. You don't sell any butter except with the stamp on it, and if any fault is found with it the sample is there. You can compare the butter with the sample.

29099. The CHAIRMAN.—And if any allegations are made as to the condition in which the bulk arrived at its destination you can then refer to the sample?—Yes.

29100. Mr. WILSON.—Who does the inspection?—The I.A.O.S.—Mr. Flint.

29101. That has nothing whatever to do with any departmental scheme?—No.

29102. It is voluntarily done in the interests of grading up the Irish butter?—Yes, and to keep up the standard reputation.

29103. The CHAIRMAN.—What is your principal market across the water?—Again, sir, I am afraid I cannot tell you. We send a good deal to Manchester, I think, and Birmingham. We find Belfast and Glasgow cheap. We have been trading with Aberdeen, and we find that the Scotch—although they have not that reputation—give even a better price than the English.

29104. Mr. WILSON.—Do you know what would be the quantity of milk taken in by a workingman's wife?—Not more than a pint of milk a day.

29105. You would not consider that adequate?—No.

29106. Why would she not take in more?—She could have it if she likes, but they don't like. In the main, they just get it for creaming their tea.

29107. How long has the Aghadowey Creamery been working?—Thirteen years.

29108. Do you notice any change at all for the better or worse amongst the working classes with regard to milk?—They are advancing in every way. The change in the last twenty years is extraordinary.

29109. The CHAIRMAN.—There is a better standard of living?—Yes; and they are better educated, and get better wages, and have better houses. The whole aspect of the country has been changed for the better.

29110. Mr. WILSON.—Do you find that the children in the schools are healthy and strong?—Yes. I submitted this evidence to the committee of my creamery last night, and they instructed me to state that while their co-operative creamery is doing an absolutely honest trade, and is willing to submit to any alterations that are necessary for the preservation of the public health and the prevention of fraud, they insist that all home-made and factory butter should be subjected to the same restrictions.

29111. Professor METTAM.—You say that there is a shortage of milk in the winter season?—Yes.

29112. Don't the labourers find any difficulty in getting milk in the winter season?—I am sure they do, but the farmers find a difficulty too; and you cannot just run the farmers' cows with the object of providing milk for the labourers.

29113. Would it not be another argument in favour of winter dairying?—Yes, but it is not practical.

29114. How long did your experiment last?—You mean subsidising the winter supply?

29115. Yes?—We are carrying it on still.

29116. It has been going on for years?—Yes.

29117. And still, despite this inducement you were giving, your suppliers are making no effort to meet you?—They are making no effort to meet us. Winter dairying is impossible. It does not pay, and cannot be made to pay under ordinary circumstances. It would take 6d. a gallon to pay for winter milk, and creameries cannot give that price. We tried to give to winter suppliers money taken off in the summer, but could not give enough. In addition, the price of a calving cow is great at this season, and the risk so much less, that the average farmer likes to sell her.

29118. The CHAIRMAN.—There is another aspect of the question—have you found any difficulty with your market by reason of your being only able to supply for a limited period of the year?—Yes; we lost badly.

29119. You had to break with your customers?—Yes, and to undersell in order to get back our customers.

29120. That is another argument in favour of winter dairying?—Yes. Here is a further argument, if you want it. The cow is sold. She is taken to some industrial centre, and milked and well fed. When the milk is exhausted, the animal goes to the butcher, and this affects the supply of milking cattle and milk production, for in this way the pick of Derry cattle are killed as three or four year olds, and their places taken by, it may be, inferior cattle.

29121. Professor METTAM.—I don't see how you can overcome that?—You can, if you pay the farmer to keep his cows at home.

29122. As to goats, I suppose as a medical man you have no objection to them?—No.

29123. And you would rather favour the keeping of goats than that people should be short of milk?—Yes; and if you can keep them from destroying the hedges, and giving four or five quarts of milk in the day it would change my views of them.

29124. As regards tuberculosis, is there much of it amongst the human population?—A very great deal.

29125. All forms of it, I presume?—Yes; but chiefly pulmonary.

29126. Have you come to any conclusion in your own mind as to the probable source of infection?—Yes. I believe a great part of it came from the industrial centres. Our people go over to Scotland and industrial centres in England, and amongst other good things they get they contract phthisis.

29127. Miss McNEILL.—They live in the worst quarters when they go?—Yes.

29128. Professor METTAM.—Have you ever come across cases that you thought had been of bovine origin?—I think that in the case of a child fed on the bottle the disease might come from the milk.

29129. Mr. O'BRIEN.—I see here in your synopsis of evidence that your creamery has a turn-over of £13,000?—Yes. In 1910 we had 502,493 gallons of milk.

29130. This year you say your milk supply will be increased by 20,000 gallons?—Yes.

29131. There is a question I would like to ask you about this winter supply. You say in your *précis* that unless you can pay 6d. a gallon for milk in the winter that it would not pay to go in for winter dairying. I can quite understand that, but it depends a great deal on how much milk your cow is giving?—It does.

29132. I found myself, as a practical farmer in the south, that winter dairying did not pay unless my cows were giving on an average not less than 600 gallons of milk in the year. The average of Ireland is below that, and up here—I don't know about your district, but in most of the districts—the cows give very little more than 200 or 300 gallons?—300 or 400 gallons I would say.

29133. The question whether winter dairying pays or not depends very much on the quantity of milk the cows give?—Yes.

29134. And I wondered how much milk you were calculating on your winter calving cow giving?—No man can produce milk for less than 6d. a gallon.

29135. Miss McNEILL.—The yield of the cow must come into the matter?—Yes.

29136. Mr. O'BRIEN.—If you have a cow giving 1,000 gallons she does not by any means cost double the amount of a cow giving 500 gallons. She will probably cost less, because very often a bad milker will do nothing but eat?—The more milk a cow gives the better you will be paid.

29137. How long does your creamery give the 6d. per gallon?—November, December, January, and February.

29138. I gather that the cows in your district calve rather early?—Yes. I think the last three months of the year, and the first three are the last months with us.

29139. You say, in addition, that the price of a calving cow is greater at this season of the year and the risk is so much less. What do you mean by the risk?—The risk of calving in the winter.

29140. Professor METTAM.—If you got the milk in the winter you could handle it, I presume?—Yes; we would have no difficulty about that.

Mr. J. GALBRAITH examined.

29141. The CHAIRMAN.—How far do you reside from Derry city, Mr. Galbraith?—Four English miles.

29142. Are you interested in dairy farming?—Yes.

29143. To what purpose is your milk devoted?—It is sold in the city.

29144. Is there any creamery in your locality?—No.

29145. Do you find a steady market for your milk in Derry?—Yes.

29146. Have you regular customers, or is some of your milk sent speculatively to whomsoever requires it?—We have private customers, and we supply one of the institutions as well.

29147. Is your milk delivered in any of the industrial centres of the town?—It is scattered all over it.

29148. Would you be able to form any opinion as to what quantity of milk is taken in by a household with four or five children and an income of £1 a week?—I was speaking to one man, who was a barber, and he told me his milk account was 6s. a week. That would represent seven gallons roughly. He believes in milk.

29149. He is a wise man as well as a barber?—I believe he is.

29150. I hope that his type is numerous and plentiful in Derry?—Derry is well supplied with milk, and the people consume a big lot of it.

29151. You think the value of milk as a food is appreciated?—It is indeed.

29152. Do you think there is a larger quantity consumed now than in your earlier recollection?—I think there is a bigger consumption of milk than when I started, twenty-three years ago.

29153. What class of cows do you keep?—I just buy in the town market. My stock is rather big for the amount of land I have.

29154. You must keep up your supply, and you must keep sufficient cows in order to have that supply?—Yes.

29155. What market do you buy them in?—Principally in the city.

29156. Is there a weekly or a monthly market in the city?—Weekly.

29157. And you can always get a cow calving at any period?—Of course, in some seasons of the year they are high in price.

29158. Are they dearer, as a rule, in winter than in summer?—Very little latterly.

29159. What price would a good average dairy cow bring here?—£17 to £22.

29160. Do you find it more profitable to buy a good one?—Sometimes I am carried away by fancy, but sometimes they are not the most profitable animals.

29161. You never keep the cows for a second milking period?—I am keeping twelve out of sixty.

29162. Do you have any difficulty in having them attended to?—There is some difficulty; but I have very little difficulty so far.

29163. We have heard in other districts that there is undoubtedly a difficulty about Sunday work?—I find no difficulty; but if you have a change it is difficult to get a suitable man instead—one that takes an interest in his cattle.

29164. Do you find that they are careful in their habits in regard to cleanliness and keeping their hands washed?—Yes. I am there every morning myself, and see that everything is done. They clean the byres twice daily.

29165. What custom do you follow in the winter season—do you keep up your supply?—Yes.

29166. Would you have much difficulty in keeping up your bulk in the winter season?—I find it is as easy to keep it up in the winter as in the summer.

29167. What artificial foods do you resort to in the winter season?—If our own oats are cheap we consume a big lot of them.

29168. You consider them a good food for milch cows?—Yes; and turnips and Indian meal, or cotton-cake.

29169. With regard to the use of turnips, do you find they give an odour to the milk?—No.

29170. Do you feed them after the milking is done?—Yes.

29171. Lady EVERARD.—Have you ever tried ensilage?—No.

Mr. J. GALBRAITH.—13th August, 1912.

29172. The CHAIRMAN.—Do you raise enough hay for the winter feeding of your cows?—Principally straw.

29173. Can you raise enough yourself?—Yes.

29174. You don't give them hay, as a rule?—No, except it happened to be very cheap.

29175. You think you can get as good results from hay as from concentrated foods?—Yes.

29176. Do you chaff the straw?—No.

29177. Lady EVERARD.—Have you tried parsnips?—No; mangolds are very good.

29178. The CHAIRMAN.—Parsnips are better. Mangolds give a large bulk, but poor quality?—I am inclined to think that.

29179. If you were to feed the cows on mangolds and hay alone you would probably find a difficulty in keeping up the standard of butter fat?—Yes; we give them meal.

29180. Lady EVERARD.—Do you feed your cows on cabbages?—Yes.

29181. Do you find that very good?—We begin to feed when the grass begins to fall.

29182. The CHAIRMAN.—Do you find that cabbage is as good for milk production as any food you can give?—Yes, and the cows are very fond of it.

29183. Do you ever go in for the growing of catch crops in order to have spring feeding?—No; I never tried it.

29184. Has it ever been tried in your locality?—I don't know.

29185. It has been tried with great success elsewhere, and I see no reason why it should not be equally possible to carry it out here?—We produce a lot of turnips, and we are able to feed on to the middle of May.

29186. But this is even a better food for the production of milk?—Yes.

29187. With regard to the yield of milk from cows, is it as good now as you have known it to be?—I see very little change. In fact, in my opinion you may have a cow milking well this year and not next year.

29188. The fact that a cow is a heavy milk yielder for one lactation period would not mean that she would be a heavy milk yielder for the next lactation period?—No. I would be afraid that a big milker would give a poor quality of milk.

29189. Taking the contrary proposition. I was asking some one engaged in the trade a few days ago whether an animal that gave a limited supply of milk would necessarily give one rich in butter fat, and he said no—that it did not follow that the cow giving a small yield would naturally give a high yield of butter fat?—I would fancy that the cow that would give a small quantity would give you richer milk than the cow giving double that.

29190. I was asking cow-keepers what was their experience in this matter, and they said that it did not necessarily follow that because a cow was a light milker she gave a rich yield of butter fat. Do you ever find it difficult to keep up your standard of butter fat?—Yes; it would be low in the spring. The turnips are spent a bit, and the cows are getting a bit run down.

29191. Some cows if their milk was analysed might be under the legal standard for butter fat?—Yes.

29192. Do you find a marked difference between the morning and evening milk?—Yes; there is a decided difference.

29193. Which is the best milk to buy for a purchaser?—The evening milk is much richer. We start milking at 5 o'clock in the morning and finish about 6.15. We start in the evening at 2.30 and finish at 8.30, and there is a shorter period between the milking.

29194. Have you tried milking machines?—No.

29195. Have they been tried in this region?—I don't know.

29196. Have you ever been troubled about a surplus of milk being returned?—In June and July, when the people are at the sea-side, you will have to try and regulate your supply accordingly.

29197. Would the poor people buy any more milk when it would be more plentiful?—I don't think so.

29198. Professor METTAM.—Would it be cheaper then?—We get 2½d. a quart in summer and 3d. in winter; and, in fact, for years we supplied for 2½d. a quart all the year round, but last year it was increased owing to the drought and the difficulty of keeping up a supply.

29199. The CHAIRMAN.—Is there any material change in the price of cows?—Within the last month they have been £2 or 50s. a head less on account of the restrictions imposed owing to the foot-and-mouth disease.

29200. That is only a temporary check?—Yes.

29201. Taking an average of from five to seven years, are the cows dearer or cheaper?—Two years ago the cows were dearer than I remember them for twenty years.

29202. They run up and down at certain periods owing to local circumstances?—Yes.

29203. Do you sell any cream?—No; I sell all whole milk.

29204. You do no home butter-making?—No; unless we had a little surplus.

29205. And that would be only for family purposes?—Yes.

29206. Are you in the Londonderry Rural District?—Yes.

29207. And subject to the inspection of the officers of the Londonderry Council?—Yes.

29208. You are familiar with the provisions of the Dairies and Cowsheds Order?—Yes.

29209. Do you think they impose any unnecessarily severe restrictions on those engaged in the milk trade?—No.

29210. They are only calculated to lead up to a standard of efficiency that any intelligent man engaged in that trade would like to see for his own comfort and safety?—In the case of a person building a new byre the amount of space for each cow would leave you a cold space in the winter time.

29211. You think the requirements in the matter of air space are liberal?—Yes; 700 feet. In the winter time it would be very hard to keep up a natural heat.

29212. Do you let your cows free at all in the winter?—No; I keep them housed throughout.

29213. Mr. O'BRIEN.—You don't let them run out in the day?—No.

29214. Not even to water them?—No.

29215. Or while you are cleaning out the byres?—We can clean them out without disturbing the cows at all.

29216. Your byres are cleaned out every day?—Yes; twice a day.

29217. The CHAIRMAN.—Do you suffer any loss from tuberculous affection amongst your stock?—Very little. Occasionally we would have an odd case.

29218. A pinner?—Yes.

29219. What becomes of her?—We get rid of her.

29220. Send them to the abattoir?—I call in the man whom I call the "relieving officer," and I sell the animal to him.

29221. Are you generous enough to export them to Glasgow?—No.

29222. Would the man you sell them to have any trade in that way; because we have heard that it is not at all uncommon to find them exported out of the country?—I have delivered them to butchers that were shipping at the time.

29223. You considered it no part of your duty to inquire what became of them?—No; I wanted to get rid of them.

29224. You don't keep your cows for a second milking period?—Only ten or fifteen out of sixty.

29225. And then do you select the best milkers?—If I had a good milker I would be tempted to keep her.

29226. Professor METTAM.—Do you keep any records?—No; occasionally I would measure a cow's milk.

29227. The CHAIRMAN.—What do you think would be the average yield of milk from your cows for a full lactation period?—If I had fifty cows milking I would consider that if I had two gallons of milk from each cow I would be satisfied.

29228. That does not quite convey the idea that one wants to know, but under your system it is hard to give an opinion. What I wanted to know was—what would be the average milk yield in gallons of the whole herd?—I can hardly tell you that.

29229. Would it reach 500 gallons per cow?—No. I consider from 300 to 400 gallons would be the yield.

29230. Of course, one knows where the land is poor, and the treatment is worse still, that the average will run down considerably?—There is no doubt.

29231. We were told only yesterday of a district where the average would be 120 gallons?—That cow would not be worth keeping.

29232. The cows were poor, they were owned by poor people, and they were poorly fed, and everything was poor, and the milk yield was worse than all?—Yes.

29233. We had a confirmation of that by another witness to-day, who said that he thought 170 or 180

gallons would represent the average of a poor district—on the western coast of Donegal?—The land would be poor there.

29234. Yes, and the cows would be poor?—A good goat would be better than them.

29235. Have you experience of any other breed than the cross-bred shorthorn for dairying?—The general breeding is to cross the Ayrshire with the shorthorn, and that is very good.

29236. Are they procurable in this locality?—There are a few of them.

29237. Is there an Ayrshire bull?—No; the Ayrshire cow and a shorthorn bull.

29238. And sometimes Ayrshire cows are brought in?—Yes.

29239. What sort of calf would the cross produce?—A good one.

29240. From the meat point of view?—No; but from the milk.

29241. Will it partake largely of the character of the Ayrshire, with the sharp back?—No; I have a little cow, and she is very good. She is doing about sixteen or eighteen quarts a day. She will do that only for four months, and then drop to about eight quarts.

29242. Do you think that they reduce in their milk yield more rapidly than the other cross?—All the heavy milkers drop off.

29243. The cow that would give a steady flow for a long period is the better dairy servant?—Yes; I would prefer a cow that would give me twelve quarts steadily than one that would give me eighteen quarts for a certain length of time.

29244. Is there much loss suffered from abortion in the dairy herds of this county?—There was a good deal of it, but we are getting rid of it.

Mr. JAMES LYON examined.

29256. The CHAIRMAN.—You are living in the Coleraine district?—Yes; about three miles from Coleraine.

29257. How long is your creamery at Ballyrashane established?—Fifteen years.

29258. Have you been connected with its management for that period?—For eleven years.

29259. Has it developed during your knowledge of it?—Yes. The turnover is now fully double what it was when I went there. Last year our turnover was £32,000. Our milk supply last month was 215,000 gallons, for which we returned over £4,000 to our suppliers.

29260. Have you auxiliaries?—Yes; we have seven auxiliaries. Our area is mainly situated in North Antrim. Our auxiliaries are, some of them, eight and twelve miles distant from the central creamery. The area we work on would cover a radius of about twelve or thirteen miles to the east and south of Ballyrashane.

29261. Do you manufacture butter at your auxiliaries or only separate the milk?—We only separate the milk at the auxiliaries. All the butter is manufactured at Ballyrashane.

29262. What is your principal market?—We are about equally divided between England and Scotland. We have a large number of customers in both countries. A very large quantity of our butter goes to Glasgow and district, and also north, to Aberdeen and Inverness.

29263. About your winter supply—how often do you separate in the winter?—Three days in the week.

29264. Is the quantity you are dealing with in the winter increasing or diminishing?—I cannot say that there is much of an increase. We have more milk in the winter than we used to have.

29265. But you have a still greater proportion in the summer?—Yes. For instance, the winter supply—say, from the beginning of November until perhaps the end of March—would barely equal one month's supply in the summer.

29266. What I would be anxious to know is whether, relatively, that was greater than it was five years ago?—I am not prepared to say it is.

29267. And does the belief prevail in your district that winter dairying is not profitable?—That has been the opinion so far. There are a few exceptions. There are a few of our suppliers who keep up a good supply in winter; but they don't number more than half a score altogether.

29268. Would they be exceptionally circumstanced in any way as regards proximity to the creamery or

29245. You, of course, are not troubled in that way?—I had some little experience of it.

29246. And found it difficult to eradicate?—Yes; it is troublesome.

29247. But a more intelligent conception as to the cause exists, and people are able to make a better effort to deal with it?—Yes.

29248. Lady EVERARD.—Are there many goats kept in your neighbourhood?—There are few, except by the labouring class of people.

29249. Don't you think it would be rather an advisable thing for a small cottier to keep them?—The goats are troublesome. The majority of the labourers in Union cottages having a bit of land have them, and tether the goats on the road, and they spoil the fences.

29250. We had evidence that goats would be very advantageous to a cottier. Is there much consumption in your neighbourhood?—I cannot say there is, in my experience.

29251. And you have not much tuberculosis amongst the cows?—Very little.

29252. Do you think that all the by-products of milk should be brought under the same rules and regulations as new milk?—I think they should be under supervision, the same as new milk. In a great many of the creameries the skim milk is taken back by the farmers.

29253. That is the separated milk?—Yes.

29254. Have you had any experience of the separated milk that is brought back from the creameries?—Not personally; but I know some farmers using it, and I fancy it has not been improving their young stock.

29255. We have had evidence that sometimes it won't keep at all?—It is for immediate consumption. It won't keep.

with regard to the quality of the land, or the accommodation they have for their cattle?—No; I don't consider so.

29269. It is just the spirit that moves the owner?—Yes; and the men I refer to are men of progressive ideas, and they keep a good class of cow, and that is a very important point in regard to winter dairying.

29270. Would these be men who paid an unusual amount of attention to procuring cows of good milk-yielding qualities?—Yes; but as far as I know they mainly breed their own cows—at least, several of them do. Of course, they may buy a cow now and then.

29271. But they make a rule of breeding their own cows?—Yes.

29272. And the consequence is that they are able to continue the supply of milk throughout the winter season?—Yes.

29273. At least they do, whether it is a consequence or not?—Yes.

29274. Do they grow winter or spring food for their stock?—There is nothing specially done in that way. The green food is principally turnips, mangolds, and swedes. You see a small patch of vetches here and there, but not much. The principal winter food of the cows is turnips and straw, and some use cake and other concentrated food. Some of them will use a good deal of crushed oats of their own growing and chaffed straw.

29275. Do they give them any heated food in the winter time?—Some do, but it is not a general thing.

29276. What breed of cattle do they keep?—Mainly shorthorn.

29277. Are there any Ayrshires kept in that region?—I have never seen any of them.

29278. Or an Ayrshire bull or an Ayrshire cross cow?—No.

29279. Do you find that the milk is sent to your creamery in a fairly clean condition?—Yes; we seldom have any fault to find with it.

29280. Is there an improvement in that way—are the suppliers more careful in handling it?—Yes.

29281. Do you find that the application of the Order has been in any way helpful to you in securing a cleanly milk supply?—I consider it has helped. At the same time I consider it has one drawback.

29282. What is that?—If a milk supplier is asked to make improvements and refuses to do so, he can cease selling milk, and can make butter at home.

29283. Your view is that he should be under the same conditions manufacturing butter at home as if he sent his milk to the creamery or sold it to the city?—Yes.

29284. That seems perfectly reasonable?—Yes.

29285. Is there much loss amongst the dairy herds from tuberculous affection, have you heard?—No; I have not heard of many cases. An occasional one has come under my notice, but not many.

29286. Do you sell milk retail at your creamery?—No.

29287. Have you ever been asked to?—Well, sometimes from Belfast.

29288. What I wanted to know was, if the industrial population surrounding the creamery needed a milk supply for their domestic use would you sell it to them?—Yes; we sell the milk regularly for that purpose.

29289. In whatever quantity they need it?—Yes.

29290. As low as a pint?—Yes.

29291. And is that largely availed of by the working population?—Yes.

29292. Would they come a mile or a mile-and-a-half for it?—They would; and in the winter time they come much further.

29293. Mr. WILSON.—Do you allow the milk to be sold at the auxiliaries?—No.

29294. The difficulty being supervision?—Yes; and there would be complaints on the part of suppliers not getting back the separated milk they expect.

29295. The CHAIRMAN.—Have you less difficulty in regard to your central creamery?—We have better supervision there.

29296. What quantity would be dealt with in that fashion—would you sell five or ten gallons retail a day?—Not so much; four or five would be the outside.

29297. Do you sell any separated milk?—A little, but not much. We supply any demand that there is for it.

29298. I wanted to know what was the demand?—It is for the buttermilk the demand is. We have two hundred gallons in the summer.

29299. What weight of butter would you have disposed of in the past month?—35 tons for the month. We also sell a large quantity of fresh cream.

29300. For export trade?—Yes.

29301. Is that trade developing?—Yes.

29302. You can get rid of a larger quantity now than you could five years ago?—Yes.

29303. Is that more troublesome or less troublesome than the butter manufacture?—You save all the expenses of manufacture. The cream does not require so much labour.

29304. Is the carriage higher for cream than it would be on butter?—Weight for weight, it is the same.

29305. If the butter was manufactured from the cream, the weight would be less?—Yes; about half the weight.

29306. Is there any increase or diminution in the yield of milk from the same number of cows in the same herd?—Five years ago our milk supply reached its highest point. After that there was a gradual decrease, until last year, and that was mainly attributable to the milking capacity of the cows deteriorating. It was said to be due to breeding too much on beef lines.

29307. To the premium bulls?—Yes, and other reasons were ascribed for it. One thing that militates against keeping a good cow is the tempting price the farmers are offered for it. Our society has been urging on the suppliers to try and get into a good class of milking stock, and go in for the systematic keeping of milk records, and breeding only from the best class of cows.

29308. Are they conforming with that advice?—Yes, to a limited extent. There has been an improvement certainly within the last year or two, and we hope more will follow when they see the benefits resulting from it.

29309. Is the keeping of milk records extending?—Yes.

29310. Have any cow-testing associations been formed?—No; not in our locality. Whatever has been done in that way has been done in connection with our creamery.

29311. Do you think that the keeping of milk records would be helpful in working up this supply, and the standard to be reached and aimed at by the cow-keepers?—Yes, I am certain of that. It would also point out to the dairy suppliers the unwisdom of keeping cows whose milk record is below a certain standard.

29312. And thereby increase the yield from the entire number, and consequently the supply available in the country generally?—Yes.

29313. Do you pasteurise your cream?—We pasteurise all the milk before it is separated.

29314. To what temperature do you raise the milk to?—To 170 degrees or over.

29315. By what method—is it by steam heating?—Yes.

29316. Does that ensure that the whole body of the milk is exposed to this temperature?—Yes.

29317. Is it being agitated while it is in the heater?—Yes.

29318. Mr. WILSON.—The effect of pasteurising milk in that way is, of course, to kill off all the lactic acid type of bacilli. Do you find as a consequence that it deteriorated very quickly afterwards?—The separated milk?

29319. Yes?—Unless it is thoroughly cooled down afterwards it won't keep long.

29320. Do you in ordinary practice cool it down?—Yes, except we are short of water.

29321. Where the separated milk would leave the creamery in a warm condition it is open to very speedy deterioration?—Yes, in the summer time; but the farmers don't mind whether it gets sour or not, as it is for calf and pig feeding. The calves will thrive as well on sour as fresh separated milk. You have to confine the calves to one or the other—it does not do to give them fresh milk to-day and sour to-morrow. You must keep to one or the other.

29322. I suppose they have learned by now that separated milk is not sufficient by itself?—Not without enriching it with gruel or something similar.

29323. Supposing in certain country districts there was a distinct shortage in the milk supply for the labourers where the creamery system is established, and it seemed to those interested in the milk question that the only way in which the supply of milk for the labourers could be secured would be for the creamery to act as a retail dépôt for the sale of milk, would you see an insuperable difficulty in making the auxiliary a dépôt?—No; I don't think so.

29324. It has been suggested to us that it is impossible to turn a creamery into a dépôt for that purpose?—Of course, we found in trying it that it had its drawbacks. If the milk suppliers got a short measure of separated milk they stated that we were selling more than we were accounting for.

29325. Lady EVERARD.—Supposing you received twenty gallons of milk, how much separated milk are you supposed to return to the supplier?—About 80 per cent.

29326. Mr. WILSON.—If you had a retail trade of that kind it would tend to be a rather steady demand from day to day?—Yes; but so far as my experience goes, there is no scarcity of milk for domestic use.

29327. I quite understand that, so far as your locality is concerned, but there have been districts where we have been told that the creameries have taken all the milk. The answer to that is, that if the creamery becomes a dépôt that will solve the problem. We want to find out the great difficulty that prevents a creamery doing that?—I don't see any insuperable difficulty provided the creamery committee consent; they can get as good a price for the milk as by making it into butter.

29328. Rather better?—Yes.

29329. How many gallons of milk would it take to make a pound of butter?—Our average ran to a little more than nine quarts.

29330. Professor METTAM.—What do you do with the drainage of the creamery?—It is purified by a system of septic tanks and bacterial beds.

29331. Where does your effluent from the septic tanks go?—The effluent from the septic tanks goes to the stream adjacent to the creamery.

29332. Have you any complaints in regard to it?—No, not now; but before we introduced this system there were.

29333. What do you do with sludge?—We only require to clean that out once a year.

29334. The matter in the separating bowl?—That is thrown into the ash heap.

29335. Does it decompose rapidly?—It does not lie there long.

29336. Mr. O'BRIEN.—Do you know what it consists of—that particular slimy substance?—The impurities in the milk, to a great extent.

29337. Professor METTAM.—What are the impurities in the milk you refer to?—They would be more or less fine matter in suspension.

29338. What is the nature of this fine matter in suspension?—I cannot tell you exactly.

29339. Manure?—Possibly.

29340. Hair?—Yes, there are hairs.

29341. Scrapings and so on from the udder—scales?

—Yes. There are generally one or more dogs waiting to get a feed as soon as the contents of the separating bowl are thrown out.

29342. And it does them no harm?—No.

29343. Mr. O'BRIEN.—They come back again?—Yes.

29344. Yours is a co-operative creamery?—Yes.

29345. Have you been manager there long?—Eleven years.

29346. Were you living in the neighbourhood before that?—No. I was manager of a creamery in county Sligo previously for several years.

29347. You are living in your present district sufficiently long to have a good idea of the milking capacities of the cows in the locality?—Yes.

29348. You say there is not much improvement in their milk qualities?—No, only in exceptional instances.

29349. You have not undertaken, with the assistance of the Department, to become a cow-testing association?—No; we have done nothing in that way yet.

29350. You don't know of anybody there in the district who keeps records as to what would be the yield from one herd, say, and the average per cow?—I know there are some farmers who have kept records for several years. The individual cows will give from 600 to 800 gallons. I have one farmer in my mind who keeps eight cows, and the yield is from 600 to 800 gallons. He weighs the milk and keeps a record, and

this man is one of our principal winter suppliers. He keeps up a good supply of milk in winter. He made out last year that out of his autumn-calving cows he made about £5 per cow per annum more than for the spring-calving cows.

29351. What is the average price at your creamery for the year?—4½d. per gallon and the separated milk returned.

29352. That is rather high?—We have not gone below 4½d. this summer yet.

29353. If the cows of this farmer whom you have mentioned gave him not less than 600 gallons, he finds it pays to have them calving in the winter?—Yes.

29354. Mr. WILSON.—If a farmer of that kind has got a herd of 800-gallon cows he would retain a certain amount, of course, for his own use and for the neighbours?—Yes. These figures I have given are the actual produce of the cows.

29355. Would it be possible to ascertain what quantity of milk comes to the creamery from that particular place?—Yes, of course it would. We have the record of the total quantity that we paid him for during the season. This farmer last year averaged £10 a cow from the creamery for the milk he sent. Of course, he has a large family, and also a number of cottier houses, which he has to supply. I know another supplier who has four good cows, and he averaged over £12 for the season. His cows are exceptionally good.

29356. It would be interesting if by any chance you could send us the quantity of milk he sent to the creamery and the record of his milk yield?—I will try to do so.

29357. Do you get milk from the labourers' cottages at all—do they keep a cow, and send the milk to the creamery?—No.

29358. None of them?—No.

Alderman Marshall TILLIE, D.L. examined.

29359. The CHAIRMAN.—You are an employer of labour, Mr. Tillie, in the city of Derry?—Yes. I am partner in the firm of Tillie and Henderson.

29360. Is it male or female employees you have as a rule?—Principally females.

29361. Speaking generally, is the health of your employees good?—Yes, very good.

29362. Do they take a mid-day meal at the factory?—No; they all go out for their meals. They go home generally.

29363. Do they live within easy reach of the factory?—Yes; of course there are exceptions.

29364. Is any provision made to enable them to cook whatever food they consume?—Not with us. There are a great many places where they get food cheap.

29365. Which cater for the working-class population?—Yes.

29366. Do they look healthy and strong and vigorous—the young girls from fourteen to eighteen?—Yes.

29367. And they are not often incapacitated through illness?—No.

29368. Have you any married women engaged?—We have a good many. We don't employ married women, but if they get married in our employment we keep them on.

29369. Do they look as if they got healthy food and sufficient nourishment?—Yes, but I think they take too much tea. If they took more milk it would be better. That is part of my object in coming here to-day. I would like to have milk depots in the city as in other towns. The workers find it difficult to get milk because they have to go to their employment early in the morning, and the milk is brought through the streets in carts.

29370. Miss MCNEILL.—And if they are not there when the carts are passing they may go without milk?—Yes. I think the milk is deteriorated by being shaken about in carts through town. The milk is four or five hours in the carts and it is half-churned.

29371. The CHAIRMAN.—What hour do they go into your factory in the morning?—8 o'clock.

29372. They have their breakfast before then?—Yes.

29373. Do you think it would be an economic purpose to which public funds might be devoted if

milk shops were established, and, if need be, a slight reduction was made in the price of milk for the working-classes?—I do. If milk shops with refrigerators, where the milk would be kept cool in summer, were established it would be a good thing. It would be very easy to have a little refrigerating room in each shop.

29374. In the ordinary small depot in a town, you usually find that the milk is stored with objectionable commodities likely to cause a taint?—I have no experience.

29375. You are clearly of opinion that it would be an economic administration of public funds to cover at least the cost of the distribution of the milk supply, in order to secure that pure and healthy milk will be available for the poorer classes?—Yes. I think it would be a great thing to encourage the working-classes to put more milk into their tea. You cannot get them to give up the tea.

29376. If a larger supply of milk were available more of it would be used you think?—Yes, and I also think that a corporation such as ours should not charge tolls to milk vendors. Our corporation charge 6d. a week on every cart coming into the town. If they come twice a day they pay 1s. a week. I think it is a ridiculous thing to tax workers that way. It is not altogether the payment of the toll, but the annoyance of it that is objectionable.

29377. We never heard of that custom prevailing anywhere else?—I am of opinion that it should not be charged. Milk tolls, so far as the working-classes go, are objectionable. It keeps the trade in the hands of larger people.

29378. This is the first occasion on which we have been told that tolls were charged?—They are charged here.

29379. Miss MCNEILL.—Is it a very old custom?—Yes; it is a very old custom. I am a member of the corporation myself, and I don't know what revenue this toll brings in, but it is vexatious and should be abolished.

29380. The CHAIRMAN.—For a centre of population like this it seems to me to be antediluvian?—They are a great mistake; they are carried on to keep people in positions; if the tolls were abolished, they would lose their situations. Some men get 25s. a week for one

Alderman TILLIE, D.L.—18th August, 1912.

day's work. That is how it works out. I think it should be abolished by Act of Parliament. Let the people have their purchases free of toll—free trade in fact, that is what it means.

29381. Mr. O'BRIEN.—You don't feed any of these girls that are working in your establishment in the middle of the day?—No.

29382. They prefer to go out?—We had a dining-room at one time and it did not work.

29383. They did not care about it?—No. There is nothing that would bring them to drink milk more quickly than having facilities to get it.

29384. You say you keep on such girls as get married in your employment?—Yes.

29385. What do they do about their babies?—They are away for a time, and the mother or some friend takes charge of the baby and the worker again goes back to her employment. A great many of them marry men who are not in employment at all.

29386. The husband minds the baby?—Yes, or the grandmother.

29387. What do these men who depend on the women's work do?—Nothing. They knock about.

29388. You don't find that the women who are married in your employment neglect their infant child

at all—that is to say, that they wear it as soon as possible?—No.

29389. Do they come back to work within three months?—Yes, some of them do, and some less. Some come back in one month.

29390. That, of course, you cannot very well discourage?—We don't take any notice of it. We don't wish to turn them off as long as they give good attendance. We are having a very strong company starting a ship-building industry that will give employment to the men in Derry.

29391. Mr. WILSON.—I suppose that will be a great disappointment to the men whose wives are supporting them?—They will have an opportunity of working then.

29392. The CHAIRMAN.—Is this scheme of starting a ship-building industry likely to see fruition soon?—Yes; it is going to be started immediately.

29393. You have plenty of dock accommodation available in Derry?—Yes.

29394. Lady EVERARD.—Has there been a boot factory started in Derry lately?—No. We have plenty of employment in the city for women. Collars and shirtmaking are their principal occupations. I should be very glad if the Commissioners would pay a visit to our works in the morning.

The CHAIRMAN.—We shall endeavour to do so.

The Commission then adjourned till the following day to Omagh.

FIFTIETH DAY.—WEDNESDAY, 14TH AUGUST, 1912.

The Commissioners met at the Courthouse, Omagh, at 12.30 o'clock.

Present:—P. J. O'NEILL, Esq. (Chairman); LADY EVERARD; MISS MARGARET MCNEILL; ALEC. WILSON, Esq.; DERMOD O'BRIEN, Esq.; and Professor A. E. METTAM, B.Sc., F.R.C.V.S.

S. W. STRANGE, Esq., *Secretary.*

Mr. R. S. CLEMENTS, J.P., examined.

29395. The CHAIRMAN.—You are a member of the Rural District Council in Omagh?—Yes.

29396. How long have you been connected with the administration of that body?—Since March, 1873—thirty-nine years.

29397. Has the Omagh Rural Council put into force the provisions of the Dairies and Cowsheds Order?—Yes, recently.

29398. When?—Within the last couple of years. I am not sure of the date.

29399. Will you be good enough to tell us what steps have been taken to enforce the Order; have they appointed inspectors?—Yes. They have appointed two lay inspectors and a veterinary surgeon.

29400. And reports are received from them from time to time regarding the condition in which they find the byres and dairy stock in the district?—They have sent in a few reports, but not regularly.

29401. To whom is the responsibility for the irregularity to be attached; is it to the officers or to the council?—Probably to both.

29402. Are the council not taking a keen interest in the administration of the Order?—I think they are, but still it is not done, and a very small portion of the cowsheds or byres are reported on.

29403. Is registration enforced—are all persons vending milk or sending it to a creamery registered with the clerk to the rural council?—A good many are, but I would say a great many are not.

29404. It would seem then that no very vigorous steps have been taken by the council or its officers to enforce the provisions of the Order?—It has not been enforced, and I don't know on whom to put the blame. There was some reluctance about accepting it at all, and they accepted it on the condition that they would have it as easy as possible.

29405. On whose part was the reluctance?—I think the council first agreed to do their best, and we had

the Local Government Board inspector down once or twice, and the council appeared to change their mind when there was pressure brought to bear on them from outside.

29406. The members of the council changed their minds?—Well, I think to a very large extent they did. That is my own opinion.

29407. We are grateful for an expression of your own opinion. Have the officers appointed by the council ever reported that the conditions prevailing in certain dairies or byres were not in conformity with the regulations laid down?—There were a few reports made to that effect.

29408. And what action was taken on these reports?—I think notices were served, and I think that is the whole of it.

29409. Notices were served on the owners of these dairies or byres that they were not conforming with the regulations laid down for their guidance or control?—Yes.

29410. Were any prosecutions ordered?—Not that I am aware of.

29411. Did any subsequent report come before the council stating either that the persons on whom notices had been served refused to comply or had made arrangements to carry out the improvements?—I am aware only of two or three reports. My opinion is that the matter was not followed up.

29412. Professor METTAM.—Do these inspectors get any salary?—They get a small salary.

29413. The CHAIRMAN.—I am rather sorry that some of the officers are not coming before us?—The doctor will come. He is one of our officers; he is the dispensary doctor.

29414. He would not be familiar with the administration of the Order?—I am trying to give you as good an idea as possible.

29415. I am rather inclined to gather from what you tell me that no vigorous action has been taken, at all events by the council?—No; not very vigorous. If a new house was to be built it would have to be built on certain plans, but if there was an old byre they had to do with it with some improvements, and generally speaking, there were improvements made in all the byres throughout the union.

29416. It would seem to be much more conclusive and satisfactory if the council would ensure that healthy and sanitary conditions were present?—Yes.

29417. Are there any creameries in this district?—There are a great number. This is a large district.

29418. Do you remember the period previous to the introduction of creameries?—Very well.

29419. Has the introduction of the creamery system been in any way responsible for decreasing the supply of milk available for domestic purposes?—I don't think there is any scarcity for domestic purposes in this part of Tyrone at all.

29420. No scarcity exists at all?—Not that I am aware of.

29421. Even with the poorest section of the population?—So far as I know they are all supplied. They have become decreased in number in the rural district.

29422. The working-class population has diminished?—Yes.

29423. Is there a scarcity of labour to attend the dairying?—I think it is becoming more acute.

29424. Is it the custom for farmers in this district to supply labourers with a fixed quantity of milk?—It is with a great many.

29425. It is not universal?—No, and where it is not universal they give higher wages I presume.

29426. And where the custom does not prevail, would the labourers find any difficulty in procuring a milk supply?—I think they can always get it. I never heard any complaints, except for a short time in the winter when milk is scarce.

29427. Is there any objection on the part of farmers to sell milk in small quantities?—No.

29428. There is no sentimental or practical objection to the sale so far as your information enables you to state?—None.

29429. If a man was resident in a union cottage and was not working regularly with a farmer, from what source would he get a supply?—He would get it from other neighbouring farmers about.

29430. There would be no objection to supply him because he was not resident on a farm?—Not in the least, on the same terms.

29431. Are you engaged in the dairy industry yourself?—Yes, I farm a couple of hundred acres.

29432. Do you sell milk to the creamery?—Very little.

29433. To what purpose is the milk you produce devoted—butter-making?—Some years ago I sent it to the district asylum. They have nearly as many cows now as they want. They have between thirty and forty cows, and they need very little milk now from outside.

29434. Do you go in for home-dairying?—No; latterly I keep more dry stock than formerly.

29435. You have abandoned the dairy trade to some extent?—To a large extent.

29436. Did you find it difficult to get the work of the dairy looked after. Was that the reason?—No; some other reason.

29437. Regarding the milk-producing quality of the dairy stock available in the county, is it better or worse than it was in your early recollection?—I think it has in many ways improved.

29438. Is the milk yield of the cow to-day as good as that of any other period with which you are familiar?—I think it is about the same.

29439. What class of cow are you using in the dairy?—Cross-bred and shorthorns.

29440. What premium bulls are brought in by the County Committee?—Generally shorthorns—pure-breds, and there are a great many farmers keeping bulls besides.

29441. These would be probably the produce of a cross between a shorthorn premium bull and a non-pedigree cow?—Yes, very often that happens, they are trying to get bulls of a milking strain recently.

29442. Is it a pedigree strain with a milk record they desire or is it a cross-bred bull?—A cross-bred is thought to be the best.

29443. Are they co-operating with the Department's scheme for the production of dairy bulls?—They are, recently.

29444. Are you personally co-operating?—No.

29445. Are there any Aberdeen Angus bulls used?—There are a good number in this county.

29446. Are there any of the stock of these bulls kept for dairy purposes?—Yes, some of them are.

29447. What sort of dairy servants are they?—The milk is good, but the quantity is not large.

29448. Are milk records kept, do you know?—Some people keep them.

29449. Do you keep them?—No.

29450. Do any others engaged in the industry do so?—Yes, but none of my close neighbours.

29451. Has any cow-testing association been established in this locality with the object of keeping the records and having them registered in the dairy scheme?—None close to me that I know of.

29452. Is there much tuberculosis amongst the dairy stock in this county?—There is a great deal of late.

29453. I would infer from that, that you rather think it is increasing in recent times?—Yes, very much. I remember a time when you heard very little talk about it. If I may do so, I will give you an opinion as to the causes at the end of my evidence.

29454. I will be glad to have them now?—About thirty years ago or less you would scarcely hear of a case of tuberculosis. At that time farmers generally kept their young stock in houses in the winter. There was a notion got abroad that it would be better to keep them out in winter and that the cows would do better. In this wet climate the calves were kept out in winter and at that they would be probably from nine to six months old. They would be out behind ditches or standing at gates in mud a foot deep, or lying on the cold, wet, damp ground. This is not a country for keeping cattle out in the winter—this cold, damp, wet land. The cattle acquire that disease when young, like asthma in human beings, and it develops when they get older. That is my opinion as to the increase in tuberculosis, and I am fully convinced it is right.

29455. Does the custom still prevail of keeping the dry stock out in the open in the winter?—Not so much now as formerly.

29456. They are reverting to their old customs and methods?—Yes, to a large extent, and they provide shelter if they keep the cows out, so that the cattle can go out and in, and it is much better for the cattle and they are doing better.

29457. You are of opinion that there is a considerable increase in the number of cases of tuberculosis within twenty years?—I am sure of it. It has increased more than seventy-five per cent.

29458. Would it be also true to state that in all probability at the period to which you refer, this disease was not as accurately diagnosed as it is at the present day, and that cases of disease existed but were not recognised as suffering from tuberculosis?—I don't believe there were the same number in existence at all for the reasons I have given.

29459. But it is your experience that the losses in stock are greater within the last ten years than they were thirty years ago?—It is probably now more than seventy-five per cent. greater than it was then.

29460. And naturally these losses have to a considerable extent handicapped the dairying industry?—Yes, certainly, and caused great loss to the farmers besides, and some of them are probably not aware of it.

29461. Have you mortality amongst your calves, and do you lose many of them in the first six months of their existence?—No; it is more common in the County Cavan.

29462. Abortion does not trouble you so much?—No.

29463. It is not a frequent source of loss amongst the dairy stock?—It occurs sometimes.

29464. But it is not nearly such a serious drawback as the presence of tuberculous affections?—No; it is not nearly so bad.

29465. What is the ultimate fate of a cow that would be in a dairy when she contracts tuberculosis; what becomes of her?—I don't know many cases close to me of the sort.

29466. Has the veterinary inspector appointed by the Omagh council ever reported to that body that he had discovered cows that he believed were suffering

from tuberculous affection?—Not so far as I am aware. I think he made one report about a couple of months ago. I saw it in the paper. I did not happen to be at the Board meeting that day.

29467. Were any directions given to him with regard to that particular beast as to what should become of it?—He made a report on visiting some cowsheds and byres, and I don't know that he had any case of tuberculosis at all.

29468. What was the nature of the report—that the conditions existing were not in conformity with the regulations laid down?—Some of the reports were favourable and some unfavourable. I think this report was two months ago.

29469. Regarding the unfavourable reports, were any instructions given to him with regard to them?—More than likely there were. I was not present at the Board meeting.

29470. Are the creameries numerous in this locality?—Yes, and auxiliaries.

29471. Have you ever known dirty milk to be returned from a creamery or auxiliary to a farmer?—I have heard a few cases where they thought the cans were not properly kept clean, but not many cases. They are warned. The creamery sends them a private circular to keep everything clean and in good order.

29472. If milk is refused in one creamery, is it possible to get it taken into a neighbouring creamery?—No. I never heard of a case of that sort.

29473. Are those engaged in the dairying industry—milkers and others attending on the cows—careful in their habits?—I suppose a good many would require to be more careful, but I have advised them to keep everything right—the byres and udders and everything. I have been very watchful about that.

29474. I wanted to know if those engaged in this particular form of occupation were naturally clean in their habits, and careful about their clothes, and handling milk?—It is so hard to answer a question regarding the whole of the Omagh union.

29475. I only want the information so far as you can speak?—I am anxious to give every possible assistance. I think there are a great many keep everything clean and in good order, but there may be some exceptions.

29476. And no effort has been made by the local authority so far as your information enables you to state, to bring those who are careless into line with those who are careful?—They try to do so.

29477. Have they ever prosecuted them for non-observance of the provisions of the Order?—Not that I know of.

29478. Is winter dairying carried out generally in the county Tyrone?—Some farmers never send milk to the creameries at all, and also a good many here that live not far from Omagh.

29479. At what price is the milk sold in Omagh?—I think it used to be sold at 8d. a gallon in summer and 10d. in winter. I think for some years past it is sold for 10d. a gallon in summer and 1s. in winter.

29480. That price would be considerably more than the creameries pay?—More than double; 10d. a gallon would be almost double what the creameries give.

29481. Do any of the creameries themselves sell milk retail?—I never heard of the like. I knew a creamery about Belfast where they sold milk.

29482. Is there any milk sent from here to Belfast?—No.

29483. Nor to Derry?—No.

29484. Is the town of Omagh well supplied with milk at all seasons of the year?—It is well supplied.

29485. And there is never a scarcity?—Never so far as I know.

29486. Do the working-class population appreciate the value of milk as a food?—I don't think they do. I think the middle and upper classes appreciate it more.

29487. Has any improvement taken place in that respect: are they more keen on getting a milk supply for their families now than they were twenty years ago?—I think a great many are.

29488. Some improvement is taking place in that particular direction?—I think so.

29489. Is there much home-dairying carried on?—There are still a good many carrying it on.

29490. Is the number increasing or diminishing?—It is about the same. When they count their trouble sending milk to the creamery every morning, and the

distance, and when you take it into account that some farmers get the same price for their butter as the creamery itself, and that they can sell the butter, and that it supplies the poorer class of people in their own locality, there is no profit in sending it to the creamery.

29491. Have you ever heard it stated that the rearing of calves on separated milk has an injurious effect on their constitution and disease-resisting powers?—I don't know that it engenders disease, but it would not do to give it alone, unless you got flax seed. It would not do without that for calves. They could not live on the separated milk alone. It is very good for pigs but not for calves.

29492. Has the feeding and bringing up of young stock on separated milk had an injurious effect on the general stock of the country in your opinion?—The calves are not nearly so good if you don't add oil-cake and flax seed meal, and Indian meal, to the separated milk.

29493. With the addition of these substances is it your opinion you can rear as vigorous and healthy a stock as if they were brought up on whole milk?—It was never the custom to bring them up on whole milk except for the first month. It was never the custom to continue them for six months on new milk.

29494. I don't suggest that they would get new milk for six months, but they certainly did get new milk for a longer period previous to the introduction of the creamery system, than they do since it was brought in?—I presume they did.

29495. Do you think that has any effect on the disease-resisting properties of the calves?—I don't think any disease follows, but the separated milk does not rear as strong calves unless they have the things I have mentioned added to it.

29496. Would they be as good two-and-a-half year-olds as if brought up in the ordinary way?—Not except great care was taken and ground oil-cake was given to them. It is possible to rear calves without giving too much milk at all if they are over two or three months. If you don't give them milk at first you cannot have good calves.

29497. How long are you giving pure milk to the calves—for what period?—I don't think hardly any calf gets it long enough, but we give it for about six weeks or thereabouts.

29498. Even those who are sending milk to the creamery?—Yes.

29499. That is more generous treatment than is given in other localities?—That is what is done.

29500. Lady EVERARD.—Is porridge used in this district?—It is, but they give it thinner than the ordinary stirabout.

29501. The children get it?—Unfortunately the poorer classes don't get enough, they have got such a notion of tea.

29502. You find they drink too much tea?—Yes.

29503. Can they get milk to colour tea?—They can.

29504. Do you think the mothers appreciate the value of milk as a food for their children?—I think they do, but if they used more stirabout it would be better.

29505. Do you find that they use home-made bread or baker's bread?—When they can get butter-milk they bake at home, but if they don't get milk, they cannot make it easily.

29506. Have you got a district nurse in your neighbourhood?—Not where I live.

29507. I don't mean a midwife, but a Jubilee or sick nurse?—There are a number of nurses about all towns, and we have one connected with every dispensary.

29508. But that is a midwife, and what I mean is an ordinary sick nurse?—I think about the towns and cities there are some of them, but not in the country. They would not be wanted.

29509. Have you got much tuberculosis in this neighbourhood?—Very little so far as I know. I scarcely know a case about where I live for miles around. They are all healthy out in the country except there are other causes; there are more dying from apoplexy and things of that sort.

29510. The CHAIRMAN.—That is not suggestive of starvation?—No.

29511. Professor METTAM.—And they die from old age?—Yes.

29512. Mr. O'BRIEN.—The majority of the farmers here send milk to the creameries, I suppose?—I would say the majority.

29513. I see we have some managers of creameries coming forward to give us evidence. I suppose they will be able to give us evidence about the sort of stock there is, and how much milk is sent to the creameries?—They can give you a good idea of the quantity sent off the farm, but as regards the stock very few of them see the cows. They can tell the number of gallons they received.

29514. When you were supplying milk to the asylum and were in the dairy business, did you know at all what was the sort of average yield a cow would give?—It varies very much, but I know cows that gave very large quantities.

29515. You had a necessity of keeping up your supply because you had a contract with the asylum?—Yes.

29516. And you had to supply a certain quantity of milk?—Yes.

29517. And were you selling milk elsewhere at the time?—No.

29518. How many cows did you have to supply that contract?—I think a cousin of mine and myself had forty cows, but they would not be all in full milk.

29519. How many gallons did you have to contract for at the asylum?—That is a difficult question to answer because it varied. You got an order for every week, and sometimes they would change the order before the week was up.

29520. I was trying to get at the quantity of milk that the cows in this district yield. Do you think they yield on an average 500 gallons in the year?—I never tried it that way. I can average more what each cow gives daily. Some cows go dry sooner than others, and may milk very long this year and it would be *vice versa* next year.

29521. One fully recognises that?—Yes.

29522. Professor METTAM.—I don't quite understand you when you state that the cattle were improving, or rather the conditions under which they were kept, within thirty years?—I think there are more pains taken to keep the byres right.

29523. And still you think disease is more common amongst cattle?—Yes.

29524. What is the explanation—that if the cattle are better kept disease is more common amongst them?—They get disease when young owing to being kept in the wet, cold fields in the winter.

29525. Thirty years ago they were not kept as well as they are now?—They were kept better in that particular way.

29526. You think tuberculosis was not prevalent thirty years ago?—Not by 75 per cent. of what it is now.

29527. Do you know tuberculosis when you see it, or is it mere hearsay?—I have never been troubled very much in my stock.

29528. What you have stated is probably hearsay?—There was scarcely a word about tuberculosis thirty years ago.

29529. Did you ever hear of tuberculosis of the udder?—I heard of the bag being affected.

29530. Is it common, do you know?—No; I heard of milk-fever but never had a cow that had it, and it is a very bad disease.

29531. But that is different altogether from tuberculosis?—Yes, I know it is.

29532. You might tell us something about the dirty and diseased condition of the cows. How are the cows kept in the byres in the country districts?—In the usual way; they are kept tied.

29533. Are they kept clean, or is the manure allowed to accumulate in the byres?—No; most of them clean the byre every morning. There are great pains taken by some farmers.

29534. Do they clean the udder before they milk the cows?—Generally they do.

29535. Do they put on overalls and do they wash their hands?—I think they wash their hands, but I don't think they put on a change of dress, except aprons.

29536. They don't protect themselves from the cow or the cow from them?—I don't see any change of dress.

29537. You say they wash their hands?—Yes.

29538. You are a member of the rural council?—Yes.

29539. And you get reports from the medical officer as regards disease in the district?—He makes reports.

29540. Did you ever hear of outbreaks of typhoid or diphtheria?—Yes; probably there were ten or twelve cases within the last twelve months, supposed to come from bad water.

29541. Have you ever heard disease to be caused by milk?—No.

29542. Or traced to a certain distribution of milk?—No.

29543. Is there any difficulty for anyone to obtain milk in your neighbourhood?—Except for a short time in the winter. There are not as many cows calving in winter as in summer.

29544. The chairman asked you a question, namely, as to whether there was any winter dairying in this neighbourhood. Do many cows calve in the winter; is there much winter production?—Anyone who has contracts must keep up the supply.

29545. But those who have not contracts?—They won't trouble themselves to buy any stock when they can do without it until their own cows calve. It would not pay them.

29546. When do the majority of the cows calve?—From March to June, or from February to June.

29547. Then, of course, there is a big deficiency in the milk supply during the winter months?—Yes.

29548. And save by those who have contracts, no provision is made to keep up the supply?—No, it would not pay the farmers to do so. They would have no room for the cows, they have their dry stock.

29549. They keep their dry cows?—Yes, always.

29550. As regards butter-milk; is there plenty of it available for those who want to buy it?—No; that is where there is a shortage.

29551. And these farmers who make butter at home, they are quite willing to sell the butter-milk if anyone goes to them?—Yes.

29552. At a reasonable price?—Yes.

29553. What is the price?—I often saw it selling at about a penny a gallon.

29554. Do they use this butter-milk for making bread, or do they drink it, or use it with porridge?—They use it for porridge and baking, but it is to be regretted there is not enough of it.

29555. In your précis of evidence you have got a note with regard to the improper storage of milk, can you tell us anything about that; where do they keep the milk?—Many of the farmers have a dairy, but in the small farms the accommodation is not sufficient.

29556. You could suggest improvements?—Yes.

29557. In most places?—In a good many places.

29558. In most places?—I would not say the larger number. I would say in a good many.

Mr. JAMES M'GILLION examined.

29559. The CHAIRMAN.—You are a representative of the Omagh Urban Council, Mr. M'Gillion?—Yes, sir.

29560. How long have you been a member of that body?—Four or five years.

29561. Has it taken any steps to enforce the provisions of the Dairies and Cowsheds Order?—Yes.

29562. What steps has it taken?—As the law laid down.

29563. Has it appointed an inspector?—Yes.

29564. Lay or professional?—Lay.

29565. And they have appointed no professional man?—They have a professional man.

29566. Is he a V.S.?—They have a veterinary surgeon, Mr. Windsor.

29567. At what period was the Order put into force by your council?—When it came into operation.

29568. Have reports been presented by the officers appointed by your body from time to time?—Yes.

29569. And what fate overtook these reports?—The officer gets instructions to see that the Act is carried out, and he reports back to the council. In all cases the instructions have been carried out.

29570. He reports in the first instance that certain violations of the rules laid down for the guidance of those engaged in the dairy industry have been discovered, and he subsequently reports that on his recommendation these defects have been remedied?—Yes, and if they don't have them remedied in a short time they are prosecuted.

29571. Have you ever instituted prosecutions?—No, because so far as I remember all the recommendations were carried out.

Mr. JAMES M'GILLION.—14th August, 1912.

29572. How often does the Urban Council meet?—Monthly, except for special purposes.

29573. Are monthly reports presented by the officers appointed?—Yes.

29574. Has the veterinary inspector ever reported to the council that he found an animal in the dairy herds in Omagh that he suspected of suffering from tuberculous affection?—Not to my knowledge.

29575. Has the lay inspector ever reported that he found people handling milk with unclean hands, careless in their habits generally?—Yes.

29576. What order was made?—An order requesting the people to take proper precautions, or that prosecutions would be instituted.

29577. And no prosecutions were ever undertaken?—No; they carried out the instructions.

29578. Would the officer subsequently report that he had discovered that the instructions given were closely observed?—Yes.

29579. Is there any scarcity of milk for the poorer population in Omagh?—Yes.

29580. For the year round, or for a limited period?—The months of December, January, February and March.

29581. During these months, would it be possible for the mother of a family having money to buy, to procure milk?—It may be possible, but there are a great many who have money and cannot procure it.

29582. Such a contingency might arise?—Yes.

29583. Where is the town supplied from?—From the country districts.

29584. And milk is sent in by carts?—Yes.

29585. And delivered through the town?—Yes.

29586. Are any cows kept in the urban area?—Yes, but very few, by vendors of milk.

29587. The main portion of the supply comes from the outer area?—Yes.

29588. Has any report ever been presented by the medical officer of health that he suspected the milk as a source of infection?—Yes.

29589. And what action was taken under these circumstances?—I am sorry to say his order was not carried out.

29590. What did he recommend?—I cannot call to memory, but I know he called attention to the matter.

29591. What I asked you was this—Did the medical officer of health ever report to your council that an outbreak of infectious disease had occurred in the town, and that he suspected the milk supply as a source of infection?—I cannot exactly say that.

29592. You have no recollection of such a report?—No, not in the town.

29593. Has it occurred in the country?—Yes.

29594. I don't limit you in the evidence you give to the conditions within the urban area. We are as much concerned with the people in the country as in the town?—In Greencastle there was a great outbreak of fever. The medical officer stated that the disease came from the milk.

29595. What action was taken by the local authority?—The rural council had to do with that. I saw the matter reported in the papers.

29596. I take it, if the newspaper report was complete, it would, indicate what order was made, or if no order was made?—So far as I know, there was no order made.

29597. So that the medical officer's report might as well never have been written, so far as the results were concerned?—Yes.

29598. How long ago would that be?—Four or five years.

29599. About how many cows would be kept in the urban area?—I cannot exactly say.

29600. Is registration enforced in the urban district?—Yes.

29601. Have your officers definite instructions to enforce the provisions of the Order?—Yes.

29602. Have they reported that they found the conditions of the byres unsuitable and unhealthy?—Yes, on certain occasions.

29603. And they have received instructions from your council to enforce the provisions of the Order against the cow-keepers in these cases?—Yes.

29604. And the improvements that were indicated as being necessary have been carried out?—Yes.

29605. And they never have been obliged to report on a second occasion that the owner of the dairy was obdurate and refused to conform with the requirements?—No.

29606. Are there any milk shops in Omagh?—No.

29607. Professor METTAM.—No shops where milk is sold?—There are a few on a small scale.

29608. The CHAIRMAN.—What class of shop would they be—are they what would be known as the small huxter's shop?—Yes, exactly.

29609. Do your inspectors visit these shops?—They do.

29610. Have they ever reported that they found the milk stored in unsuitable surroundings?—Yes, and had prosecutions.

29611. Prosecutions were instituted?—The Constabulary had prosecutions.

29612. That was on the question of adulteration?—Yes.

29613. Have your inspectors ever reported that they found milk stored in unsuitable surroundings, or in unclean vessels in these shops?—Yes.

29614. What action was taken?—They got notification to put their places in order.

29615. And no prosecutions were ever resorted to?—No, because they conformed with the notice.

29616. They carried out the improvements required?—Yes.

29617. Have you a Food and Drugs Act inspector under your council?—No.

29618. Is that duty carried out by the Constabulary?—Yes.

29619. Have samples been sent for analysis, and have prosecutions been instituted as a result of the analysis?—Yes.

29620. What sort of fines were imposed on those convicted of selling adulterated milk?—Small fines, as far as I remember.

29621. What would be the amount?—2s. 6d. or 5s.

29622. These were not by any means weighty penalties. Does the public feeling in the town regard the penalties imposed by the magisterial bench as adequate to the offences committed?—Sometimes the public feeling is not expressed with regard to these people. Some would be satisfied with the fines, and others not.

29623. They pleased those who might later come under the lash of the magistrates, but those who may be condemned to drink a mixture of milk and water would consider the penalties inadequate?—Yes.

29624. Is there, a period of the year at which very few carts come into the town to vend milk?—Yes.

29625. And during that period the mothers of children anxious to give a milk diet to a child cannot procure it?—Yes; it is impossible to get it.

29626. Have you any knowledge of the rural district?—A slight knowledge, but I would rather confine my evidence to the town.

29627. Do you think that the condition to which you refer in the town may also be found to apply in the rural district?—Certainly.

29628. And it is quite possible that the occupant of a labourer's cottage might not be able to procure milk?—Yes; I know some of the occupants of labourers' cottages and they cannot get milk. That is in the rural district.

29629. So the custom to which Mr. Clements referred of the farmers supplying the labourer with milk as a portion of his emoluments does not always prevail?—So long as it is part of his emoluments he is all right.

29630. If a man were working for a contractor, or on the road, would the farmer have the same interest in giving him a milk supply as if he were working for himself?—I am afraid not.

29631. What is the population of Omagh?—About 4,700.

29632. And I suppose amongst that population there would be one half of them earning their bread by labour?—I daresay there would.

29633. And it is quite possible that the households in which these people reside for four months of the year might not be able to procure milk?—Certainly they could not get it.

29634. Would you think it would be desirable to establish a milk depot under the control of the urban council to deal with that necessity?—I certainly would, because for the last three years in the months I have stated there was a famine for milk. For instance, I made a contract with a milk vendor myself and she did not supply me saying that the milk got very scarce and that she had to supply her customers.

29635. Had you a difficulty in getting milk?—I had to do without it.

29636. And your case would be typical of many?—Yes. There are a good many of the carts that come twice in the summer, and only once in the winter time.

29637. And less than half the supply would be available then?—Yes.

29638. Milk is not raised?—No.

29639. What price is charged retail for it when delivered through the streets?—In fact I can hardly just put an exact price on it.

29640. It varies?—Yes.

29641. Are the better class people charged a higher price than the poor?—No.

29642. Different sellers might charge different prices?—When the milk is scarce the measure is very "neat."

29643. The measurement is very accurate?—Yes.

29644. Would your council, in your opinion, be willing to undertake the management and control of such a depot if established, and would they furthermore be willing to undertake to levy a rate to meet the cost of delivery, or cheapen the milk to the working-classes?—I cannot answer that. I daresay there would be some for and some against that. When there was notification given of this Commission visiting Omagh there were expressions of opinion for and against. I said myself that there was a scarcity of milk. Doctor Thompson said he quite agreed with me, from his experience.

29645. Even that statement was controverted by some members of your council?—Yes.

29646. There is not absolute harmony here apparently. Was it a question as to what they regarded as a scarcity—was it a question of degree or of direct contradiction?—They said they thought there was no scarcity.

29647. Perhaps they were not particularly curious to find out?—My idea was that they were not in touch with the working people.

29648. That is probably the explanation?—Yes. The casual labourer cannot make a constant contract for milk because he cannot get employment regularly.

29649. Professor METTAM.—Of your own knowledge you are aware there is a scarcity?—Yes. It is not hearsay with me at all. I am in touch with the working-classes, and that is why I know.

29650. Mr. WILSON.—Is there any popular explanation as to why there should be a shortage of milk in the district: for instance, in many districts the blame is laid on the creameries. Does that occur here?—That is the general opinion here amongst the class of people I describe—that as soon as the creameries started they could not get sweet milk or butter-milk.

29651. That is the common talk of the district?—Yes.

29652. You are referring to the conditions in Omagh town?—Yes.

29653. Not out in the country districts?—No.

29654. Is there a creamery actually in Omagh?—Yes.

29655. Does the creamery sell milk?—It sells skim milk. I don't know that they sell pure milk.

29656. The CHAIRMAN.—Did you ever know a person who went to the creamery for a small quantity of new milk and was refused?—No.

29657. Is there much separated milk used?—Yes, because they cannot get anything else.

29658. Mr. WILSON.—It occurs to one that if there was such a demand for milk that it would be a very easy matter to test the thing—if the people complaining went to the creamery and asked for milk?—I think as far as the creamery is concerned, whatever they have they give it, but a lot have to go away without any—I mean skim milk.

29659. I am talking of the new milk. You say there is a scarcity of new milk. It seems to me that if the milk is in a certain place in the town that

the people complaining, to show the genuineness of their complaint, should go and ask for it?—I never knew that they could get new milk at the creamery.

29660. That is the complaint?—Yes.

29661. From what you know of this town, if the demand is there, and if the article is in the town, surely it should not be an insuperable problem to get the two together, and what I would suggest to you is, that those who are interested in this question should organise what have been called "milk clubs"—have an organization of the poorer people in the town who wish to get the milk, and let them bulk their order and divide it amongst their members afterwards. Would there be any serious difficulty in getting up a body of that kind?—It would be a good idea.

29662. The whole thing turns on whether the statement made by you is correct, that there is a demand. If the demand is there, it seems that a very simple amount of organization would get over the difficulty. Would you agree with that?—To a certain extent.

29663. What would be your plan?—I don't think the creameries would do as you suggest. They would not sell. I think it is the creameries have left the scarcity of milk—the scarcity is due to the creameries.

29664. The CHAIRMAN.—Mr. Wilson is assuming that there would be a certain amount of pressure to compel creameries to carry out this arrangement?—That would be all right. I would agree with that.

29665. Mr. WILSON.—Even without the pressure, the price that people pay for sweet milk is better than the price that the creamery gets for its product?—I don't know about that. I am afraid you would not get it from the creamery unless there was pressure.

29666. The CHAIRMAN.—You are afraid the creamery would not co-operate or give the milk?—Yes.

29667. Mr. O'BRIEN.—Do the people use any substitutes for milk in the way of condensed milk?—They do in some cases.

29668. They buy it in the shops?—Yes.

29669. And what sort of brand do they use—tinned separated milk or tinned whole milk?—I cannot say; it is not sold very much in the town.

29670. Do they go sometimes without any colouring to their tea at all?—They do.

29671. Instead of buying condensed milk?—Yes; I only saw it once or twice in the town.

29672. If you went about the people's houses you don't see empty tins with geraniums in them, and things of that sort?—No.

29673. Professor METTAM.—You told us that you found a difficulty in getting milk for your own household?—Yes.

29674. What did you use instead of it?—Nothing.

29675. You did not buy any skim milk?—No.

29676. The CHAIRMAN.—Is there much trade in separated milk in Omagh town?—Only at the creamery, as far as I know.

29677. Is the creamery on the confines of the town?—It is in the town.

29678. They do sell separated milk retail in small quantities—half-a-gallon?—Whatever is required; even a quart.

29679. Is there much consumption of it?—More than the creamery can give.

29680. More than can be supplied?—Yes.

29681. Mr. O'BRIEN.—Most of the separated milk goes back to the farmer?—There are a good many people in the town buying it.

29682. Most of the farmers want their full 80 per cent. of the milk they send in back again to feed their calves?—I have seen occasions when people sent for it to the creamery and could not get it; and the farmers were approached, and they gave it sometimes, and sometimes they would not. They only gave it as a compliment.

29683. Is there any branch of the Women's National Health Association in Omagh?—I think so.

Dr. HUGH HARRIS examined.

29684. The CHAIRMAN.—You are a medical practitioner, Dr. Harris, in Stewartstown?—Yes.

29685. What distance is Stewartstown from Omagh?—Over twenty-five miles.

29686. Do you hold any public appointment there?—Yes; I am Medical Officer of Health and Dispensary Medical Officer.

29687. Is Stewartstown in the Omagh Rural District?—No; in Cookstown Rural District.

29688. Do you happen to know what provision is made by the Cookstown Rural Council under the Dairies and Cowsheds Order?—Yes; I was inspector for two years. I think they thought that we were too strict, and they stopped our money, and they appointed a veterinary inspector.

29689. What branch of the Order were you carrying out for them?—I was inspector of cowsheds.

29690. As to air-space and cleanliness and ventilation?—Yes; and they thought I was rather hard, I think.

29691. And they thought, probably, by making a new appointment they might reduce the pressure?—Yes; and they reduced the salary to half.

29692. Professor METTAM.—Do you mean to tell me that the veterinary inspector took it for half price?—Yes; and the price that was paid us would not pay whip money to the driver of a hack car.

29693. The CHAIRMAN.—And they wisely concluded that when the pay was reduced by half the pressure would be reduced in the same proportion?—I am sure they did.

29694. What condition did you find the cowsheds in?—When I started they were in a bad condition, and I left model ones when my appointment ceased. I made them take into consideration the extent of air-space, ventilation and light. I was told to confine myself to air-space and ventilation, and I did that. It took me a year to get that done, after visiting the cowsheds five or six times; and I reported on all the cases, and I had to pay about two hundred visits.

29695. In order to get what you thought was desirable carried out?—What was half desirable, not desirable at all.

29696. You dealt with what was imperative in the first instance?—Yes; and I tried to do away with the worst phases of the case first.

29697. Were you ever obliged to prosecute?—No. I was told if there was enough of air-space and ventilation that that would do. There was an order then that they do no inspection at all; and then the Local Government Board insisted on an inspector, and now they have got a veterinary surgeon. I have seen the air-holes stuffed with boxes.

29698. And the manure heap in close proximity to the byre?—I tried to get that done away with. I have sent in more reports than any man in the North of Ireland.

29699. Professor METTAM.—Do they carry them out?—No. Some of the Councillors have got the idea that the reason I sent in a report was to have a prosecution, and get money from them. One Councillor told me that; and he went so far as to say that unless I got money for prosecutions I would not institute them.

29700. That was a very reprehensible position to take up. Did you find any difficulty in getting your requirements carried out?—Some with great difficulty and some with no difficulty.

29701. And any alterations you required were small things at the commencement?—Yes. £2 or £3 would carry them out. One or two people made great improvements.

29702. At your suggestion?—Yes.

29703. Without bringing pressure to bear on them?—A little pressure. In my opinion, from reading books and seeing samples of cows in England, some of those in my district when I had charge would compare favourably with any in England.

29704. The CHAIRMAN.—Until the time the inspection was withdrawn?—Yes; so long as I continued.

29705. Since the new inspector was appointed, have you seen any reports of prosecutions that were carried out at his instigation or suggestion?—No.

29706. And as far as you can learn, from your knowledge of the locality, and reading the local press, you have no reason to think that any prosecutions have been undertaken?—I don't think they could take place without my notice.

29707. Regarding the health of the cows of the district, it is not a question on which you are an expert, but did it strike you that there was a possibility of some of the animals suffering from tuberculous affection?—I would not be surprised. Suppose a cow dies, it is kept quiet.

29708. It is not noised abroad?—No. It is my duty to watch, and I am always on the watch.

29709. Has anything been done by the veterinary inspector in order to ensure the health of the cows?—I cannot tell you. There was a case of supposed anthrax the other day. There are two inspectors—one appointed by the District Council and the other is appointed, I think, by the County Council. There was a case of supposed anthrax, and I inspected it, and the veterinary surgeon buried the carcass at once.

29710. Professor METTAM.—Was this case reported to the police?—Yes.

29711. The CHAIRMAN.—With regard to the milk supply, your position would enable you to state whether it is sufficient?—It is not sufficient.

29712. Is this owing to a scarcity of milk or want of appreciation of its food value?—Both.

29713. Is there a period of the year in which it is impossible for the working-class population to obtain a supply?—Yes. They cannot obtain an all-the-year-round supply in any place. I remember on one occasion sitting on a half-broken chair and half a stone in a small cottage, and I saw a child getting baker's bread and boiling water. I saw that with my own eyes.

29714. Mr. O'BRIEN.—That was better than tea?—I suppose it was.

29715. The CHAIRMAN.—What age was the child?—Three or four years, and there were seven in family.

29716. Could they buy milk?—They were poor; and they said they could not pay for it, but that they could not get it if they could purchase it.

29717. The CHAIRMAN.—Have you ever ordered a milk diet and been told that it was not procurable?—Often.

29718. Even for adults as well as for children?—Yes.

29719. Would that prevail throughout the entire year or only for a limited period?—Of course, in the summer it would be more easily got; there would be more milk.

29720. Does the custom prevail of the farmer supplying milk to those engaged working on his farm?—Some do and some don't.

29721. It is not a universal custom?—No.

29722. Is there any objection to sell milk in small quantities by those sending milk to the creamery?—Yes. Some of the people sending milk to the creamery don't keep enough for themselves.

29723. Professor METTAM.—Is that common, do you think?—I don't think it is very common, but it is common.

29724. The CHAIRMAN.—Is it the custom to provide the labourers with their food generally?—Yes.

29725. And often, in such circumstances, they don't even get milk in their tea?—In some cases, but not all.

29726. The very fact that such a state of things is to be found in individual cases would lead one to believe that they are not entirely isolated cases?—They are not.

29727. Would the working-class population use a larger quantity of milk if more were available?—I believe they would. I know one family of ten, and that man gets 6s. a week, and he has to feed his family with it.

29728. There is not much margin for extravagance there?—No; I have to give them money myself. In some places there is very bad water. In one case of a new well I got a report from the analyst that the water was condemned. The Council seem to think that I want them to spend money extravagantly.

29729. Your interest is in the public health?—Yes.

29730. To safeguard the interests of the poor?—Yes.

29731. Have you got tuberculosis in your district?—Not very much.

29732. Nothing remarkable?—No. I was told by Her Excellency that my district was a healthy one.

29733. So far as the registration of deaths indicate?—Yes.

29734. Are children adequately fed in your district?—No. They are not half fed. When I got into the district there was smallpox and typhoid fever, but not now. If I got my way I could keep the place fairly healthy.

29735. Is it an insane desire to be economical that prevents the Council carrying out suggestions contained in your reports?—They think it is economical. They would give a solicitor any price he asked, but not a doctor.

29736. While they would be willing to provide the necessary means to deal with an outbreak of disease they don't take steps to prevent the outbreak?—Yes; the Council would not do anything to prevent disease if they had to put their hands into their pockets.

29737. Is not that a short-sighted policy?—It is. The Council do not agree with me or I with them. If the Government could subsidise some of the farmers and give them so much a year to provide poor people with milk it would be a very good thing. In Melbourne the Municipal Council have a farm, and supply poor people with milk; and if they cannot buy it it is given free. It would also be well if these new breeds of goats which

have been kept by Lady Dunleath, and the use of which have been advocated by Lady Aberdeen, were got into the district.

29738. Are there many goats kept in your district?—Yes; but they are dry in winter.

29739. The introduction of the new breeds would be helpful in that respect?—Yes.

29740. Would the people appreciate the introduction of these goats into the district?—I am sure they would.

29741. And they would co-operate with any scheme that would be brought forward for the improvement of the breeds?—Yes. I was talking to a lot of people about them.

29742. Mr. O'BRIEN.—Would the farmers appreciate the goats?—They would not like the hedges destroyed. I am quite sure some of them would like a goat. I know some gentlemen would even go in for them.

29743. The CHAIRMAN.—Would your District Council view with equanimity the prospect of being called on to undertake some of the expenses, say, of distribution?—Yes; but if you put anything on the rates they won't do it.

29744. Unless it is made compulsory?—Yes. They will pay a lawyer, but not a doctor. They will give a lawyer £500 or £600 or £800 without a word.

29745. Mr. O'BRIEN.—Perhaps the lawyers would take up this question of supplying the milk in this case. Farmers are the guardians?—Yes.

29746. They would recognise that to supply milk at 8d. or 10d. a gallon all the year round would pay them better almost than any farming they are doing?—It would.

29747. I can vouch for that, but I suppose they don't do any winter dairying here at all?—No, not much.

29748. They say it does not pay?—Yes.

29749. Have they ever tried it?—I don't think so. I only know one or two farmers in a manufacturing district that supply the people with milk, and it pays them.

29750. The CHAIRMAN.—They supply people having regular employment?—Yes. I know one family, and they get about 22s. worth of butter in the month, not counting the milk.

29751. Mr. O'BRIEN.—Are there creameries in your district?—Yes; separating stations.

29752. They are all auxiliaries?—Yes.

29753. Do they get a plentiful supply of milk during the winter?—No; they don't get half as much as in the summer.

29754. Not enough to keep them going?—No; only two or three days in the week.

29755. Do you know if the creameries store the milk for their suppliers during the days that they are not working; do you know if they take in the milk until they are separating?—I don't think so. I don't think it is sent to them until the regular time.

29756. In some creameries they do store the milk rather than let the small farmers keep milk in their own premises, knowing that they have no proper provision to keep it clean?—I was speaking to one manager of a creamery, and he told me that one supplier sent milk on one occasion in which there were beetles and cockroaches.

29757. Do you think it would be possible to purchase milk at these separating stations?—They never sell any.

29758. Has it ever been asked for?—No.

29759. And there has been no organisation amongst the labouring classes or the poorer people to see if they could get milk?—No.

29760. Do you think it would be possible to get something like that done?—I was going round amongst the people, and a great many gave me their names. They told me that they would be willing to buy milk if they could get it, and that they would be willing to keep the goats. They have not the improved breed of goats.

29761. The CHAIRMAN.—You are familiar with the provisions of the Order?—Yes.

29762. Do you think there is anything unreasonable contained in that Order, or unnecessarily severe for any person anxious to carry out the trade intelligently?—No. A great many of them are beginning to see the necessity of it.

29763. Mr. WILSON.—You have been trying to enforce the Order in your own district?—Yes.

29764. Have you known of any cases where the enforcement has put a person out of the trade?—No.

29765. They have all remained in the business?—Yes; it would not put any one out of the trade.

29766. The CHAIRMAN.—From your own knowledge of District Councils, do you think it would be possible that uniform administration of this Order would be carried out so long as it is enforced according to the will of the local authority?—No; until it is taken out of their hands and put into the hands of the medical profession.

29767. You would be in favour of central control and uniform administration over the entire country?—Yes.

29768. And until that is done one need not hope that the milk will be as carefully handled or as clean as the public health requires?—Certainly not.

29769. Lady EVERARD.—You think the appointment of a whole-time veterinary officer would be important?—Yes, certainly.

29770. And a whole-time medical officer?—Most undoubtedly.

29771. It would conduce to proper administration of the Order?—Yes.

29772. Professor METTAM.—Established by a central authority?—Yes, and properly paid. He should be paid the same as the State-paid lawyers.

29773. Lady EVERARD.—Under the Insurance Act there is a whole-time medical officer, and that is something of the idea that would be in your mind?—Yes; but they don't pay half enough.

29774. Do you consider that all the by-products of milk—butter, skim milk, &c.—should be placed under the same rules and regulations as new milk?—Certainly.

29775. Mr. O'BRIEN.—Do you think the mothers in your district appreciate the value of milk as a food?—They don't understand the value of it at all.

29776. They don't realise that the money spent on tea is better spent on milk?—No; they would rather spend it on tea or whisky.

29777. I see in your *précis* of evidence you say that some people give laudanum to their children?—Yes.

29778. Is that common?—No; it is done to keep them quiet.

29779. Would not that harm them?—Yes; but they don't find it.

29780. Professor METTAM.—Laudanum is practically fatal to young children?—Yes.

29781. Miss MCNEILL.—Have you many deaths of children under twelve months?—Yes.

29782. Have you many deaths between, say, five and six years of age—anything more than usual?—Not more than usual. There may be some deaths in the summer time owing to bad milk.

29783. Professor METTAM.—Is that summer diarrhoea?—Yes, and meningitis.

29784. Miss MCNEILL.—The giving of laudanum is confined to mothers in factory employment?—Yes.

29785. Lady EVERARD.—Have you got a Jubilee nurse?—No.

29786. Have you a branch of the Women's National Health Association in your district?—We had the exhibition down. We are trying to start a branch of the association.

29787. I think you would find a nurse a great comfort?—Yes, if we could get her paid for.

29788. Are the children fed on stirabout in your district?—No, they don't use enough of it.

29789. Do the mothers bake at home, or is it baker's bread they use?—Baker's bread.

29790. What is the price of milk in your district?—I cannot say exactly.

29791. Mr. WILSON.—The creameries in your district, are they for the most part co-operative or proprietary creameries?—They are co-operative.

29792. Has the experiment ever been tried of a person who wants milk going to a creamery and asking for it?—I never heard of it.

29793. So it is impossible to say whether the creamery manager would be in favour of selling the milk?—He dare not do it without the permission of the committee. I do not know whether the committee would do it unless they were paid well for it. I am sure they would do anything for money.

29794. Mr. O'BRIEN.—The price they would get for retailing milk would be nearly double what they give farmers and more than what they make by butter?—Yes. You would have to go miles to the creamery in some cases.

29795. Before you go to the creamery asking for milk you must organise the demand?—Yes, they would do anything to get money.

29796. Perhaps the creamery manager might say that this retailing of milk in small quantities would

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give trouble, but on the other hand, if the creamery manager is in favour of selling the milk in this way he could bring pressure to bear on his committee?—Yes.

29797. It has not been tried?—No.

29798. Mr. WILSON.—It is quite obvious that no single solution of this milk problem can be found. There must be a series of plans—one to suit one place and another to suit another, but where the creamery system is in existence it seems to us that the organization of the demand was the solution?—It might.

29799. That is if the people really want milk?—Yes; some of the people have not the money.

29800. That would have to be a matter for some charitable organization of some sort, but the first thing one has got to do is to supply the milk to the people who have money and see that they can get it?—Yes.

29801. Mr. O'BRIEN.—Is there a difficulty about pure water in your district?—Yes.

29802. Why is that?—Lough Neagh is the worst place to get water, because they have to go out a quarter of a mile to get it. I got three wells sunk and they were all condemned.

29803. Condemned for what?—The water is contaminated with animal matter. They were not sunk in the proper place, and the council did not build them high enough.

29804. Professor METTAM.—And did they become contaminated with animal matter?—One is sunk in a ditch, and I don't think they built them high enough.

29805. And there is surface contamination?—Yes.

29806. That would be easily remedied?—Yes, but they won't spend the money. I ordered a well to be sunk in one place and they would not do it, and they spent £40 or £50, and afterwards they had to sink it where I suggested. The council won't do anything I ask them to do.

29807. Mr. O'BRIEN.—It seems to me that there will be friction as long as you are there?—I am afraid so.

29808. Lady EVERARD.—Do you think there would be people in your neighbourhood who would keep a billy goat?—I am sure they would.

29809. We have had evidence in many places that it would be advantageous to the labourer if he had two goats—one kidding in May, and another in November?—Yes.

29810. This new breed of goat will kid at any time of the year, not like the old Irish goat?—Yes.

29811. Professor METTAM.—Have you had any experience of milk-borne epidemics?—The only one was twenty-four or twenty-five years ago.

29812. And none in recent years?—No; it is possible some of the cases of diphtheria we get may be from it.

29813. Of course you are aware that milk is often a convenient vehicle for the virus of diphtheria?—Yes.

29814. Your practice is in the rural district?—Yes.

29815. Have you any urban experience at all?—No.

29816. You would have no objection, I presume, speaking generally, that the Urban Council should send its representative into the rural district in order to investigate any supposed outbreak of disease?—No; I would like to see them go, and I would help them to stamp out disease.

29817. Have you any idea of the condition in which milk is stored?—They send it away at once to the creamery.

29818. But those making butter themselves store the butter in the houses?—Yes; some keep it well, but in odd cases they do it badly.

29819. Some of them could be improved?—Every one of them could be improved.

29820. Talking of tuberculosis, what is the nature of the lesion that you most frequently meet in your rural district?—Pulmonary, and disease of the joints.

29821. Glandular?—Yes.

29822. Is glandular more common than pulmonary?—Yes, and some disease of the joints.

29823. Glandular and joint disease are principally due to contamination of food; as, for instance, from contaminated milk or contaminated food?—Yes. There was an animal that I heard about which was sold in a certain place and bought by a certain butcher, and it is stated it died of cancer.

29824. Miss McNEILL.—Is your place a factory district?—There is only one factory in it.

29825. Are there married women in the factory?—Yes.

29826. Do they nurse their own children?—Some do, but they cannot do it in the factory. Some of them feed their children at night, and give them milk in the day time.

29827. Are the mothers fairly healthy and vigorous who breast-feed?—Yes; a great many of these people intermarry and that destroys them.

29828. Is breast-feeding general amongst the factory operatives?—Yes.

29829. Professor METTAM.—What happens to the child while the mother is engaged in the factory?—They get some person to look after it.

29830. Some old woman acts as nurse and feeds the child?—Yes.

29831. Mr. O'BRIEN.—And is it this temporary nurse that drags the children?—Yes.

29832. And you find many children suffering from paralysis from this early drugging?—I only saw one or two.

29833. Because I have known cases of children with their faces drawn, or temporarily paralysed?—I have not seen many of them. The inspector of the Prevention of Cruelty to Children Society comes round.

29834. You have a "cruelty man," as they call them, going round?—Yes, he is in Portadown.

29835. You speak in your summary of evidence of money spent on whisky. Does that apply to the factory hands?—Not only to the factory hands.

29836. Is not drunkenness on the decrease?—I would not say so.

29837. Because I would say generally throughout the country drunkenness is on the decrease?—Some respectable people drink.

29838. Do women drink in your district?—There are some respectable women who do.

29839. Those who can afford it?—Yes.

29840. The CHAIRMAN.—Would they drink methylated spirits?—I don't know of such a case. In the Draperstown district they drink ether.

Mr. J. G. BROWNE examined.

29841. The CHAIRMAN.—Are you interested in agriculture, Mr. Browne?—Yes.

29842. In what district?—In the county Tyrone—in Mr. Russell's division.

29843. With regard to the industrial population there, do they get an adequate supply of milk?—They do. There is plenty of milk in my district if they pay for it.

29844. Miss McNEILL.—At what price is it sold?—They pay 10d. a gallon for it at Sion Mills. The creameries don't pay anything like that.

29845. Mr. O'BRIEN.—They pay, on an average, 4½d. for the butter fat alone?—They don't. I have the report of our co-operation creamery, and for years the quantity has been going down. Suppose a cow gives 400 gallons of milk, that would be a fair average good cow.

29846. The CHAIRMAN.—You think that is a fair average of the yield of the cows?—Yes. For the milk the owner would get £7 2s. from the creamery and

the separated milk would be worth 30s., and you cannot feed a cow for under £9. In 1909 there were one-and-a-half million pounds of butter sold at the creamery, in 1910 one-and-a-quarter million, and last year it was one-and-a-quarter million, and not only had the percentage fallen but the quantity fell. In 1909 the percentage of butter fat was 8.5, in 1910 8.4, and last year it was not 8.4.

29847. Professor METTAM.—But last year was an exceptional year?—I don't know.

29848. Mr. O'BRIEN.—It was. The quality was distinctly down all over?—The farmers did not feed the cows.

29849. The CHAIRMAN.—That would indicate that the dairying industry is not very remunerative?—It does not pay at all. You are just getting for the milk the cost of production.

29850. Is the number of farmers engaged in the dairying industry in your locality decreasing?—No:

they are keeping as many cows as before or more, but they are not feeding them so well. The calves pay them and the store cattle pay them.

29851. Would it be your opinion that it would pay the farmers better to care their cows better?—No; they are well enough cared for, but no forcing food is given them.

29852. In your opinion, it is more profitable to feed them cheaply than to force a supply?—Yes. Some people cannot dispose of their milk.

29853. Can you speak of any area outside the town of Sion Mills?—Yes. In the district around Sion Mills milk is plentiful enough. The farmers cannot supply it for nothing.

29854. We are more anxious to know if people cannot secure it for money?—There is no such thing about our locality.

29855. Does it apply to any part of the county Tyrone?—No. In some cases you cannot get butter-milk, but you can always get new milk.

29856. We have been told—not in Omagh—that the people cannot always get milk for money?—That is nonsense. They can get it at the creameries.

29857. We have been told that some of the creameries refuse to sell milk retail?—They will sell it. 29858. We had a creamery manager who told us that he thought it would be unreasonable to require creameries to sell it?—I don't know what kind of a manager he was.

29859. It was suggested to many creamery managers that they might be induced to sell milk for cash retail, and some objected to that?—I never heard of its being objected to.

29860. The feeling that you indicate does not prevail universally amongst the creamery managers?—No.

29861. And, in your opinion, it would not be unreasonable to compel them to sell milk retail?—No, and they would be making money by doing so.

29862. It would not be so much a question of price. It was the question of the dislocation of the management of their trade?—There would be a little difficulty, it could be got over.

29863. It must create a little extra trouble, but if the public health demanded that it should be possible for the residents of the district to procure milk, and if the factories had the milk, would it not be reasonable to think that the factories should reserve a certain quantity for domestic use?—Yes, and nothing would pay them so well.

29864. Are the children sufficiently nourished on a milk diet?—I should say so, but I am not an expert. There is plenty of milk available.

29865. Is the milk yield improving?—No; it is diminishing.

29866. To what cause do you attribute that, other than the poverty of the feeding?—The scarcity of labour. If you had a good cow she would make 1,000 gallons of milk a year. You cannot get efficient labour for milking, no matter what you pay.

29867. Is that one of the difficulties of the trade?—That is a great difficulty.

29868. You think that the yield of the cow is diminishing?—Yes.

29869. By reason of the imperfect milking?—Yes, and the prices do not pay the farmer to keep the cattle so well.

29870. Is the deep-milking cow less likely to be efficiently milked than the small-milking cow?—Yes, and you will likely lose her in a few years.

29871. From another point of view, the aim and end of our Inquiry would be to find some means by which the milk yield of the cow would be increased. You have an objection to that?—Yes.

29872. That is an entirely new aspect of the question.

Mr. O'BRIEN.—How many dairy cows would the average farmer have?—A dozen to twenty.

29873. There are no farmers with up to eighty or one hundred cows?—No; none with more than fifty.

29874. I suppose no one uses a milking machine?—No.

29875. The CHAIRMAN.—How many cows would each milker be expected to milk?—From six to ten.

29876. Is it male labour that is usually employed?—No, mostly female. They are taking the men because the females are not available.

29877. Is it the factory work that is attracting the females?—No, emigration to America.

29878. Does that difficulty operate in other districts?—I would say so.

29879. The extension of it, I take it, will lead to the limitation of the milk supply generally, if it should go on?—Yes.

29880. Is the scarcity of labour a growing difficulty with you?—Yes; it is getting worse, year by year, and the quality of it is getting worse. It needs more supervision now than it did before.

29881. You cannot be safe in leaving them uninspected?—No. You would lose an 800 gallon cow in a few years if you did.

29882. Mr. O'BRIEN.—Have the farmers gone in for the keeping of milk records of each cow?—No.

29883. Weighing the milk once or twice a week would show whether the milker was doing his work?—Yes, but what about the other four times a week?

29884. You might have it done every day?—It would be too much trouble.

29885. There is no trouble?—You would have to be always there yourself.

29886. What is the farmer at when the milking is going on?—It is hard to tell.

29887. He might not be up perhaps?—Yes.

29888. The farmer's wife might be up?—He might not have a wife. Generally, the farmer's wife must supervise.

29889. The CHAIRMAN.—Is the farmer's wife deteriorating also?—Yes; I think she is deteriorating at the milking.

29890. Is not the Sunday labour a difficulty with you?—Some people object to do it, but it is not so difficult as getting it properly done.

29891. Do you send milk to the creamery?—Yes. I keep pure-bred shorthorns.

29892. Do you keep any milk records of them?—No.

29893. Have you ever kept milk records at all?—Never for a year.

29894. Do any of the farmers in your locality?—I think they did for a few months, but they stopped it.

29895. Why?—I don't know.

29896. Did they object to the trouble?—I don't know.

29897. Mr. O'BRIEN.—Did you object to the trouble yourself?—No.

29898. You kept them yourself?—Yes, for a few months. I did not want the cows to give any more milk, because they were giving enough, because they only give the cost of production.

29899. The CHAIRMAN.—Can you improve the quality of the milk by the feeding of the cow?—Certainly you can. A man might be supplying milk for three months all right, and it may come up to the legal standard, but owing to some cause the cow goes below that standard. We often find in the creamery that it sometimes comes below the standard, so it is very hard for a man to be fined when he supplies milk as it comes from the cow.

29900. That is quite recognised, and it is a possibility that might arise?—It has happened. I know a man who was fined. It was not a heavy fine.

29901. It is not the amount of the fine, but the stigma?—Yes.

29902. Do you find a great difference in the butter fat in the morning and the evening milk?—Not very much.

29903. Do you milk at regular intervals?—Yes.

29904. As nearly as possible twelve hours between?—Yes.

29905. In that case the percentage of butter fat would not vary so much?—No.

29906. Have you any cows that persistently refuse to yield up to the standard?—No.

29907. Do you think that a cow that yields a small quantity of milk will give more butter fat proportionately than one that yields a larger supply?—Yes, but it is not universally so.

29908. Do you think that the feeding of calves on separated milk has deteriorated the store stock of the country?—Not very much, but it has a little.

29909. Is the fat supplied in the majority of cases?—Yes; otherwise the calves would die.

29910. Is it the universal custom to give linseed meal and flaxseed boiled to calves with separated milk?—Yes.

29911. What do you think would be the average milk yield of the ordinary dairy cow, fed fairly well, in this county?—About 400 gallons.

29912. You would not get beyond that?—I don't think so.

29913. And that would be a good-sized cow, fed on good land?—If you fed her extra she would give more.

Mr. J. G. BROWN.—14th August, 1912.

29914. What do you think it would be possible to increase the yield to with generous treatment?—To 600 or 700 gallons.

29915. And it is your opinion that it would not pay to produce that extra quantity?—No; I tried it myself.

29916. And you think that there was no profit in it at all?—Not the smallest, at the creamery prices. Supplying milk to a town would be different.

29917. Do you sell any of your milk other than to a creamery?—No; but the people who are milking get it for nothing.

29918. It is regarded as portion of their wages?—No, but they get it.

29919. And there is no stipulation when they are employed that they will get it?—No.

29920. But they get it all the same?—Yes.

29921. Do you employ any female labour at the dairy?—No; it is only a separating station.

29922. At the central dairy, is the butter made by a dairymaid or man?—A dairymaid I should say.

29923. The dairymaid has gone out of fashion, and men are now employed?—It was a dairymaid for the last year I know.

29924. Have you tried winter dairying?—Yes.

29925. With what result?—There is no profit in it except that you will have better calves, and the cows will give the same supply of milk in the winter as in the summer; but to supply milk to a creamery at 4½d. per gallon is not sufficient.

29926. They give up to 6d. a gallon in the winter in some places. Is it the poverty in the butter fat of the milk that causes them to give poorer prices?—It is not; they pay 6d. a gallon for one month when they are competing with another creamery, but they take it off afterwards.

29927. That is a question of competition?—Yes; our average is something like 4½d. a gallon all the year round. I have the return here.

29928. Is there any trade in separated milk from the creamery?—No; there is no demand for it if they can get sweet milk so readily as they can.

29929. There would be no demand for separated milk?—No, there is no demand for it, and at Sion Mills they would not drink it. I cannot tell you why.

29930. Did you ever taste it?—No.

On resuming after luncheon, Professor Mettam presided.

Mr. JAMES STEWART examined.

29931. Professor METTAM.—You have kindly consented to give evidence before the Commission, on the question of the milk supply. Will you be good enough to make a statement as to the condition of the milk supply in your district?—Since getting a letter from your Secretary, I made inquiry all over the district of Strabane. In my own immediate district the milk supply and the rearing of the calves are the main support of the farmers.

29932. The production of milk for consumption and the rearing of calves?—Yes.

29933. Have you many creameries in your district?—A big part of my district has no creamery. I would say that in my immediate district they churn at home or sell sweet milk rather than send to a creamery.

29934. Is there any difficulty in obtaining milk?—No.

29935. As much as is wanted is available?—Yes. In my own neighbourhood we have twenty-five per cent. more milch cows now than we had thirty years ago.

29936. Do you think that the poor people use a larger quantity of milk in their homes now than they did years ago?—They use more than they did thirty years ago.

29937. They use more milk for their children?—As far as I can see, they have no trouble in getting a supply of milk. My own men are using more than they were thirty years ago when I began farming.

29938. Do you think that applies to your whole rural area?—No. I am in the neighbourhood of Sion Mills, and I sell my butter and buttermilk at Sion Mills. Messrs. Herdman graze forty to sixty cows every year for their workers. A great many of their workers keep a cow or two, and they only charge a nominal sum for the grazing.

29939. Is the Dairies and Cowsheds Order enforced by your Council?—Yes.

29940. You appointed a veterinary surgeon?—Yes, and two sub-inspectors.

29941. Whose duty it is to go round and see the condition in which the cows are kept?—Yes. The veterinary surgeon examines the cows, and the sub-inspectors visit the byres frequently.

29942. Do you find that the people generally assist these inspectors in carrying out what they require them to do?—Yes; they are all in favour of it. The Order did not apply to me when it first came out, and it does not apply to me yet. I was Chairman of the Council at the time, and some of the members thought that I was too anxious to put it into force, as I was not brought under it myself, and I put in my application to be brought under it.

29943. I suppose the Inspectors are only bringing about a gradual change?—Yes.

29944. And not putting the cow-keepers to too much expense at once?—I think they insist on cement floors, and on everything of that sort, to keep the byres sanitary. I think most of the people in the district have the byres cleaned out twice a day. The inspectors insist on that.

29945. And the manure being removed a certain distance away from the cow-byres?—Yes.

29946. Have any prosecutions been instituted by your Council under the Order?—None, except to make them register.

29947. Threats have sufficed to bring about the enforcement of the Order?—Yes.

29948. As regards the cattle generally, what cows do you usually go in for in your neighbourhood?—The cross-bred shorthorn.

29949. There are no pure-bred herds in your locality?—No. Well, there are some thoroughbreds kept.

29950. Do you find the type of animal has improved or disimproved in recent years?—Well, I think at one time they went down in milking qualities. They are greatly improved within the last few years. They are paying more attention to the milking qualities of the cows.

29951. In fact, they use a cow now as a real milking machine, to get as much out of her as possible?—Yes.

29952. When do the cows calve with you as a rule?—In September and October.

29953. You go in personally for winter dairying?—Yes.

29954. Is that common in your district?—It is improving. There are a great many people going in for it.

29955. They see the value of it?—They feel it in their pockets.

29956. And you are getting a demand all the year round for the supply?—Yes, and your cow milks more evenly all the year round.

29957. Do you know, of your own knowledge, whether tuberculosis is common in your district amongst the cattle?—No; it is not.

29958. You keep the cows out as long as you can?—Yes.

29959. What kind of feeding do you give them during the winter months?—Turnips, hay and straw.

29960. Do you go in for any of the so-called catch-crops?—Yes, vetches.

29961. And the so-called hardy greens, and rape, and so on?—I don't go in for these. I don't believe a cow milks on greens or cabbage at all.

29962. Do you send any milk from your district to Belfast or Dublin?—No, Strabane consumes a good deal of sweet milk. It consumes much more than it did in my earlier days. In Strabane they have a good supply of sweet milk and buttermilk. Thirty years ago it was supplied with thirty cows, and at present there are 180. I have reports here as to the condition of the milk supply in other districts.

29963. Tell us about the districts further afield from you?—I have reports from these districts. The first is Donalong.

29964. Mr. WILSON.—Did you prepare these reports yourself?—I got this information from the people that I wrote to. Donalong is about the best farming district, perhaps, in the North of Ireland. Creameries

started there seven years since with a supply of 400 gallons per day. Now, they have 900 gallons per day. The labouring men get their new milk as formerly each evening, and the farmers churn one day each week so as they can have a supply of buttermilk, and a number of labourers keep a cow and send the milk to the creamery, and some of them have as much as 30s. per month for milk supplied. In the Ardstraw district they have from twenty-five to fifty per cent. more milch cows than were kept twenty or thirty years ago. The labourers are fairly well supplied with milk, as most of the people churn Sunday's milk, and they get new milk at a cheap rate. Before the time of the creameries there was scarcely a labourer about here got leave to keep a goat, but now there is hardly one of them but has a goat, which they get grazed with the farmer for whom they are working. In the Donaghedy district the number of cows kept by the farmers is as large as has been the case for the last fifteen years, and I believe the present supply is adequate for the requirements of the district. In the Leekpatrick district the number of cows kept have increased during the last few years. Farmers have almost completely stopped churning their milk, and are sending it to the creamery. Labouring men are getting all the milk they require, and there are never any complaints as far as new milk is concerned. There is a scarcity of buttermilk in the district, and they make separated milk a substitute. In the Donamara district there is no increase in the number of cows kept. The labourers who are living with the farmers get their supply of new and buttermilk where they are employed. Those living in labourers' cottages usually keep goats and get buttermilk wherever they can. On the whole, they can easily and cheaply obtain a supply of milk. In Newtownstewart district, during the past twelve years, the number of cows has increased about five per cent., and the milk supply about ten per cent. during the past two years. The labourers in the country get a supply of new and buttermilk from their employers. There is more difficulty in procuring buttermilk than formerly in the town of Newtownstewart, and the people are using separated milk, which takes its place for baking purposes, but they have a good supply of new milk. They have started a cow-testing association.

29965. Professor METTAM.—Have you any experience of cow-testing associations?—I have been weighing my milk for the past five years. I carried out a test—winter against summer; I found it was useful and I still weigh.

29966. You find thereby you get rid of the profitless cow?—Yes. I may say I sold all my good cows when I weighed the milk.

29967. Mr. WILSON.—You mean to say that the animal you expected would be a profitable one was shown by the records not to be profitable?—Yes. At that time I liked to have a good-looking cow. I am getting up the milk again. I had cows that would not give an average of 800 gallons, and at the present time I have cows giving over 500 gallons, and they are milking still.

29968. Professor METTAM.—That shows the utility of the test?—Yes.

29969. Mr. O'BRIEN.—These good-looking cows, you thought, were giving more than 800 gallons?—I did not weigh their milk. I had good calves from them.

29970. But, not having kept milk records, you did not know what value they were from the milk point of view?—No. I sold most of them for £20, and I got cows for £14 and they give more milk. With regard to Newtownstewart district, I know that the labourers get a supply of new and buttermilk from their employers. There are a good many of them getting perquisites of milk from their employers.

29971. Professor METTAM.—Daily as part of their pay?—Yes. In our district they have to buy it, but at a cheaper rate than we sell to the town.

29972. Are the wages larger with you than in those places where the milk is given?—There might be 6d. a week in money.

29973. Miss McNEILL.—What is the ordinary wages of an agricultural labourer?—8s. to 10s. a week, and they have a house, a rood of potatoes, and two to three tons of coal. They also have goats grazing. The perquisites come to 4s. or 6s. in the week. As I have stated, there is more difficulty in procuring buttermilk than formerly in the town of Newtownstewart, and the people are using separated milk, which takes its place for baking purposes, but they have a good supply of new milk. I don't know much about separated milk, but I don't think it would make a good substitute for buttermilk.

29974. Professor METTAM.—So, taking it all in all, you think there is an abundance of milk to be obtained?—Yes. I expect it is the best milk-supplied district, perhaps, in the North of Ireland.

29975. And where the buttermilk is scarce, it is where the creameries are established, and the farmers don't go in for butter-making in their homes?—In some cases the buttermilk seems to be plentiful where the creameries are. In my district there are many of the farmers sending milk to the creamery, and they keep the Saturday night's milk, and they have more buttermilk than they want for their own use.

29976. In your area are there many goats kept?—I am sorry to say there are too many. On my land they have up to a dozen goats, and I would like to have none.

29977. Of course, they are notorious destroyers?—Yes.

29978. In the remote country districts where milk is not exactly next door to a labourer, would you recommend that he should keep a goat or a couple of goats for his own use?—I think they are very useful, if they are kept tied. Twenty years ago I had goats on the farm. I gave them up again, and I got them again about ten years since, and I scratch my head when I look at the hawthorn hedges.

29979. You believe that the goat is the poor man's cow?—Yes, it is a great help to a poor man with a large family.

29980. Mr. WILSON.—I gather from what you say that there seems to be no difficulty between the farmers and the labourers so far as the supply of milk is concerned?—There is not.

29981. Are those labourers living in the new cottages or the old houses?—In the Strabane district there are few agricultural labourers in the new cottages. They are generally occupied by an aged couple with a large family that work in the mills.

29982. Do you happen to know of any place where friction has arisen between the farmer and the labourer through the labourer living in one of these houses?—No. For my part, I would be glad to see them more plentiful.

29983. Cottages?—Yes; if we can get the right sort of men into them, but in the Strabane district we had a large scheme which was just completed, and we cannot find an agricultural labourer to occupy them. An agricultural labourer with a farmer is worth from 14s. to 16s. a week with his perquisites, and you can get a day man for 10s. or 12s.

29984. You mean they all go for the day man in consequence?—Yes, but we cannot get them.

29985. Have you ever heard it stated that a man supplying milk to a creamery will keep too little for his own use at home?—I heard it, but I believe he would be a foolish man.

29986. Do you believe it?—No, I think they can hardly do without it.

29987. We have heard that stated in a dogmatic way in different places?—I don't think it is so. Half of our district has no creamery in it. They are churning at home and selling milk.

29988. I suppose they sell a lot of new milk into the town of Strabane itself?—The district I allude to supplies Strabane. There is four times as much milk coming into Strabane now than there was five years ago. Thirty-five years ago the late Mr. Gordon had the supplying of the town, and he had only from forty to sixty cows.

29989. I suppose the whole of that trade of Strabane is in the hands of the owners of cattle?—Yes.

29990. Has any co-operative society attempted to supply milk?—No.

29991. Did they ever try?—Yes; there was a man in Strabane over twenty years ago who tried it. He was selling new milk and butter, and he found it was a failure. He ran only a couple of years.

29992. Miss McNEILL.—Did he buy the milk from the farmers?—Yes.

29993. Mr. O'BRIEN.—You have gone in for winter dairying yourself, and you have kept milk records?—Yes.

29994. Can you tell us what the average yield of your herd is?—Over 500 gallons this year.

29995. Are there many about you who have cows with an average of 500 gallons?—I heard some of them have run up to 1,200 and 1,400 gallons.

29996. But as an average?—They only commenced keeping records this last year.

Mr. JAMES STEWART.—14th August, 1912.

29997. You said there was a milk-testing association established?—Yes, in Newtownstewart.

29998. You sell milk retail?—Yes.

29999. What sort of price do you get?—Different prices.

30000. You find that it pays?—Well, I think so.

30001. I suppose you would hardly continue it unless you found it paid directly or indirectly?—Sometimes in the North you find a man that does not know what is good for him.

30002. You have all your cows calving in the late autumn for winter dairying?—Yes. Very seldom they would be more than a month dry.

30003. You find the period of lactation is longer?—Yes.

30004. And the calves are better?—Yes.

30005. They go on to the new grass just at the time when they can get benefit out of it?—Yes.

30006. We have been told that people won't take up winter dairying because it will not pay, but that has not been your experience?—No. A cow calving in May, it makes no difference what feeding you give in September or October, they drop their milk, and you cannot raise them.

30007. And your calf does not increase weight for weight as the other does?—No.

30008. Professor METTAM.—What do you do with your calves?—I keep them on and fatten them.

30009. You fatten the calves?—I run them on to two-years-old.

30010. Mr. O'BRIEN.—You fatten them as baby beef?—No; two years-old.

30011. Professor METTAM.—That would be bullocks, but what about the heifers?—I sell some of them for beef, and I keep those I want for dairying.

30012. Mr. O'BRIEN.—You keep up your own dairy?—Yes; I have always half-a-dozen heifers coming in in the month of September.

30013. Of your own breeding?—Yes.

30014. You also buy some, I suppose?—I very seldom buy a heifer.

30015. Do you keep a bull of your own?—Yes, a thoroughbred shorthorn.

30016. Bought because it comes from a herd with a good milking record, or bought simply from points?—Bought from points.

30017. But of a thoroughbred bull?—Yes, a shorthorn.

30018. Are there any of the Polled Angus bulls in your neighbourhood?—Not many. I got one a few years ago for the country. The people wanted me to get them one. They were able to make 30s. or £2 off the calves bred by the black bull more than from the shorthorn.

30019. You spoke of the labourers who are not employed by farmers regularly—that they mostly have goats?—That is so, in one district I mentioned.

30020. In your district, is that so?—No.

30021. And all the agricultural labourers are living with the farmers?—Yes, in our district.

30022. Do you know in these districts that you read reports of, and where they are not living with farmers and are depending on the goats for the supply of milk—do you know how they get a supply in winter, or whether they get any?—That is in the Donaman district. That is a district that does not go in so much for creameries as the others, and I expect they can always get a supply of buttermilk and sweet milk.

30023. Would you say that more butter was consumed by the people in their own houses, labourers and small farmers, than there used to be?—Certainly. For my own part, thirty years ago there was hardly one pound of butter taken, and now there is no labourer that does not use at least one pound a week.

30024. What price do you get for your butter?—I don't tell every man my price, but I could sell 20 cwt. of butter every week at the retail price of the creamery.

30025. Is that because the people are better off than they were, or that they are putting more value on the milk products?—They are better off.

30026. In any of these districts that you know of, do they drink separated milk at all?—Indeed, I don't know that they do.

30027. You have not heard of it?—No.

30028. Do they use oatmeal porridge for the children?—Yes.

30029. And give them sweet milk with it?—I expect it is buttermilk that they give them.

30030. Talking of Strabane, you say that the milk bought there has very much increased?—Yes.

30031. Is that because there are better wages round there, or that they are learning that milk is more of a food than they thought?—They have better wages. We have two shirt factories in the town, and since they were established there is more employment in the mills.

30032. Do you think the people generally recognise the food value of milk?—I don't know that they do as much as they ought.

30033. Supposing that there is a family with the parents and five or six children, do you think that they recognise that milk is the best and cheapest food that they can get for their children, and would buy it accordingly, so as to give them a quart of milk a day each?—That is not commonly done at all. They would go in for something that they would consider cheaper. They don't consume a quart a day each.

30034. I suppose not. If they had money to buy, you don't think they would do so?—No.

30035. You say they use more butter at all events?—Yes.

30036. And the children quite often have butter?—Yes; they all buy butter, even where there is only a single worker in the family.

Mr. JOHN CUNNINGHAM examined.

30037. Professor METTAM.—I understand, Mr. Cunningham, you are a member of the Dungannon Urban Council?—Yes.

30038. And you are prepared to give the Commission evidence as to the milk supply to Dungannon?—Yes. I have taken a great interest in a goat ranch department, and also in a bee industry. Lady Aberdeen has taught me very useful lessons. I have come here to speak in favour of Lady Aberdeen and Lady Dunleath's scheme that will help the people.

30039. What kind of goats have you got in your neighbourhood?—We have got a mixture of the Spanish and the Irish goat, which gives from two to three quarts a day for eight months. I have been out in America, and saw the Germans and others adopt the plan of having goats' milk, as the goat is an animal that is practically free from consumption, and that is very important.

30040. So we may take it that you are strongly in favour of those who cannot get cows' milk keeping goats?—Yes.

30041. Is there a plentiful supply of cows' milk coming into Dungannon?—No, especially in the winter. I myself for two months never tasted buttermilk. I look upon what is called "creamery milk" as nothing but the dross of a cow.

30042. What do you mean by "creamery milk"?—The milk that is sold in the country. It is separated milk.

30043. Separated milk is largely used in Dungannon?—Yes. About twice a week we get a supply.

30044. Are there any creameries in Dungannon?—There are, two miles out.

30045. The separated milk is brought in from these creameries and sold in Dungannon, and is used by the workers in the mills?—Yes.

30046. But is not plenty of sweet milk available for them?—Yes, but they cannot buy it at the price.

30047. What is the price?—A shilling a gallon, and in my younger days it was only 2d. a quart in summer and 3d. in winter. Now it is a shilling a gallon.

30048. Is it dearer in the winter time?—It has never gone higher than 3d. a quart.

30049. You told us just now that there was very little milk coming into Dungannon in the winter time?—I cannot get buttermilk.

30050. But you can get sweet milk?—Not enough of it at a fair price, but we can get no buttermilk, which is our natural food, with potatoes, and when you see the people getting buttermilk you have healthy fathers and mothers, and no consumption in their families. I think if we got a sufficiency of buttermilk we would have less consumption, because there is a carbon in it.

In regard to the question of the goat, I have taken an interest in that since I have come from America, seeing so many of them there, and watching the Germans in their habits. If a goat ranch was started in every district, say, in Dungannon, a hundred goats could be handled by one man for 15s. a week, and you would have no consumption and no debilitation. The people are getting an inferior class of milk.

30051. You think a scheme for the keeping of goats would be feasible and possible in Dungannon?—Yes. And that a quantity of milk could be provided from these goats which would be available for those who could purchase it.

30052. Are there many poor people in your locality?—Yes; our neighbourhood is principally composed of manufacturing people.

30053. What would be the price of the goats' milk that you suggest might be made available?—I will read

this to you, and you will know my ideas. I am in favour of starting a sanatorium on Altmore mountain, which is 800 feet over the sea level; also a bee industry; also a goat ranch that would supply the poor consumptives. Altmore would be suitable for a goat ranch, as there are four miles of mountain, and you know that heather is good for goats. I know where goats go to a gentleman's garden and steal the honey for the sanatorium. They are great robbers, and I praise them very much. Mr. Horner in South Tyrone, Mr. Russell in North Tyrone, Mr. Magee in Mid Tyrone, and Mr. Redmond in East Tyrone, have probably at least a hundred consumptives in each of their divisions. Now, if they will adopt my plan, I will cure out of these institutions 60 per cent. inside of three years, and give these parties liberty to go out and work, and strive to be industrious, and reduce the rates 1s. 6d. in the £. I think the farmers ought to listen to me now if they are here.

Mr. R. J. WILSON examined.

30054. Professor METTAM.—You represent the Omagh Co-operative and Agricultural Dairy Society, Mr. Wilson?—Yes, sir.

30055. As regards the question of the milk supply, does a sufficiency of milk come into Omagh for the use of the people?—Yes, quite a large sufficiency.

30056. Quite a sufficient quantity?—Yes.

30057. And there is no difficulty at any time of the year in anyone obtaining milk?—Not if the applicant pays for it.

30058. What is the price of milk during the year?—In the summer it is 10d. a gallon, and in the winter a shilling.

30059. Is there plenty of buttermilk also available?—There are a number of carts that supply the town.

30060. Milk brought in from the country?—Yes.

30061. Have you any interest in creameries?—Yes, I happen to be Secretary of the Omagh Creamery.

30062. The Omagh Creamery has, I understand, a large number of auxiliaries?—Yes, it has six auxiliaries.

30063. For the reception of milk?—For the reception of cream.

30064. You receive from these auxiliaries where the milk is separated?—Yes.

30065. What is the price that the farmer obtains for his milk from the creamery—what is the average price?—Last year our average price was 4.8d., and we calculated the value of the skim-milk at 2½d. per gallon.

30066. Mr. WILSON.—That seems a very high estimate?—It is not.

30067. Mr. O'BRIEN.—Usually, separated milk is valued at a penny a gallon. I always believe it is worth more, but that is the usual figure put on it. You value it at 2½d. a gallon?—Yes. I would value it at that for feeding pigs or cattle or anything.

30068. Professor METTAM.—How do you arrive at the average of the milk. You say on an average you pay 4.8d. How do you strike that average?—On all the milk that is received during the year. There might be men who would be getting up to 6d. per gallon. That would be for milk containing a larger proportion of butter fat, but that is the lowest that is paid.

30069. Not the average?—That is the lowest.

30070. The quality of the milk sent in to the creamery is on the high side?—Yes. Our average for 1910 was 4.57d. per gallon.

30071. When does the greater volume of milk come into the creameries?—June, July, August, and part of September.

30072. The cows mostly calve in April or May?—Yes.

30073. And you have a big flow of milk coming in in the months immediately succeeding?—Yes.

30074. What about the milk in the winter time?—A good number of the larger suppliers like myself are doing our utmost to get up a winter supply.

30075. You are going in for winter dairying?—Yes. We see that it is the only thing that will do to advance our Irish butter trade.

30076. In other words, if you are not able to make butter in the winter season, you cannot retain your customers?—We cannot; in Omagh we are doing our best for three years to get that object attained.

30077. Mr. WILSON.—Do I understand you are a farmer yourself as well as the Secretary of the Creamery?—Yes; I have 260 acres of land.

30078. Mr. O'BRIEN.—Does the creamery belong to the Butter Control?—Yes.

30079. Professor METTAM.—I take it, as a matter of business, that once you have got your market it is your endeavour to try and keep it?—Yes.

30080. Whereas if you cannot keep your market you have to make a new market the following year?—Precisely; we are encouraging the winter suppliers by paying better prices in the winter time than we are really able to do.

30081. In other words you are subsidising the winter supply?—Yes.

30082. You might give us some idea how you treat your cattle in the winter time in order to keep up the supply?—We have to give them roots and hay. Our best milking cattle must get some artificial stuff.

30083. Have you gone in for catch crops?—No. A few of my friends have done so, but I have not.

30084. You have not tried cabbage?—I go in for cabbages in September and October.

30085. Do you grow rape?—No; there are only a few of my friends who do, but I have not touched it.

30086. Do you find that cows that calve at the latter end of the year have a second flow, as it were, when they go on to the grass?—Yes.

30087. And consequently your milk yield goes up?—Yes.

30088. What class of cattle is there generally about Omagh?—Really crossbreeds.

30089. Has any endeavour been made by the farmers to increase the milk-producing capacity of the cows by crossing with any milk strain?—Around here we have been trying to get a shorthorn bull of a milking strain. From my father's time we have some cattle in the herd for forty years, and it is my endeavour always to keep the heifers of these cattle that produce the best record.

30090. Is there much export trade in milch cows?—Yes; that is to our detriment very seriously.

30091. That is to say that cows that should be kept in the neighbourhood are lost to it?—Yes.

30092. Where do they go?—They go across to Newcastle-on-Tyne, Edinburgh, Glasgow, and to Aberdeen.

30093. Is it the custom at all when you get a good milch cow to save her heifers and endeavour to bring them into the herd?—There are some people who do that.

30094. Mr. O'BRIEN.—But they are tempted by the big prices offered?—Yes; the prices just take away the cattle.

30095. Mr. WILSON.—Do you keep milk records yourself?—No, I am sorry to say I have not done so.

30096. There are some farmers who do it?—Yes, about Newtown Stewart.

30097. And with satisfactory results to themselves?—Yes.

30098. We were told that in this town there was a scarcity of milk amongst the working-class population at certain times?—I don't know when it is.

30099. Supposing any workman or labouring man came up to your creamery in Omagh, would he be able to purchase milk from you?—No demand has ever been made, and no provision has ever been made by the Committee as regards that.

30100. The demand has not arisen, so that provision has not been made for the purpose?—No. I knew last winter a cart in town carrying home milk. There was not a demand for it.

30101. Mr. O'BRIEN.—Was that owing to want of money to purchase?—Want of money.

Mr. R. J. WILSON.—14th August, 1912.

30102. And ignorance of the food value of milk?—The money went otherwise. There are certain parts of the town that would take porter.

30103. Mr. WILSON.—Supposing a situation arose as a result of this Commission or some other way that a demand was made on your committee that you should sell milk, not on credit of course, but for cash, have you any reason to suppose there would be a difficulty in meeting that demand?—I don't think there would be any difficulty whatsoever.

30104. As far as you know there would be no difficulty?—No. I never heard it discussed, but I don't see why there should be any difficulty.

30105. And, of course, from the point of view of £ s. d. a penny a pint is rather better even than your figures from the creameries?—Yes.

30106. So it would be to your interest to develop this demand if it matured?—If the need arises, and it paid the committee, I don't expect they would be opposed to it. Anything that would give the creamery committee cash would be welcome.

30107. In the districts from which you draw your supply—I am going now from the town to the country districts—have you heard any complaints of the creameries taking all the milk out of the country and not leaving enough for the people living in it?—No.

30108. That complaint has not reached your ears?—Not in my district.

30109. On your own home farm I suppose you have the usual staff of labouring men?—Yes.

30110. Have you got them in your own cottages or in Union cottages?—In my own cottages.

30111. And you still keep up the old custom of the labourer getting his milk as part of his wages?—The men who assist at the milking get their milk as a perquisite; other men are charged so much, but less than the retail prices.

30112. Professor METTAM.—What would be the difference?—A good third.

30113. That is to say, 1d. instead of 1½d.—Yes.

30114. 2d. instead of 3d.?—Yes. They are never charged what they would have to pay in the town market.

30115. Mr. WILSON.—Supposing a labourer was living in a Union cottage, would he be able to obtain a supply of milk?—There are two cottages adjoining me, and I give the occupants milk at the same price as I give it to my own labourers.

30116. Although they are not in your own employment?—Yes.

30117. Because in some of the southern districts we were told that some of the farmers were loath to supply men who were not in their own employment. That does not appear to be the custom here?—Not with me.

30118. In your own case you supply those who are not in your employment at all?—Yes.

30119. In short, one gathers from what you say that, in connection with the object that this Commission is travelling about to inquire into—the alleged scarcity of milk—there is no reason for coming here. The alleged scarcity is somewhat mythical, you suggest?—I don't see much scarcity.

30120. These labouring men on your place are married?—Yes.

30121. What would they take from you in the day in the way of new milk?—Whatever they require.

30122. What would they take?—A quart, and some of them more.

30123. A quart in the day?—Yes, and some more.

30124. I suppose the ones that would want more would have large families?—Yes; I may say that some of the men have another perquisite from me. They keep goats, and some have two.

30125. Professor METTAM.—Running on your place?—Yes.

30126. Mr. O'BRIEN.—With your cattle?—Yes, as a perquisite. If they had not these goats they would require more milk. If they had not the goats I would give them whatever milk they required.

30127. Those goats milk only in the summer practically?—Yes, practically.

30128. So whether they have goats or not, you have to supply them with milk in the winter?—Yes; they get whatever they require, even if they wanted a gallon.

30129. Do you find that they keep sufficient milk for their children; take, for instance, a labourer and his wife and three children, how much milk would they get

—would they get more than a quart in the day for the family?—Yes; of course it is just according to the number in the family. Some get a quart, and some two quarts, and some three quarts.

30130. Do some of them get as much as three quarts in the day?—Yes.

30131. Would you mind telling us of a case that you know of the exact quantity of milk that is taken?—As they require it they get it.

30132. You cannot say exactly how much?—I really cannot. Some of the children might be hired out some parts of the year, and the next part of the year they might be at home.

30133. Do they go out to work very young?—Yes, from fourteen years up.

30134. To the factories?—Yes, and to be cattle-herds. At present my ploughman, who has a large family, has a number of girls working in the factories here in town, and he has a son away hired with a man herding cattle, and you never can tell what number of children he has in the house at the time.

30135. Mr. WILSON.—How about the Dairies Order in your neighbourhood? We gather this morning that the enforcement is not rigid. Have you ever been inspected?—Yes, twice. I had Dr. McCarthy, the Local Government Board Inspector, with me.

30136. Miss McNEILL.—Had you any local inspector?—Yes, Mr. Windsor.

30137. Mr. WILSON.—Did you have to make some structural alterations?—Yes, I had. I had one building that was going to fall, and I had to rebuild it.

30138. But taking the Order as you know it, do you consider it a hardship on the dairy farmer to have to keep his premises according to the provisions of the Order?—There are one or two things in the Order that might be troublesome, but I believe that the Order would be conducive to the interests of the dairy trade if it were enforced.

30139. You want to see everybody treated alike under it?—Yes; that there would be no exceptions with regard to the people making butter at home.

30140. As far as you know, has the Order put any one out of the trade in this neighbourhood; has any one stopped keeping dairy cows on account of the Order?—Not that I know of. I know one gentleman who has retired from the milk trade, but whether it was as a result of the Order I cannot say.

30141. Professor METTAM.—Has he made his fortune?—The gentleman is Mr. George Murnahan, ex-M.P., who has retired from the milk trade, and he was in it for twenty years. That is the only gentleman that has retired from the milk trade that I know.

30142. Do you find that the regulations laid down in the Order have proved to be irksome?—Some farmers say that they are irksome, but I think that it would be to their benefit if the Order were enforced.

30143. Mr. WILSON.—I entirely agree with you. It is about the very minimum of decency in the production of a food product like milk. Your idea is that the Order should be applied all round?—Yes.

30144. And that what suits A should suit B?—Yes.

30145. Mr. O'BRIEN.—Do you, as Secretary of this creamery, have much to do with the creamery management itself; are you not pretty conversant with the way things are conducted in the creamery?—Yes.

30146. You have been on the receiving platform and seen how the milk is sent in?—Yes.

30147. Do they send it in pretty clean?—Yes.

30148. Do you ever have to send milk back because it is not in decent condition, or because the cans are dirty?—Very rarely.

30149. If you do it once it won't happen again?—There are men who will require checking perhaps half-a-dozen times. There are some careless men, but they are really the exceptions.

30150. Miss McNEILL.—Do you fine them if they send in dirty milk?—The way it is, is that the milk is refused, and that is fine enough.

30151. What happens to the milk when it is refused?—They might use it for cattle if they liked. The manager checks their cans next morning to see that it is not sent again. In Omagh creamery the manager is very particular.

30152. Mr. O'BRIEN.—You have a very good manager, I know?—Yes. I wish all the managers in Ireland were like him.

30153. Do they allow milk cans to be sent in with cloths under the lids?—We used to, but the representative of the Organization Society made a raid a

number of times and the cloth went over the hedge, and there was some very expressive language used, and very few cloths appeared afterwards.

30154. They were blown away by the violence of his language—they were got rid of?—Yes.

30155. Were they not kept clean as a rule?—No matter how clean you keep them you cannot keep them really white. They are clean enough but they get a dirty yellow colour.

30156. The cans I suppose too are kept clean?—Yes.

30157. Do you scour out the cans for them before putting in the separated milk?—No.

30158. You have not got a steam platform for them?—Yes, for the purpose of cream cans, but not for the ordinary milk suppliers.

30159. All your milk suppliers are members?—Yes.

30160. Have you ever considered the advisability of having a steam jet on one of these cleansing platforms at the creamery, so as to ensure that cans are thoroughly cleansed at least once a day at all events?—We have one.

30161. But you don't use it?—It would be almost impossible with a large supply to get it done.

30162. It would mean certainly one extra hand during the summer season?—Yes, and it would mean a delay to the suppliers of practically twenty-five minutes to every cart, and at a large creamery it would mean that the work instead of being over at about 10.30 would not be done at 3 o'clock.

30163. I don't think it takes so long on these steam platforms as that, but, of course, it does entail extra work. A small boy bringing in the milk would not

be able to handle the cans himself?—It is not exactly that. It is the delay in taking off the cans and getting them away again. Of course the cream cans are subjected to that, but the ordinary milk suppliers' cans are not, because the committee consider it quite enough that the people at home clean them.

30164. Professor METTAM.—But do they?—They do. The committee do not see the necessity of scalding them at the creamery. The manager who sees the cans daily has a fair knowledge whether they are scalded or cleaned. He can see if there is any adhering cream.

30165. Mr. O'BRIEN.—Do you know anything of the cows that supply milk to the creamery as a rule—you know the class of animal?—Yes, they are mostly cross-breeds. We might have an odd Polled Angus, or an odd strain of Jersey.

30166. What is your total supply?—Last year it was 481,976 gallons.

30167. How many suppliers have you?—I cannot tell you that.

30168. Can you tell us what was the average produce of a cow or herd roughly; do they average up to 500 gallons?—They ought to. I have some cows that average a little more.

30169. You have not gone into that question of the yield of the suppliers' cows?—No.

30170. Mr. WILSON.—A 500-gallon cow would mean approximately that 1,000 cows were sending milk to your creamery. Would that represent your figure?—Yes.

Mr. WILLIAM JOHN ANDERSON examined.

30171. Professor METTAM.—I understand, Mr. Anderson, you are manager of the Omagh creamery?—Yes, sir.

30172. And are the auxiliaries under your supervision as well?—No, only one; all the rest are independent.

30173. Mr. WILSON.—What do you mean by "independent"?—are they all under the same committee?—They are managed by committees in their own districts.

30174. Mr. O'BRIEN.—They sell the cream to you?—Yes.

30175. You churn each one separately and give them the price of the butter, less manufacturing expenses?—Yes.

30176. Mr. WILSON.—Are each of these auxiliaries free to send to you or to some other firm?—They must send their entire stuff to us during their period of agreement.

30177. They can break the agreement after a specified time?—Yes.

30178. They have Home Rule enough for that?—Yes.

30179. Professor METTAM.—As we understand, 500,000 gallons come into the creamery annually?—Yes, roughly that.

30180. In what condition is this milk received on the platform, generally speaking?—In a satisfactory condition.

30181. But occasionally, of course, you get dirty milk?—You will have the appearance of dirt in it occasionally.

30182. What condition of the milk would justify you in refusing it?—It is scarcely ever in that condition that we have to refuse it. The principal reason that we refuse it is because it is sour.

30183. Not because it is dirty?—It is not dirty enough to refuse it.

30184. We heard occasionally of milk being rejected because it contained all sorts of things—black beetles?—You will seldom find that. The greatest cause for returning the milk is because it is sour. If it is not properly cooled it will go sour in a very short time.

30185. Professor METTAM.—Do you pasteurise the milk at all in the creamery?—We pasteurise the cream.

30186. You are familiar, of course, with the pasteurising process?—Yes.

30187. Which is the best method?—The pasteurising is a great advantage in every way.

30188. There is the flash method and the holder process—which is the better method?—The one that exposes the milk to the higher temperature for a short time.

30189. Do you think the whole volume of the milk is raised to that temperature?—Yes.

30190. In what part of the milk is the temperature taken—is the thermometer put in at the side or the centre?—It is put in a small pipe about two inches in diameter through which the entire volume passes.

30191. As regards this pasteurization of milk and cream, do you think the temperature is sufficiently high to destroy micro-organisms that are likely to be injurious to the people?—Yes.

30192. To what temperature is the milk raised in pasteurization?—185 degrees.

30193. And the cream?—To the same.

30194. You don't raise cream to a higher temperature than that?—It may occasionally go up to 190 degrees.

30195. Is there any change in the cream when it gets to a high temperature?—No.

30196. There is no burnt flavour?—No.

30197. Have you found any difficulty as regards the sewage of the creamery?—No.

30198. No complaint has been made with regard to the washings from the floors and vessels getting into the water-course?—No.

30199. You know there have been complaints of polluted streams?—A great deal of that is due to the man's land it passes through.

30200. As regards the sludge, what do you do with it?—We throw it into the sewers.

30201. Is it not too solid to get away through the sewer?—No; it gets mixed up.

30202. Do you find getting rid of it any difficulty?—Not the least.

30203. As regards the separated milk, when does the farmer take it?—As soon as we get it separated.

30204. And he takes it back in the same can?—Yes.

30205. Consequently it would be more or less useless for him to have his can cleansed if he is taking the skim milk back again?—It would not be useless.

30206. It becomes contaminated as soon as it is filled?—Provided the milk is contaminated.

30207. You cannot always guarantee that the milk is not contaminated?—I would not go that length.

30208. I would, because the temperature to which the milk is raised is not sufficient to destroy all the micro-organisms?—190 degrees is very high.

30209. As regards the separated milk, is it not a fact that it undergoes a change very rapidly; does it not sooner or later become putrid?—Not if properly handled.

30210. Does pasteurised milk keep sweet as long as untreated milk?—It should keep sweet longer if it is properly handled afterwards.

30211. If it is not exposed?—Yes, and properly cooled down.

30212. How long would skim milk that has been pasteurised and returned to the farmer keep?—It would depend on the conditions under which the farmer keeps it. It should keep for twenty-four hours if he keeps it in a cool temperature.

30213. What opportunity has a farmer for keeping the temperature down?—I am afraid some of them have not the ideal temperature.

30214. And in the summer time it is carted a certain distance along the road and the temperature is pretty high by the time it gets home?—Yes.

30215. Next day there would be an odour from it?—I would not say that. It would have gone sour. It would not be putrid.

30216. Is it not a fact that pasteurised milk undergoes putrefaction?—No; the very opposite.

30217. You don't pasteurise it to prevent putrefaction?—We do.

30218. Is it not a fact that milk that has been heated and the lactic acid bacilli destroyed will go putrid?—Yes.

30219. Are any other organisms added when the creamery sends back the separated milk to the farmer?—No.

30220. Is it not a fact that the lactic acid bacteria in the milk prevent and keep in check putrefaction?—Yes.

30221. Mr. WILSON.—You heard the question I was putting to the last witness, Mr. Wilson. I want to know your views on the question—the possibility of a creamery retailing new milk. Suppose a labouring man goes up to your creamery and asks for a pint of milk and hands you a penny, are you willing to make a sale?—The creamery is put up for making money for the farmers, and I don't see any reason why they would not sell milk. It is all a matter of £ s. d. If there was a market created the creamery would sell milk.

30222. And a penny a pint is a reasonable price from the point of view of the creamery compared with what they get from the milk by turning it into butter and selling it?—Yes.

30223. So far as you know, the creamery system as such does not prevent the labouring man from getting his supply of milk through the creamery if it is considered desirable that milk should be sold in that way?—No.

30224. Have you ever been asked for milk in that way?—No.

30225. Following up what Professor Mettam has said regarding the addition of lactic organisms to the milk after it has been heated; you heat the milk to 185 degrees?—Yes, the cream.

30226. The whole milk does not go through any heating process at all?—It is heated to about 180 degrees before separation.

30227. That is to make the butter fat come off clean?—Yes.

30228. Does 180 degrees destroy the lactic acid organisms?—No.

30229. They remain uninjured at that temperature?—A great many of them.

30230. And, therefore, the separated milk when cooled should return to its normal condition?—Yes, provided it is properly handled.

30231. But it would not putrefy as it would if it were pasteurised and then sent back without any other process?—It cannot putrefy.

30232. I want to be quite clear about it. If you pasteurise milk and then expose it to the contamination of a journey home in open carts, the pasteurised milk handled in that way would putrefy before it would go sour?—I think the reverse would be the case.

30233. I am speaking of pasteurised milk?—Yes, I have never seen it in that state after two or three days, and I have it in my own house for two or three days.

30234. Professor METTAM.—And had it been pasteurised?—Yes.

30235. Miss McNEILL.—To what temperature did you say?—185 degrees.

30236. Mr. O'BRIEN.—Have you ever drunk the separated milk coming from your creamery?—Repeatedly.

30237. How soon after?—I have drunk it im-

mediately after it came from the separator while it is hot, and after two or three days.

30238. Do you cool the separated milk in the creamery before giving it back to the suppliers?—Yes.

30239. To what temperature?—To fifty-five or fifty-six degrees—as low as the water will do it. The hottest season we can bring it down to about fifty-six degrees.

30240. And you bring it down to fifty-five or fifty-six degrees before giving it back to the suppliers?—Yes.

30241. Because, of course, when it comes from the separators it is at a very high temperature—I suppose it is 120 degrees as it comes out?—Yes, or 130.

30242. And it would be quite hot, but you cool it down always?—Yes, always.

30243. So you could drink it as it came out?—It would be nice for drinking.

30244. Did you object to the taste of it?—It never did me any harm.

30245. Did you find it unpalatable?—No.

30246. Mr. WILSON.—You sell a good deal of it, do you?—Yes.

30247. Do you sell it as a drink or for calf-feeding?—Largely for making bread, and using it with porridge as well.

30248. Don't the farmers want all their milk back?—They get 85 per cent. of their milk back. It is impossible to get it so fine that there is nothing left. There is always a surplus where you have a large supply.

30249. Do you know of any families who buy separated milk to take with porridge?—I don't know what they do with it. It is used for cooking purposes.

30250. You don't know any men who drink it in the middle of the day?—I drink it myself in the middle of the day.

30251. You don't happen to know if the farm-labourer comes in and gets a drink of the separated milk?—I am certain it is used largely for that purpose. I have no experience of it, but I am certain it is so used. I don't see why it should not be.

30252. Would you have any objection yourself to selling milk; as a creamery manager do you think it would add much to your difficulties?—I don't think we would consider it would be troublesome if it was found to pay us.

30253. You have never been asked, I suppose, to contract to supply whole milk?—No, we have not.

30254. You never put in for an asylum or work-house contract as a creamery?—We have not.

30255. Professor METTAM.—What about the winter supply; do you get very much milk in the winter time?—It has largely increased these last three or four years.

30256. The supply is going up?—Yes.

30257. How many days in the week do you work in the winter?—Three days.

30258. Can you give us an idea as to the relative amount of milk that comes into the creamery in the winter time as compared with the summer time—is it a quarter or one-third?—I cannot say at the moment, but I was looking over the figures to-day and I find that for the last four years it has increased thirteen per cent. the first year, eight per cent. the second year, and twenty-five per cent. in the year 1911-12.

30259. Twenty-five per cent. over the same period in previous years?—Yes. There will be a greater increase this year. I am dealing with November, December, January, and February. The milk supply is going up.

30260. And that is because they are getting their cows to calve at a different period, and are going in more for winter dairying?—I attribute it to that.

30261. There is a change in the whole system more or less?—Yes, and more particularly the small farmers are going in for winter dairying. They always make it a point to have a couple of cows always in milk—farmers with four or five cows. Some of the larger farmers are going in for it, but principally the increase is amongst the smaller farmers.

30262. Mr. O'BRIEN.—What price do you pay for winter milk?—About 6d. a gallon.

30263. Professor METTAM.—Is there any other point, Mr. Anderson, that you would like to give us information about?—I don't think of anything else.

Mr. PATRICK M'LOUGHLIN examined.

30264. Professor METTAM.—You are a member of the Urban District Council of Omagh, Mr. M'Loughlin?—Yes, sir.

30265. And you wish to give the Commission some information in regard to the milk supply?—Yes.

30266. Is there much difficulty in obtaining milk throughout the year in Omagh?—Yes; particularly in the winter, and also to some extent in the summer, as regards the poor people.

30267. Is it because they cannot afford to buy it, or because it is not available?—Because it is not available.

30268. How is the milk purveyed in Omagh—do carts go through the streets?—There are milk carts sent in by the farmers in the country. The former system, some twenty or twenty-five years ago, was that most of the milk was supplied by milk vendors in the town. There was then an ample supply for all parties at a cheap rate, but these vendors gradually disappeared because the rents of the land became too excessive, and the supply of milk fell into the hands of farmers in the country.

30269. Are there any milk shops or dairies in the town where milk can be bought?—There are one or two, but they are practically non-existent at the present time.

30270. So it is difficult for a person who wants a pint or a glass of milk to get it?—These country milk carts have customers and it is difficult for others to get milk unless the farmers have an excessive supply.

30271. Is it partly due to the fact that there is not a constant demand?—The demand is constant enough, but they don't have a sufficient supply.

30272. Mr. O'BRIEN.—The supply is not constant?—No. In winter it is very bad, because in the summer the carts deliver twice a day and in the winter only once, and the supply is not at all equal to the demand.

30273. Professor METTAM.—And what is the character of the milk that you obtain in the streets?—There is no complaint as to the quality; there has been an odd complaint, but it is not general. It is more to the want of milk than to the inferior quality that the complaint has been made.

30274. Is the Food and Drugs Act put in force here in Omagh?—Yes, it is.

30275. Samples of milk are occasionally taken by the police for analysis?—Yes.

30276. For adulteration?—Yes, but that has seldom occurred, and the general complaint is that the magistrates won't convict, or, if they do, the fines are merely nominal.

30277. Prosecutions have been instituted?—Yes.

30278. In the case of milk purveyors in the town?—Yes. The police look after that and they have some prosecutions.

30279. Can you give us any idea of what you would suggest as to how this shortage of milk might be overcome?—I have given the matter some thought and my opinion is that the creameries, both in town and country, and particularly in the town, should have a supply for sale for everyone who required it.

30280. Having a small depot in connection with the creamery where people could get and obtain milk if they required it?—Yes, and I would say that they should supply butter-milk as well as sweet milk, because the shortage of butter-milk is one of the greatest complaints we have. Twenty years ago there was an excellent supply of butter-milk. The poorer classes used it largely for making bread.

30281. And as a beverage?—Yes. In the absence of that some of them drink porter. I would go so far as

to say that the creameries are blamed for the whole scarcity; and that being so, they should supply the scarcity. They have been accused of the shortage and they should supply the want.

30282. Mr. WILSON.—Is the shortage the same in the summer as in winter?—No.

30283. The creamery is chiefly working in summer?—Yes.

30284. At the time when the creamery is most at work that is the time that the shortage is least noticeable?—The supply is so large in the summer as compared with the winter; there is only a small supply for the creameries in the winter, and if they absorb it all, there is nothing for the people. The charge is that the creameries have taken away the people's supply.

30285. Supposing there was winter dairying thoroughly established here and you had as full a supply of milk in the winter as in the summer, on your own showing, the creameries would have done no harm because you would have an ample supply all the year round?—I did not say there was not a shortage also in the summer.

30286. That is another point, but the shortage is less noticeable in the summer?—That is so.

30287. And if you had the milk supply all the year round as large as you have it in the summer, then the supply for the public would be at its best all the year round?—Yes, but it would not be sufficient.

30288. It would be at its best?—Yes.

30289. And, consequently, as far as I am able to understand the argument, the statement that the creamery system, as such, has nothing to do with the shortage?—They are responsible for the shortage both in the summer and in the winter.

30290. Before the creamery system existed, was there ever a time when everybody got enough?—Yes. I said that twenty years ago there was a sufficient supply of butter-milk and sweet milk, and I gave the explanation about the vendors disappearing owing to the excessive prices they had to pay for the land about the town.

30291. You are quite clear about the desirability of the creameries becoming places where milk could be obtained for sale for cash?—Yes. I was speaking to a creamery manager and he said it was quite feasible, and I quite agree. They purchase for 4d. a gallon and they could retail it at 10d. and they should have plenty of profit.

30292. Mr. O'BRIEN.—You talked about getting buttermilk from the creamery. As you are aware, buttermilk from the creamery is not the same thing as buttermilk from the old dash churn?—It is used for making bread, but for nothing else. No one can use it. It is used in some cases for making home-made bread.

30293. It seemed to me that you were making a distinction between separated milk and the buttermilk coming from the creamery?—What I want to say is this, that they should sell buttermilk at the creamery. People don't want separated milk except for bread-making. The creameries should churn in the ordinary way and have buttermilk. Before creameries were established, there was plenty of buttermilk to be obtained at cheap prices.

30294. Does anyone buy the buttermilk from the creamery as distinct from the separated milk?—There is none made at the creamery.

30295. There is. There is buttermilk and separated milk made at the creamery?—I was not aware that they ever had buttermilk at the creamery. If they have, they are hiding their light under a bushel. I was not aware that there was any buttermilk made at the creamery—I mean buttermilk as made before the establishment of creameries.

The Commission then adjourned.

FIFTY-FIRST DAY.—THURSDAY, 15TH AUGUST, 1912.

The Commission visited the following central creameries in County Tyrone:—Omagh Co-operative Agricultural and Dairy Society, Mountjoy Co-operative Agricultural and Dairy Society, Drumquin Co-operative Creamery, Dromore Co-operative Creamery, and Shaneragh Co-operative Agricultural and Dairy Society; also Lack Co-operative Auxiliary Creamery in County Fermanagh.

FIFTY-SECOND DAY.—WEDNESDAY, 2ND OCTOBER, 1912.

The Commissioners met at No. 5, Upper Castle Yard, Dublin, at 11.30 a.m.

Present:—Sir STEWART WOODHOUSE, M.D. (in the Chair); LADY EVERARD; MISS MARGARET McNEILL; G. A. MOORHEAD, Esq., F.R.C.S.I.; ALEC. WILSON, Esq.; DERMOD O'BRIEN, Esq.; J. R. CAMPBELL, Esq., B.Sc.; and Professor A. E. METTAM, B.Sc., P.R.C.V.S.

S. W. STRANGE, Esq., *Secretary*.

Mr. CAMPBELL.—As our Chairman will not be present, I propose that Sir Stewart Woodhouse do take the chair.

Sir STEWART WOODHOUSE took the chair.

Mr R. A. ANDERSON examined.

30206. Sir STEWART WOODHOUSE.—Mr. Anderson, you have already given us evidence here?—Yes.

30297. And you have come back to add something to what you have already told us. We have had before us the possibility of creameries selling milk. It was a question which came before this Commission at almost every sitting, in districts where there were creameries, whether to some extent the scarcity of milk could be relieved by selling from the creameries. We asked many witnesses, and they all told us that the creameries do not supply milk; but it is only fair to add that many of them never thought if the creameries would do so or not?—I have, I think, in my evidence in the first instance said that I believed that there was not a creamery in Ireland which was not quite ready to sell practically any quantity of milk at a reasonable price, and in addition I mentioned a price, I think, on that occasion—8d. a gallon—which would be a reasonable price. Since I gave my evidence I have been making some inquiries into the alleged scarcity of milk in each county, and I have satisfied myself that practically all over Ireland the scarcity is greater in non-creamery districts than in creamery districts. The great difficulty I see to be dealt with is that there is no demand for milk. There is a great want for it, but there is no demand—certainly no organised demand—for a supply of milk, and it is extremely difficult to get farmers to make their arrangements in such a way as to provide a supply of milk, unless they are perfectly certain the supply will be taken off their hands in the winter months. Still I do not think it is impossible, and the matter is of such great importance that we in the I.A.O.S. are going to do everything we possibly can to try and get the people, in the first instance, to demand that they should have supplies of milk for their homes and schools, and to arrange through the creameries or through individual farmers who are members of these creameries, for such supplies. Of course, in districts where we have no societies it is impossible for us to do anything, but there are several other agencies which I think could possibly be associated. For instance, we are in consultation with the United Irishwomen about it. They have taken up the matter, and have started some milk depots—a scheme for milk supply in different parts of the country, which I think will be beneficial and much appreciated. But the real trouble is to get a supply of good pure milk all the year round. It is not difficult in summer; but in winter, where milk is not much produced at present, it is not easy to get the farmers to take it up. In cases where creameries are worked through the winter, and where they only receive milk three times a week, there is a certain amount of difficulty in dealing with the problem, because the milk is not as fresh as it might be, and until we can get the farmers to produce sufficient milk in the winter months to make it possible to have a daily delivery at the creamery, I believe we shall have to make the best we can out of this bad state of things. It appears that (although this is not an ideal plan), you can get this milk pasteurised at a low temperature with a long exposure, instead of a high temperature, dealing with the entire supply of milk to the creamery; and I am told—there are medical gentlemen on this Commission—I am told this plan

of pasteurisation at low temperature is not open to the same amount of objection as the pasteurisation at high temperature, which "cooks" the milk, so to speak. We do not think that the pasteurised milk is an ideal food for children at all, although everybody will agree it is preferable to no milk, and if it is pure, and if there is a sufficient quantity for the purpose, I think it would be found in present conditions to be a great improvement. We hope that the price farmers would get for milk sold this way will be deemed enough to get some of the more progressive to increase the number of cows, and in any case where this scheme is carried out, the supply of milk would be limited strictly to certain approved farmers whose farms would be inspected, and might be trusted to send in good milk.

30298. At what temperature will be the pasteurisation, and the time of exposure?—Long exposure; 160 degrees for twenty minutes. At present they pasteurise to 190 degrees, and even higher, and the average exposure would not be more than three minutes at that temperature. This, of course, can be done in the creameries, and most of them have apparatus which would be sufficient to deal with any quantity.

30299. Pasteurise all milk?—Yes.

30300. As it came in?—Yes, as it came in; and deliver it in suitable vessels, or give it to people who came to the creameries. But, of course, we recognise that in bad winter weather people will not send their children long distances for milk, and we must try to arrange to have outlying places of distribution, where people could call for it; convenient centres like cross-roads, and schools, and places of that kind. But I don't think we shall have the smallest difficulty in getting the creameries to take it up. We sent round to two or three places where there are large creameries, to which there is a fair supply of milk—Omagh is one and Clones is another. In both these places the committees, who had not given the matter much thought before, were very glad to have it brought under their notice, and said they would co-operate in every way possible to make the project successful. So I think what we will do in the Organisation Society when our committee consider this matter, as they will next week, will be to issue a circular letter to the creameries calling on them to do their part in helping to remedy this state of things, and I think it is much more from want of thought than want of heart that the matter has not been brought before them.

30301. Could you give me, even roughly, what proportion of creameries there is, and where, at which milk might be available daily in the winter time. We came across three kinds of creameries; those running in winter and summer daily; those which close entirely in the winter; and those which are open for perhaps two or three days and closed for the rest of the week?—Roughly speaking, I should say that the majority of the creameries in the North of Ireland would be in a position to supply milk daily. In the South of Ireland you may say that practically all the large creameries could supply three days or four days a week, and in those cases where creameries are closed now, owing to the want of a supply of milk, it must be remembered that they close because they have not got a sufficient quantity of milk to make butter making profitable.

But that does not mean that they would not take in a small supply of selected milk for resale, because so little expense is attached. They have never thought of it. If it was put to them that it was a duty they owed to the community, there is enough public spirit in them to make them do it.

30302-3. In summer they would have a considerable measure of profit?—They might sell it for less. I mention 8d. a gallon because I think that would be the winter price, but I think it would be less than that in summer.

30304. How much?—I dare say a farmer getting 6d. for summer milk would be quite satisfied. In the good creameries, with the present price of butter, they get paid about 5d. a gallon on the average for the milk, and get the separated milk back. If they got 6d. they would not be getting more for the whole gallon than they are now getting for the milk plus the value of the separated milk.

30305. They would not have much profit in the summer?—No.

30306. In winter they might have some moderate profit?—Yes.

30307. If it was raised by twopence to 8d. a gallon in the winter time?—I think that would be a very satisfactory price—8d. a gallon for winter. I think no farmer would keep his milk at home if he could get 8d.

30308. Dr. MOORHEAD.—That would be determined by the demand?—Very largely. Of course, a great number of things have to be taken into account. At present our cows do not produce as much milk as they should, the production is much lower than it need be. If you had a good strain of cows it could be increased far beyond the figures I have given.

30309. Mr. O'BRIEN.—We have evidence from several people that unless your cows are producing 600 or 650 gallons in the year, it would not pay at present creamery prices to keep them in milk in the winter, and certainly that has been my experience of a good many in the country, when most in want of milk. The class of cattle that they keep and that can live in the country can never produce anything like that amount of milk. They think it a good milker in the West that produces 250 gallons or 300 in the year?—Yes.

30310. Whether in Connemara and the more mountain districts they could grow a better class of animal by having winter food, and whether they could grow winter food for them, I think is rather doubtful. I don't know what the agricultural inspectors would say to that?—We found, though it is very slow—painfully slow—that the growth of winter milk production is increasing. This scheme might stimulate it—we hope it will—because although there is only a limited amount of milk taken in the first instance, the few men who benefit from the sale of their milk at this price in the winter will show other men how they may produce winter milk at a profit. And all the different bodies at work throughout the country, the Department, ourselves, and all that, help and instruct the people how to get better cows, and eliminate the bad ones, and increase the milk yield generally; and how to treat the milk—to keep it clean and fresh. All that is helping us, and I think that this scheme of starting these clubs or associations for the supply of milk in the country districts will, perhaps, do a great deal more than we at present see, to stimulate the production of winter milk.

30311. Do you think that, unless people are educated to the full value of milk, you will get any large increase in the demand for milk?—No.

30312. Because in my own particular district I supply milk to anybody who needs it at that price—1d. a pint—and the people take extraordinarily little milk?—Yes.

30313. I mean a pint to a quart for a family of five is quite a usual thing per day?—Yes.

30314. Therefore I don't think it is because they can't pay a little bit more—they can't afford very much more—but I think they do not realise the full value, and I feel that, until they are educated in the schools into the food value of milk, we shall not get a real demand for a supply that is sufficient for life?—I am sure that is so, and I said so when I came here to-day, that the real trouble was to organise a demand. That seems to me to be almost the first thing to do. We will be quite ready to get the milk, I am sure, when

there is a demand, but it must not be a spasmodic demand—a demand for a quarter of the farmer's milk one day, and take it all next day—it must be a regular business.

30315. Sir STEWART WOODHOUSE.—As to the possibility of organising milk clubs among labourers, either directly or by the I.A.O.S., or the United Irishwomen, how can these associations keep in touch with farmers?—I do not think there is very much difficulty about that. The farmers who are members of these societies, in the first instance, would form the nucleus of the club. Presumably these people keep a certain amount of milk at home. I think they all do that, and some of them keep a certain amount of milk for their labourers, but the amount that is kept at home, even in the farmers' houses, and for their labourers, is ridiculously small—it is entirely inadequate.

30316. In creamery districts?—Yes. In the other districts, where they keep the whole of the milk at home, there is a more plentiful supply for the family, and, if he is generous, more to give his labourers.

30317. There is, but we have evidence that the milk kept at home went to domestic butter making?—Yes.

30318. That is not in creamery districts?—Yes.

30319. Have the United Irishwomen's organisations extended over much of the country?—They are making headway now. They started several of these milk supply societies, and I think that they have made up their minds now that it is almost one of the most important things they can do; and whenever they find that the people are anxious to get a supply of milk they send their organiser down to try to form them into an association, in two ways. One way is to have a depot such as Borris, Carlow, where they distribute milk from a little shop or house to which it is sent in. Another plan they have there in county Kerry, which seems to be working satisfactorily. They contract with a farmer, who is a careful man and keeps his milk very well, to supply the community, and deliver it at 8d. a gallon all the year round, and this man is doing it, and doing very well with it. He is making money, in fact he left the creamery he was sending his milk to. The committee that is working the creamery don't mind because they have plenty of other milk.

30320. Mr. WILSON.—How long is it since that was started?—Ten weeks ago, I believe.

30321. Is it in full working at present?—Yes.

30322. Lady EVERARD.—What part of the county?—Near Fenit, a place called Castletown or Chapeltown, a small village or country place between Tralee and Fenit. There, you see, it is simple enough to carry from the farmer to the people. There is no real organisation for purchasing the milk and reselling it again, and in a great number of cases that does not seem to be really necessary, if the farmer will undertake to supply the people, and to deliver it; that seems to provide all the necessary machinery.

30323. If the farmer will deliver it, it makes a great difference?—An association ought to be kept up if only to see that the man does not put water in his milk, and that he delivers it in proper condition, and if there are many complaints to be made that they can be made amenable. An unorganised community cannot very well make a contract with a man; there must be a society, or union, or some kind of club, to contract with him.

30324. Mr. O'BRIEN.—When you say he delivers the milk, he delivers to the depot?—No, nor actually to the houses; but along certain roads, at certain places on these roads; all the people come there and wait for it at certain hours; he can guess pretty accurately the quantity of milk required.

30325. That really would take him very little more time than sending to the creamery?—I do not think it would take very much more.

30326. It is a long process sending to the creamery?—Yes, because you have to wait for your separated milk—wait for your turn at any rate. He is quite satisfied to keep a horse on the road, doing this business; he has made very well.

30327-9. Have you found that it has caused any friction with the small shopkeepers who have been, perhaps, selling milk; very often you find in a village some shopkeepers who keep three or four cows in the winter, for winter milk, and supply the village?—No, we have not come across that yet, possibly because we have not come into competition with anybody in that business.

80380. It did not happen in this case?—Not in Kerry. As far as I understand it must have happened at Borris.

80381. Lady EVERARD.—At Naas Lady Mayo and two other people have started a depot, and four months ago they were disposing of 60 gallons per day?—Yes.

80382. They contract with the people to send it in, and they charge 8d. and 6d. a gallon?—Yes.

80383. Mr. O'BRIEN.—There a depot is in existence, and it is a town. The difficulty really is in the case of rural districts, where labourers' cottages are dotted all over the place, as most convenient to farmers for whom they are working, and there is no central place at all. You see?—Yes; you can only manage the depot plan where you have got a small town or village to which the people have recourse practically every day; they won't come specially for milk.

80384. Miss McNEILL.—Do you happen to know how far they go?—No, but I should imagine the milk contractor does not go more than about two miles in every direction; probably a radius of two miles from his house.

80385. Lady EVERARD.—Do you know if the farmers have any trouble with the men who go round getting the money?—No.

80386. I was told two or three days ago that that is a great difficulty. It is very difficult to find honest labour going round?—I think the proper way to deal with that would be to let the depot, or office, or whatever it is, sell checks at so much a piece at the beginning of the week, to be paid for the week in advance or at the end. At all events, you exchange these checks, one for every pint of milk. That is what is done by the St. Vincent de Paul Society. They had so many checks, they give the checks, and the person having the checks gets so much milk. In Limerick it is the same at the depot there.

80387. Mr. WILSON.—That reduces the trouble of book-keeping to a minimum. It removes nine-tenths of the trouble of keeping accounts; and nearly all bad debts?—You have only one account, and that is with the contractor.

80388. That would be simpler still in the case of a society?—Yes, in this case.

80389. Sir STEWART WOODHOUSE.—The possibility of organising milk clubs is a very valuable suggestion; we would like a little more information as to the method by which the I.A.O.S., or the United Irishwomen can do it. Take the I.A.O.S. first? You state that they can try farmers; they have machinery for asking farmers to start?—No, I don't think it is our job exactly. I think what we would do is to arrange for the supply, and help in devising a scheme for distribution. I think there might be some other body for organising the demand. We are in touch with the farmers who form the society, but not with the labourers, and that is where the new organisation appears to be wanted. We hope that the United Irishwomen, and, no doubt, the Women's National Health Association, who could do a vast amount of useful work by taking up this question for the people all over the country, will help. I don't think it matters how many organisations are in the field, if they don't compete with each other. The main thing is for them to work side by side. We all know a portion of the people do not realise the need of getting milk. I am quite sure they must get more milk into their homes for the children.

80340. There is one hopeful feature, that if there is ignorance among labourers—as among other people—as to the value of milk, there are labourers with a keen sense of the value of milk. Many have come forward and made complaint as to the scarcity of milk, and said they are suffering from a grievance that ought to be remedied. I have no doubt there would be in all these places a few amongst the labouring classes who would lend a hand to remedy the scarcity?—Yes. May I just add that Mr. O'Brien's experience about the quantity of whole milk that is consumed in the houses is entirely borne out by what we heard. The only purpose for which whole milk or pure milk, is ever used is in tea—to "colour" the tea, as they call it—and, except for their very young, they do not seem to buy milk to be used as milk at all. Of course, they buy sour milk and buttermilk, and sometimes get it for nothing, and they use that.

80341. Mr. O'BRIEN.—For bread making?—Yes.

80342. Mr. WILSON.—There is not a district in Ireland where we have not had that statement—north to south?—Yes. I remember once—it may be hardly relevant, but it shows that Ireland is not peculiar—I was away up the Thames in a steam launch, almost as

high as you could go. It was a country swarming with cows of all kinds, and we tried to get some milk, and the only thing we could get was half a tin of condensed milk from a lock-keeper who had a house full of children.

80343. That milk, I suppose, went to London?—Yes, very likely, or went, perhaps, to one of the big factories in the neighbourhood.

80344. Mr. O'BRIEN.—Bristol?—Gloucester, very likely, I should think, to some of the creameries. You were asking me about a winter supply. Some of the southern creameries are now doing a large business sending milk to London. They pasteurise it in this way—160 degrees for 20 minutes—and they are doing very well. South Tipperary, and down the Suir, there are a lot of creameries which are in direct and pretty speedy communication with London *via* Fishguard.

80345. Miss McNEILL.—How long does it take to reach its destination in London?—I should say fifteen hours.

80346. Fifteen to eighteen hours?—I should say so.

80347. Sir STEWART WOODHOUSE.—The pasteurisation would enable it to arrive in that time in excellent quality?—Yes. There have been no complaints so far as we can make out. In the creameries where they have got a chilling apparatus they invariably chill the milk, and generally make it as cold as they can after the pasteurisation, before sending out.

80348. The chilling is the very sensible part of the pasteurisation?—They can always chill for butter down to 60 degrees; but they cannot get it down to 40 easily.

80349. Is the more perfect form to chill it twice, that is immediately after milking, before it is sent to a creamery at all, and then after the pasteurisation?—Probably, if they keep it absolutely clean, and chill it immediately after milking, it would not have to be pasteurised.

80350. Mr. O'BRIEN.—Do you happen to know whether they pasteurise in Denmark, where they have that very fine quality of milk, and where they actually milk the cows into the ice-chilled pails?—No, not for home consumption at all.

80351. Do you know how long that would keep?—I never heard, but I imagine certainly twenty-four hours.

Mr. CAMPBELL.—Oh, yes.

80352. Mr. O'BRIEN.—That, I should imagine, is pretty costly?—Their system at Copenhagen is the best in the world.

80353. Mr. CAMPBELL.—That one system?—That one. I was over it many years ago.

80354. All Danish milk is not like that?—No.

80355. Mr. O'BRIEN.—That is rather costly?—I should think so.

80356. Only possible because they can get a great deal of ice. We gather from the evidence on the matter that every farmer there collects ice in the winter?—They used to do that out there, and I am sure they utilise the ice yet. Now they are giving it up. It was a great nuisance, and not as good as cheap chilling plant, and when these creameries have chilling plant they don't bother with ice.

80357. You must have the ice for these particular boxes?—Yes. I mean they probably can produce their ice so cheaply that they can be quite independent of shortage. It is a great bother and expense to have a great quantity of ice stored, and to cart it is almost as much as the cost of making it.

80358. Sir STEWART WOODHOUSE.—I see, under your third heading, you refer to the method of arranging the local milk supply in countries, for example, Denmark or Belgium, where the creamery system is more or less completely developed?—I am afraid Mr. Wilson is responsible for that suggestion. I have made some inquiries about that. I should have liked to have been able to give information to the Committee. As far as I can make out, from what correspondence I have had in letters from people there, they tell me there is no organised system of supplying; that the people get all the milk they want; that they don't seem to suffer from any scarcity of milk; and it has not been necessary to organise a special system of milk supply in rural districts.

80359. Mr. O'BRIEN.—They do that out on the Continent, so I gather from Professor Bond, with whom I was talking, in his part of Germany; the milk is all sent away to the cities, all the farmers do that?—In Denmark, too, the Danish farmer lives very economically. His children look healthy enough, but he does not use much milk, and uses hardly any butter. He uses margarine, and sells his butter.

30360. Sir STEWART WOODHOUSE.—In these countries, especially Denmark and Belgium, and other thickly-populated countries, the difficulty of distributing is not so great as with us?—No. In Denmark, as far as I can make out, the distribution of milk is undertaken altogether by the local co-operative stores. There are hundreds and hundreds of these stores in rural Denmark; shops where they sell ordinary domestic necessities. There are hardly any of them in the towns; they are not needed; but in the country districts, instead of ordinary little huxter shops, there are co-operative stores, and if there is milk distribution, it is all done through them, and so some one man will lay himself out to sell milk for his neighbours; but, as a rule, there is no special organisation for it. In Belgium, of course, you have got a tremendous teeming population of industrial people which makes it simple.

30361. A considerable difference?—I gather, too, from information from Belgium, that milk is not used, nearly to the extent it ought to be.

30362. Mr. O'BRIEN.—There are quite big districts in France where it would be very difficult to get milk?—The difficulty about applying the co-operative principle to milk is considerable, because the sale of 40 or 50 or even 100 gallons a day at 8d. would not provide you with sufficient margin to make the working expenses of a co-operative society; it would have to be a society doing something else. For the sale of milk as its main business, you could not start co-operative societies; but then you could use the existing societies wherever they were as the media for distribution, but I do not think it would pay to start new societies. It would be rather an unnecessary multiplication, a rather expensive form of organisation. I dare say the Commission may not be aware that a co-operative society which only has a turn-over of £100 a year has to go through precisely the same forms of procedure as a society doing £1,000,000 a year, and they have no funds to meet it. For example, they have got to pay for the registration or incorporation; they must have their accounts audited annually, and to have somebody responsible for them; pay somebody responsible for the keeping of the accounts; and a small society for the milk distribution could never meet that.

30363. You say that in some of these places where the milk is distributed through the means of the society there are co-operative stores?—Yes.

30364. There are a few co-operative stores in Ireland, I think; one or two in districts where they are quite apart from towns?—Yes.

30365. In these cases do they sell milk, say, at Lombardstown?—At Lombardstown, I don't think they do.

30366. Is not that some way from any town?—Six miles.

30367. It is a co-operative store?—Dealing with domestic requirements.

30368. To people who would not be able to get them otherwise?—Yes. They are six miles from Mallow; twenty miles from Cork. There is a little village up in the mountains, two miles away. It is practically in the heart of the country.

30369. You don't happen to know if they have taken up the question of selling milk?—I don't think they have. I am sure they would take it up.

30370. Because that is a creamery district as well?—Yes.

30371. There is a large supply of milk about there; at all events, on one side of it?—Yes. I don't think there is much need there; because there are a great number of well-to-do people living about there, who employ a considerable amount of labour, and keep cows, and no doubt supply their labourers with milk.

30372. Sir STEWART WOODHOUSE.—To revert to the suggestion that there is a feeling of pride among the farmers throughout the country which would militate against their willingness to sell milk, we found that farmers were not willing to sell milk even if they could get 8d. a gallon for it, because by sending it all to the creamery they received a big cheque at the end of the month; and, secondly, they avoided bad debts. It struck some of us that there was a feeling which they did not, perhaps, acknowledge, namely, a dislike to sell, to be a retailer of small goods: do you think that is a general feeling?—I should think it was. I should think that would be overcome to a great extent if you could obviate the necessity of the farmer going round with the milk himself. The reason he does go round him-

self is he is afraid of being tricked by the people buying the milk, or of being robbed by the carter. If you substitute a system of checks or tickets to do away with the possibility of that, of bad debts and speculation, I believe then all the farmer has got to do is to measure out so many gallons each morning to his man, send him round, adding as many pints as is reasonable for a certain number of gallons; for each gallon he gets so many checks. Of course, in selling milk the custom is to give a little more than the measure, and you have to allow for that.

30373. In some cases it would serve in country districts if the farmer sold at his own house—to a child who would come with the vessel?—Probably the farmer's wife would look after it, and take charge of the book-keeping. The man I mentioned in Kerry is a small man; he occupies forty acres of land, with twelve or fifteen cows; but still he is probably a man who is not ashamed to work, or turn his hand to anything. You don't get as many of these men as you ought to now.

30374. Professor METTAM.—He comes within the Dairies and Cowsheds Order?—He comes in anyway, for he supplied milk to a creamery.

30375. He supplied to customers?—Yes: there is a sale there, a purveying of milk within the meaning of the Act. That, of course, is a great grievance, because farmers don't say that they ought not to be inspected, but they don't like it; and what they object to is being singled out for inspection when the men who make the butter at home, anyway they please, go scot free.

30376. You think the Order should be universal, and should be applied to everybody?—It ought to be, and I would make the police enforce it.

30377. And where the cows are kept for domestic use or making butter?—I would not mind even if a man only kept cows for his own use and servants; he has no right to spread disease through the milk to them, and they ought to be under supervision. I think the Order as it stands is a hardship to the progressive people, who have started creameries, and are trying to do their best to improve the butter industry, and it is really a great shame to let these other people off.

30378. It is a hardship, because not universally applied?—Yes. None of the farmers grumble at it. They say it is all right if it only applied all round, but it does not. The farmer who makes butter at home is exempt from the operation of the Order. When he supplies milk to a creamery he comes under it.

30379. Lady EVERARD.—It is only the case where the Order is in active operation, which I am sorry to say in many parts is quite a dead letter?—Quite so. The Local Government Board have always told us that they meant to enforce the Order, and they mean to compel those bodies who won't do so to put it into force by means of an application to the King's Bench.

30380. That was done in one case?—Kilmallock. In other cases the Local Government Board have not done so. I believe it is in contemplation to enforce it, so that there won't be any shirking.

30381. We have had evidence, North, South, East, and West: we found the Order is only a dead letter in many places. I am looking here at some evidence. One witness said that it would be an enormous advantage if the Order were in active operation in his district, because they have no guarantee of the purity of the local supply to the creamery: that is a very serious thing?—Yes. In some cases where the Order has been enforced—for instance, County Antrim—it has had a very serious effect on the supply to some creameries. It has reduced one to two-thirds of the original amount. The farmers have gone out of the business. They said: we cannot afford to put up these new cowsheds regarded as necessary, and we have not got the money; we can't borrow. They won't charge their land with the Board of Works' loan for the purpose; and they say that compliance with all the conditions of the Order, and they are onerous, would make a creamery business impossible.

30382. Don't you think the Board of Works would give small sums on loan—£10 to £14—to small men?—I think that they would not be averse from doing that.

30383. They won't give less than £35?—That is so.

30384. Mr. O'BRIEN.—Don't you think that would be better done by a co-operative bank or credit society?—I don't think so.

30385. Borrowing that small sum?—No; we would be altogether against that; because a co-operative

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society is designed to loan money for short periods, and to accept for these advances personal security. For loans for longer periods you would have to have some new machinery; and if the Board of Works could see their way to simplify the procedure necessary, before giving a loan, and reduce the amount, making a minimum lower, it would meet all the requirements of the case; and, besides, I understand the Board of Works have power to take personal security. In certain cases they do not always require to obtain a charge on the land on which buildings are erected.

30386. I never heard that before?—They have.

Mr. O'BRIEN.—I don't think the Government ever did such a thing as to take personal security.

30387. Lady EVERARD.—You don't think it would be an advantage if all the by-products of milk were brought under the Dairies Order; for instance, butter, skim milk, and cream being obliged to be registered?—I would certainly think so. I don't see any justice or commonsense for having any partial system of inspection.

30388. Mr. WILSON.—In singling out one section of the trade?—It is clearly class legislation of a very bad kind.

30389. There was only one objection that we heard in our travels to a creamery selling milk, which a man who made it insisted upon; and that was with regard to the creameries where they have large central butter-making stations with outside branch collecting depots. Consequently a branch collecting depot would be most convenient; and the manager of the central butter factory, although it was co-operative, objected to the branch manager selling the milk at all; he said he could not keep control of him, and could not keep control of the milk?—I think that is a very flimsy excuse.

30390. It seemed to me a very weak excuse?—There is no reason why it should not be done. I presume that the manager's objection was that if you sold any portion of milk, and had not an accurate account of the percentage of fat, it would be difficult for him to calculate the average percentage of fats in the milk received at the creamery. I can't conceive any other reason.

30391. His exact phrase was, we would have no check on the managers. That was the only objection he raised; he said he had no other objection to offer. Another witness, at Limerick, whom we asked whether the creameries sold milk, replied that the farmers very strongly objected to it, and the creamery organisation did not like new milk to be sold. I asked him what the objection was; he could not tell me the objection; and I asked the creamery manager whether he had tested the committee of the creamery if the farmers would not like it themselves. These are the only two cases, I believe, connected with creameries that had any objection to offer?—The committee were afraid the money would not be accounted for; but if you settle that, with a proper system of preventing fraud, I don't think that objection would arise.

30392. Mr. O'BRIEN.—There was another witness, at Enniskillen, the manager of the Scottish Wholesale Co-operative Society, who said he would not sell milk at any price?—His directors would probably soon change his opinion on that matter for him.

30393. They would be against it. He repeated his objection two or three times?—I think that if representations were made to his directors, who are very good men, and as they are operating over a very large area, and doing the work very well, they would be quite amenable to making the change; and that would be quite easily done.

30394. Mr. WILSON.—Have many actual experiments been made in this country in the societies of the I.A.O.S. in the selling of milk by the co-operative stores? I believe in the town of Lisburn, they have been thinking of it?—I don't think they have begun. They may have been thinking of it.

30395-6. Nothing has been actually done yet?—I do not think so.

30397. From what you said earlier, your opinion regarding the system seemed to divide itself into two: you want somebody to initiate, to start the scheme, and also some more or less permanent co-operative body to control things, to investigate complaints and keep matters going?—Yes.

30398. Would there be any difficulty in places? We know the United Irishwomen and the National Health Association have branches; have you a progressive body to enlist others in taking the initiative, and act as a co-operative body to keep control?—There is no difficulty at all. They could get over the legal difficulty of

making contracts by deputing some one person to make, to enter into, a contract on behalf of the community.

30399. I am speaking of where there is no other agency in sight?—Yes. You do not want to register any corporate association at all. You simply want a club.

30400. A club like the Naas Club?—Yes, exactly; a club.

30401. And another part of your earlier evidence before us has been confirmed over and over again from practically nearly every district we went to—a tendency towards friction between the farmer and his labourers?—Yes.

30402. And it seemed to me that possibly if the farmers in many places were far-seeing enough, of their own free will, to help with such a scheme as we are dealing with, it might tend?—It would help to keep the peace.

30403. To keep the peace?—Yes, it would.

30404. Dr. MOORHEAD.—Who controls the Tralee supply?—I think the principal person down there is Miss O'Donovan. She takes a great interest, and I think she runs the club, but there is a local committee. It is not incorporated in any way; it is just a club.

30405. Are they satisfied that the simple compliance with the Dairies and Cowsheds Order secures the supply?—I do not know whether the Order is enforced there or not. The contractor had been previously a milk supplier to the creamery. If he was, he would be under the Order still.

30406. There is no special provision to secure a pure supply?—I don't think there is any arrangement for it.

30407. They have to take chance as to the purity of it?—Yes; but, of course, that will be a difficulty in every case.

30408. Is the milk subjected to any process at all, any pasteurisation?—No.

30409. Perfectly raw milk?—Yes.

30410. Do you know if milk is perfectly clean, and produced under ordinary conditions, it would be necessary to pasteurise?—Not for home consumption. I think it would be better without. It is a process which is not safe to allow people to carry out unless they know the way it should be done. The danger is, you kill the beneficial bacteria and don't kill the others.

30411. For that reason would it not be well for the creameries, if they do contemplate this supply to the public of the raw milk, simply to clean, filter, and allow the people to boil it if they think necessary?—What was suggested in connection with the creameries is that they should have a special vat for this milk, and not mix it with the ordinary supply. It must be kept separate from the rest, and dealt with as if it was not part of the creamery supply at all.

30412. Is any portion pasteurised?—Not in that case. It was only when milk was received every other day it was considered necessary to pasteurise: where it would be kept for forty-eight hours.

30413. If they removed it apart, and kept it clean, it was almost quite safe, if produced under fairly good conditions?—At all events, it would be better than nothing for keeping it good.

30414. Have you considered the problem of milk supply in districts where there are no creameries?—I am afraid my evidence on that point would not be of much value. I have tried to make it clear that, as far as the Organisation Society is concerned, while we will do anything we can to try to help to arouse all Ireland over it, our function is actually to provide a supply when the demand is organised. Where we have not got societies, I don't see how we can do much; except to give such experience as we gained in other districts to these societies.

30415. I think it is a question whether you will be able to induce a man to supply from house to house, like the Tralee man, and to have the man supply you at the 8d. a gallon?—It is distinctly cheap.

30416. It is a difficult problem to work in other parts of Ireland, I think?—It may be; but I think you would find people likely to do so.

30417. Professor METTAM.—Is the price likely to go up in the winter?—No; I think that is all the year round price.

30418. Lady EVERARD.—It is quite the lowest price we have heard anywhere?—I don't think it is quite sound myself. There must be some expense in connection with the business of the depot.

30419. In case they charge a penny a gallon more than they give the contractor, could they make it pay?—Yes. If you work it on the check system, by giving

checks to them, you could do it. But if you are selling the milk for cash, how are you to charge more than a penny a pint? You can't charge a penny-farthing, but what you could do is, you could sell a dozen tickets for thirteen pence, and cover your expenditure in that way.

30420. Mr. O'BRIEN.—The committee pays?—Yes.

30421. Sir STEWART WOODHOUSE.—In working the clubs, if the milk was not sent round, but sold at the farmers' houses at certain hours, so that the farmer's staff would not be inconvenienced, it could be done very cheaply?—You could discriminate between the man who fetches the milk and him to whom it is delivered, and charge a little more to the person to whom it was delivered. In that way you might get over the difficulty.

30422. Mr. O'BRIEN.—The difficulty was for somebody to see that the milk was measured correctly; it would seem difficult to limit the measurement to the precise amount?—It is. Supposing it is the farmer's daughter, who is not under the control of her mother or father, and a friend of her's comes and wants a pint of milk, he probably will go away with a quart.

30423. Lady EVERARD.—I think the farmer objects to people coming around his place?—They don't like it.

30424. That is really the objection?—It is not so much that they are afraid of losing anything; they don't like people coming and spying into their affairs.

30425. Mr. WILSON.—Down at the bedrock of this problem there seem to be the two chief factors—the question of distribution, and ignorance of the food value of milk. We have come across cases time after time. A labourer, for instance, will send in his milk to a creamery, and feed his children on tea coloured with separated milk. If you question him, he will probably answer: "I want the money for the milk. I did not know there was much virtue in milk"—it is ignorance more than greed, because the people are kind enough to their children—as far as they know how to be; it is simply stupidity.

Lady EVERARD.—They do not realise that 6d. spent on milk is more valuable than 6d. spent on other things.

30426. Mr. O'BRIEN.—Going back to the question of the pasteurisation of milk; in most of the creameries they have pasteurising plant, where everything connected with it is precise. They see there is a continuous supply of milk passing through the heater; it goes round and round; it might take two to three minutes to do the circuit; it is exposed to from 185 to 190 degrees for two or three minutes. It is doubtful if the whole milk gets raised to that temperature?—It is.

30427. Can the plant that they have at present be so modified as to keep the milk going round and round above heat for twenty minutes?—No.

30428. They would have to have new plant?—They could use their Starter plant apparatus for that.

30429. Where they have pasteurised, do you mean?—No; it is a suggestion made to us. Here is what it is. "To cater for the requirements of a milk depot, no large plant would be needed; in fact, the present starter preparing plants would do very nicely, and may only require a small tank to hold, say, thirty gallons of milk, and a small cooler to cool the milk prior to delivery." We are sending two of our men to the London Dairy Show who have been instructed to make special inquiries into the necessary equipment for the creameries if they want to supply the public.

30430. Have you gone into the question at all about the use of separated milk as food?—No, except I think it might be used very much more largely than it is with considerable advantage, if it is separated milk that has been properly treated.

30431. The reason I ask you that is, we have been asking whether separated milk was used for human consumption in these creamery districts, and found that as a rule it is not. In many cases—not, I am glad to say, co-operative creameries—there is a very great prejudice against it. It appeared to me that often you could get for the more grown children very cheaply from the creamery districts a supply of separated milk that would help, if one could be certain of getting it fresh. There is, no doubt, a danger in getting separated milk from the creamery which is raised to a considerable temperature which is not enough to pasteurise it quite sufficiently to eliminate all of the evil germs that there may be in it, and I was wondering whether a large farmer, say a man with forty or fifty cows, if he separated his own milk, could distribute it quite fresh, and without having to

wait for the three or four hours before he gets it back?—A large farmer; you mean a man large enough to make his cream into butter himself?

30432. No. What I want to get at is this; if he sells cream to them—to the creamery—that creamery becomes a factory?—I think it would.

30433. Under the existing Act; and he would lose a considerable portion of the value of this butter, unless that farmer were an auxiliary. Is not this the case; that the co-operative creameries can receive cream from auxiliaries, and manufacture that into butter, without becoming a factory under the Act?—Yes; but so far as the actual separation of milk from the cream is concerned the same definition will apply to an auxiliary as applies to a central creamery.

30434. The creamery has to make butter from cream separated by power?—I forget the precise definition.

30435. Mr. CAMPBELL.—That is not law at present?—Not yet.

30436. Mr. O'BRIEN.—But I think that is one of the things we have practically all agreed about?—I don't think it would be wise to suggest that there should be any departure from that definition of a creamery, because you would never know where to stop.

30437. That seems to me to be in some cases rather the objection. For my own part, I have machinery and send to a creamery; I have fifty to sixty cows milking; it would pay me much better really either to sell the cream or to make butter, and to separate my milk and sell the separated milk. It would be a great advantage to the people about. I think a great many more would drink separated milk if they got it. I could afford to sell it very cheap, and they don't really buy enough milk?—It depends a good deal on what you want the separated milk for. I have an idea the creameries might do a roaring trade with separated milk for bread-making if they would try. It would be perfectly possible where they pasteurise, because they could introduce a little pure culture into the sour milk, and make it splendid for bread-making. Part of the objection to the separated milk is an inheritance from the old proprietary creamery dairy, where there was no supervision of the character of the milk, and a good deal of water was often added to it; and another thing is that the creamery proprietors in the early days used to charge 1d. a gallon for the separated milk. Of course, the more gallons they could make out of 100 the more money. They used to "stretch" it with water.

30438. Dr. MOORHEAD.—You probably pasteurise the separated milk because it goes wrong rapidly; if they sterilised instead of pasteurising it—boiled or treated it at high temperature—it would keep longer?—Yes.

30439. And, I believe, at the present moment in Denmark what they are doing is to sterilise the separated milk. They can add sugar after?—I dare say that is so.

30440. I think milk of that nature would keep longer than pasteurised milk. They are treating the separated milk in Denmark by sterilising?—I dare say. It is so long since I was there.

30441. A friend of mine was there a fortnight ago?—It would be interesting to get that point cleared up. It would be so simple to get the milk exposed a little longer in the heater. It would accomplish your purpose to run it up to boiling point.

30442. It would certainly keep longer than the pasteurised?—Oh, yes.

30443. Miss MCNEILL.—Is the quantity of milk treated taken into consideration in regulating the time for which the milk is exposed to heat?—Of course, the capacity of your machine will have to be increased if the quantity dealt with is very large.

30444. What is in my mind is, whether any arrangement is to be made to allow a general distribution of heat before the twenty minutes?—What they do is this, they use an ordinary continuous flow machine—ordinarily used in the creamery; they fill this machine with milk out of the contents of the receiving vat.

30445. And already heated?—Yes. It is raised to this temperature, and then the milk is kept stirred constantly during the twenty minutes.

30446-47. After it passes into the container?—There is no special machinery in the creameries at present, except ordinary plant, for this; they could do it in that way. Creameries like Bansa, near Tipperary, are sending large quantities of milk to London, and without any risk at all.

30448. Mr. O'BRIEN.—You know that many creameries that don't separate every day in the winter receive milk from their employers and keep it?—Yes.

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80449. Because very often a small man has no place to keep milk?—Quite so.

80450. So that, though you may have in the creamery districts a large number of creameries apparently only working three days or even, during the winter months, perhaps two days, they very often would be able to give out a daily supply?—I think that is quite likely. I know several creameries where that is the case.

80451. The only difficulty there would be the question of some small remuneration, and the machinery?—Well, just give enough to keep going during the winter.

80452. I found that the other day when it was a case of separating, changing from separating twice a day to once a day?—That was a very big creamery.

80453. The manager wanted to get off receiving milk in the evening, and we had to insist on it. Some of us who had a large supply could not possibly keep all the milk we had?—If it adds, undoubtedly, a con-

siderable amount of trouble it would be worth while to pay him a little more.

80454. At that price it would pay a great deal better than butter, however high it goes?—Yes.

80455. Dr. MOOREHEAD.—It comes to this, working winter and summer. It is a question of demand?—That is so.

80456. If you could educate the demand you could supply it?—Without the slightest difficulty.

80457. Mr. O'BRIEN.—Not in the towns?—No.

80458. Have you thought anything about the supply of goats?—I am afraid that would make us all hideously unpopular. I think you would want a goat that could be kept in such training that it would not be out eating the young trees and hedges.

80459. I find they could be kept without the least trouble whatever?—A goat is a splendid thing in a working-class family. You could produce all the goats you want for Ireland. It is really more in the nature of a development. I believe you need every supply.

Professor JAMES FERGUSON CRAIG, M.R.C.V.S., examined.

80460. Sir STEWART WOODHOUSE.—You have been good enough to come here to tell us what you have observed in Denmark. I understand you went to see the method of receiving the milk at the creameries, and the mode of treatment there. Did you visit the dairy farms themselves?—I visited a dairy farm at Haslev in Zealand, one of the big farms which supplied milk to a large butter and cheese factory, called Trifolium, which is a factory in Haslev.

80461. That is not a town?—A village; the farm has over two hundred cows, and most of the cows were at grass when I was there. About ninety of them were in the byre, so that I saw the condition of the byre as it usually would be, summer or winter. The points, of course, which I particularly looked for were points from a veterinary aspect. I noticed, however, in looking at the cows, that they try as much as possible to prevent any sediment from passing into the milk. The peculiarity of the cows was, that the hair from the tails had all been clipped off, and the hair of the flanks had been clipped so as to prevent any of the droppings from becoming adherent to the skin or the tail, and so passing into the milk.

80462. And then that would be more easily removed if such had been the case?—In addition—it had been before milking time when I was there—one of the farm hands was going round grooming the animals by using a curry-comb and a dry brush on the hind quarters.

80463. Did that not raise a dust?—But that was about an hour before they proceeded to milk the cows.

80464. About what hour did they milk the cows?—In this particular farm the farmer told me they milked them three times a day, and that they had a larger quantity of milk than if they only milked them twice a day.

80465. One milking would be very early in the morning?—One was very early in the morning, about three a.m., I think; another about noon; and another in the evening about half past five.

80466. After milking, was the milk sent three times a day to the depot?—Oh, no. The evening's milk was sometimes kept over till morning, or the midday's milk kept until evening. In all cases the milk was cooled immediately after it was taken.

80467. In what way was it cooled?—The arrangement was rather an elaborate one. It was cooled over a sort of metal drum. Into the drum was passed cold water which was sprayed over the inner surface of the drum. The milk was poured on the top through a muslin cloth, so as to remove as much sediment as possible, and then it trickled gradually over the outer surface of the drum, and was carried to the bottom on to a channel and then passed into the milk receptacles.

80468. Around the drum, which was cooled by the constant flow of water?—Yes; the apparatus was an elaborate one in this case, because they had to pump up the water from a very big well, and that was done by means of a small engine that they had for the purpose. Very cold water was pumped up to a large receptacle for water towards the top of the building, and then from this reservoir it passed into the interior of the drum. I think it was rather a good plan, because the outside of the drum could easily be cleaned.

80469. No ice was necessary?—No ice at all.

80469A. To what temperature was it cooled down?—That I could not say.

80470. Something over 40 degrees Fahr.?—Yes.

80471. This cooling apparatus was in a special room?—Yes, free from dust.

80472. And afterwards?—Then the milk was put into cans which were immersed in cold water, and, I think kept immersed, until they were removed to the factory.

80473. What kind of cans?—Very similar to the cans used in this country.

80474. Was there anything special about the cans into which the cows were milked?—No, they are much the same as in this country.

80475. Did they carry out the regulations we carry out, or are supposed to carry out, such as washing the hands of milkers before the process begins?—I did not see them during operations, but previous to the operation I know that they wash their hands. All the milkers in this case, as far as I could see, were women, the appearance of them was rather inviting, as they appeared to be very clean.

80476. Did they wear special clothes at milking?—No, save a clean apron overall. The milk was sent twice a day by cart to the factory in Haslev, about two miles away.

80477. What happened in the factory?—In the factory sediment was removed by separators, and the milk was heated or pasteurised to a temperature of 80 degrees Centigrade.

80478. For how long?—A few minutes; it passed through a worm in a drum. Then it was put into a room, which was kept at a special temperature, and covered for the purpose of making butter; but some of the milk was retained and was sent on to Copenhagen, and sold to the small dairy people there.

80479. Had they a depot at Copenhagen to which it was sent or was it supplied to customers?—To customers.

80480. Was that milk treated in any particular way before being sent by train to Copenhagen?—It was kept cool in very cold water.

80481. There was no ice or anything like that to keep the temperature down while it was in the train?—No; so far as I am aware. They don't use ice in this particular place.

80482. Was this milk sent from the creamery, not by the farmer?—Not by the farmer.

80483. Consequently it was what one might call mixed milk, that is to say from different suppliers?—Yes.

80484. Did they send a stated quantity every day, or what was left over?—I think a stated quantity.

80485. They have probably a stated number of customers who require a stated quantity of milk?—It was not quite like that. In this particular factory they were making butter and cheese, and hence it would not matter so much if they had more milk than they had anticipated.

80486. Because they could use it up?—Yes; but there were certain conditions imposed upon the farmers. Some of the farmers had shares in this particular factory or company, and the conditions were that if the milk was found to be dirty the farmer was told of it, and the price of the milk was reduced. Another point with reference to it is that all the farms were

frequently inspected by a veterinarian. They were inspected every month to see that the cows were free from advanced tuberculosis.

30487. Or for udder affections?—Yes, the real reason for making inspection so frequently was on account of tuberculosis.

30488. They carried out surprise visits?—Yes.

30489. What was the breed of cattle?—A native breed.

30490. Are they equally good for beef?—No, they are good for milk, both as regards quantity and even quality.

30491. What would be the percentage of butter fat?—Well, I could not give you the exact percentage, but I think in a good many cases 5 per cent.

30492. Dr. MOORHEAD.—What was done to the separated milk before it was distributed to the farmers?—The separated milk was all sterilised.

30493. What use was made of this milk?—In this particular farm they had pigs.

30494. You don't know whether any separated milk was sold for human use or not?—I could not say, but in this factory I was told that the milk was sent back to the farmers. Another point they told me was that all the milk utensils were subjected to very high temperature before they were sent back to the farmer.

30495. Sir STEWART WOODHOUSE.—Do you know the price charged to customers in the town?—I could not tell you. I think it came to very nearly the same as here. Milk was sold by the litre, not a pint, and from what I could calculate the price was very similar to our own. So also with the butter; butter was sold at the same rate.

30496. On that farm do they grow their winter crops for the winter feeding, or buy them?—They grow a large proportion of the materials that would be used for feeding the cattle.

30497. What would they feed them on principally?—Principally oats, turnips, swedes, mangolds. Another point in connection with the factory which occurred to me was that they regulated the diet of the cows to a certain extent. They would instruct the farmers who send in milk as to any changes necessary in the feeding; for instance, if they found that it affected the butter they could tell the farmers that they were giving the cows too many turnips.

30498. Do they send the milk they distribute in bottles?—No, in cans, very much as it is here. So far as growing crops is concerned, what struck me in passing through the country in Denmark was the large proportion of land that was cultivated. It was only a few fields here and there that were left for grazing purposes. The land in Jutland is very poor—bog land—but the farmers seem to be making the most of their land. For it is very interesting to notice the cattle on the land. They are tethered, and as they eat up the grass they are passed a little further along on to fresh grass, and so on until they get the whole field mown down and they can proceed again.

30499. That, of course, demands a good deal of supervision on the part of the owner of the cattle, that he does not keep them too long in the one place, and that the cow is in no danger of getting starved?—They know their business is farming, and they want to make the most of their cattle and the land. The cattle are accustomed to being tethered from their youth upwards.

30500. Is there much tuberculosis amongst the stock?—There is a fair proportion of tuberculosis. Probably as much as there is in England. Professor Bang of Copenhagen was the first to make an attempt to eradicate tuberculosis from the herds, and great advances have been made in eradicating the disease.

30501. Do you know if the Government help in that. With us a cow with a tuberculous udder is destroyed, and the owner gets compensation; is there any similar provision?—It is not quite similar. The eradication is carried out in individual cases, certain advantages being given to encourage the eradication of the disease. For example, tuberculin is given free, and a certain rate given for veterinary inspection, and so on.

30502. Does the veterinary surgeon inspect every month?—A periodical inspection is made by a veterinary surgeon paid by certain associations or societies.

30503. By their own veterinary surgeon?—Yes, and this inspection is made at a special rate; it is to the advantage of the agriculturist to get rid of tuberculosis on his own account.

30504. So that you think he is quite as particular to detect tubercular disease in a cow as he would be if he were appointed by the Central Government?—Well, I suppose the owner does not like to find it.

30505. But if he finds it, it is his interest to get rid of the beast?—Oh, yes.

30506. Professor MITTAM.—Besides, I presume, they would have a hold over him by refusing to admit his milk in the creamery unless he acted under the veterinary surgeon's instructions?—That is the whole point of the inspection.

30507. Does the farmer pay anything to the society which employs the veterinary surgeon for the use of the veterinary surgeon?—I do not know definitely. I think the chief point is that the society gets the farmer's milk at a certain rate.

30508. And his inspection, to a certain extent, ensures that the milk is tubercle free?—Yes. On this farm also they resorted to the tuberculin test about once a year. They did not seem to have many cases of tuberculosis. In this instance the farmer told me they had about twelve cases a year. That is not much in a large dairy herd; but they have been carrying out that system in Denmark for a considerable time.

30509. Dr. MOORHEAD.—The proportion of tuberculous udders would be very small?—Yes.

30510. I suppose the inspection is very largely devoted to the presence of tubercular lesions on the udders?—The chief part of the inspection is to detect tuberculous udders. They also deal with the general health of the animals.

30511. Do they consider in Denmark that if a cow is affected by tuberculosis of the udder there is any practical danger of the milk containing tubercle bacilli?—I would not put it that way. You may take it that they believe the large proportion of cases in which tubercle bacilli appear in the milk is due to tuberculosis of the udder. But there are cases where no lesions can be found in the udder and yet tubercle bacilli appear in the milk. These are cases, usually, of advanced tuberculosis, not necessarily of the udder.

30512. Sir STEWART WOODHOUSE.—Do you know what becomes of the cattle which are discovered to be tuberculous?—They ultimately reach the slaughter house. In Denmark the herds are inspected, and if a cow passes from one herd to another it would be detected again.

30513. There is nothing left but to fatten the animal?—Yes, to make the best of the case, and slaughter.

30514. Do they consume much milk in Denmark, individually?—I don't think so, I think the same is true of milk as of bacon. They convert the most of it into money.

30515. Lady EVERARD.—What is the price of milk in the towns?—If you were to convert it into English measure, about 2d. a pint.

30516. Sir STEWART WOODHOUSE.—Were you impressed with the cleanness with which the milk was handled as compared with what one is accustomed to in Ireland?—In the big dairies in Ireland the handling is as clean.

30517. You don't think we have so very much to learn in our big dairies as compared with the Danish big dairies?—I don't think so, save in the handling of the milk afterwards. The points with reference to the inspection of the udder, the clipping of the hair from the tail and quarters, are, I think, good, and might be adopted by us with advantage, so as to ensure the cleanliness of the milk. Otherwise, I don't think we in Ireland have much to learn. From what I saw, the chief cause of the success of the Danish farmer was industry and co-operation. That seemed to me to be the cause of his entire success.

30518. Do you think that the cleanliness observed by the large concerns permeates down to the smaller farmers who are occupied in dairy operations?—I think so.

30519. In that way, I suppose, their small farmer is a cleaner person than our small farmer?—Much; from what I saw I think he was. They are more uniformly clean. The knowledge of the necessity of cleanliness is well diffused among the people in the matter of dealing with the cows so as to keep the milk clean.

30520. The Danish farmer realises that his own profit depends on the reputation his country has got for the cleanliness of her products?—Quite so; he understands his interest is the interest of the companies to which he is sending his milk.

30521. Dr. MOORHEAD.—Were the cows of all the farmers who supplied milk to this particular creamery inspected periodically?—Yes.

The Commission adjourned till the following day.

FIFTY-THIRD DAY.—THURSDAY, 3RD OCTOBER, 1912.

The Commission met at No. 5, Upper Castle Yard, Dublin, at 11.30 a.m.

Present:—P. J. O'NEILL, Esq. (Chairman); LADY EVERARD; MISS MARGARET McNEILL; Sir STEWART WOODHOUSE, M.D.; G. A. MOORHEAD, Esq., F.R.C.S.I.; and Professor A. E. METTAM, B.Sc., P.R.C.V.S.

S. W. STRANGE, Esq., *Secretary*.

Dr. JAMES W. BARRETT, C.M.G., examined.

30522. The CHAIRMAN.—I should like, Dr. Barrett, on behalf of my colleagues and myself, to express our indebtedness and obligations to you for your kindness in attending before the Commission this morning. We are deeply indebted to you, and regret exceedingly to interrupt your well earned leisure, to put your views before us on the question we are inquiring into. We are extremely grateful for your kindness in attending.

Dr. BARRETT.—It is very kind of you to say so. I am very glad to be here, and it has not been an interruption of my holiday. My visit to Dublin has been a delightful experience, and has been exceedingly informing.

30523. The CHAIRMAN.—We are very glad to hear it. I presume the conditions which prevail in this country are largely different from those which prevail in the "Land of the Southern Cross," but at the same time, I take it, there would be some analogy between the questions we are inquiring into and the conditions that prevail in your country. Did you find that the public appreciate the value of milk, as a food, in your country?—Oh, yes. The difficulty I heard referred to here yesterday is practically non-existent with us—that is the difficulty of inducing people to use milk as a food.

30524. Even among the working classes, the humblest members of the population?—Yes. I have never heard yesterday's problem raised in Australia. The problem in Australia is how to give the people milk which will not kill the children.

30525. Have the public health authorities in your country realised the importance of this question, and what precautions have they taken in order to ensure a pure milk supply?—Would it simplify the matter if I gave you a brief account here? It is rather a long story, and covers twenty-five years. Longstaff's work on the study of statistics was the first public reference I am acquainted with, in which it is clearly shown that whenever the temperature of the air rises to 60 degrees (mean dry bulb) the babies who are not fed on the breast begin to die, and that the cause of death is usually infantile diarrhoea. That was proved for London, and it has been proved for many of the capitals of Europe. They also correlated it with the temperature of Thames water, and I think it was fixed at 58 degrees F. for the same purpose. When I got back to Australia, having finished my student work in Germany and England about 1887, I became aware of the existence of this book, and though it is not my special professional work, I interested myself in the matter on the return to Melbourne of Dr. Stawell. He made an investigation of the Melbourne conditions to see whether the same facts could be elicited. He made a very comprehensive inquiry, and showed that it was so; that whether you estimated the figures by the deaths registered from infantile diarrhoea, or by the admissions from infantile diarrhoea in the children's hospital, that the moment the temperature rose over the mean of 60 degrees infantile mortality began. Now, that is reached every year in October, and disappears in April; so that from October to April we have the usual appalling list of casualties resulting from the deaths of children, more largely in the city than in the country, and more largely in the densely populated suburbs and in the poorer parts than in the richer. These facts are indicated by the evidence of the Government statist of Victoria. It is, however, shown that it is not the heat alone which kills, because there is no direct rela-

tionship between rise of temperature and death. It was clear that the death was an indirect function of high temperature, and since then it has been clearly shown of milk decomposition, which proceeds best when the temperature is over 60 degrees F. Then the problem becomes, as far as children under two are concerned, a separate one from the milk supply in general. The question was, how to save these lives; what could be done; and a more or less continuous agitation was kept up by the medical profession, with partial success. The success was, however, only partial until Lady Talbot, the wife of the then Governor of Victoria, interested herself. She was appalled when she became aware of the slaughter, and the public was appalled also by the constant prosecution and conviction of dairymen for adulteration. There grew up gradually, under professional guidance, a public opinion that the adulteration was not merely a theft of the meanest character, but involved potential murder, and ought to be really regarded as a felony; it is too grave an offence to be otherwise contemplated. It has not been dealt with precisely in that way, but the public conscience has been definitely aroused. Lady Talbot ascertained the views of the whole medical profession, who met in the Medical Societies' Hall in Melbourne, and determined to be advised by them as to the best way of going to work. The profession suggested the establishment of a small ideal milk supply, for educational purposes only. If we could use it as showing what could be done, irrespective of commercial considerations, we could then use that as a means of drawing the attention of the public to more extensive arrangements which could be made for putting the supply of milk on a sound basis. The Lady Talbot Milk Institute was launched with the assistance of Government, Municipal Council, public, and profession, and as Dr. Wood has indicated in the evidence given here, in the first year supplied pasteurised milk which was pasteurised for the Lady Talbot Milk Institute by a commercial undertaking. But after that time the Association determined to supply fresh milk, uncooked and unpasteurised, to the children. They then arranged, first that the cow should be milked by milking machinery under ideal conditions on a farm; the milk is placed in bottles and sold by distributing agents placed in every suburb, and who possess cold storage. It is then taken to the house of the consumer, and placed in a small ice chest supplied with a sufficient quantity of ice to keep the milk cool. That has been done for the last three years, and the practical results have been most gratifying, that is to say they were in the districts in which exact figures were obtained. The reduction in mortality is very great, and the indirect effect is shown by the general demand of mothers for what they call Talbot milk. The commercial opposition was very bitter, and it was very difficult, owing to natural causes, in an organisation of that sort to avoid faults that had to be eliminated. Those faults had to be retrieved. That is the stage the matter has reached; but something very much more important has occurred. A number of us felt that this thing will never be put right until women themselves understand the nature of the problem, until their energies are loosed in directions supported by their feelings and instincts. The National Council of Women in Melbourne began to stir themselves, and they were kind enough to honour me with an invitation to lecture on the subject. At the end of the lecture, when I told them that in the few months following the lecture 800 babies were certain to die, and ought not to be allowed to die, they

said, "what can we do?" I said, if you ask, the first thing is to become educated. A course of extension lectures on the chemistry of milk was provided by the University. Fifty of these ladies attended, followed the practical exercises, and in that way gripped the outline of the problem. They then took the matter into their own hands, and held a public conference with the dairymen; they discussed it with them, they tried to realise the practical difficulty of the dairymen, and in general stirred the public. At the last State elections in Victoria they put certain questions to every candidate for the Legislature as an educational means. As far as I recollect, the questions were—first, they drew attention to the imminent death of 800 infants; secondly, they asked them whether they were in favour of a scheme—a double milk supply daily, because in Australia the industrial conditions are a trouble; and a number of like questions, so that the public from end to end of Victoria became acquainted with the magnitude of the problem through the agency of these ladies. The Government then intervened and convened a conference of the Municipalities to discuss the problem, and at present the recommendations of that conference are being considered by the municipalities. The tendency is to get the municipalities to control the milk supply, as being the only possible solution of the difficulty and the supply in general. You understand I am discriminating between the limited supply necessary to save infant life and the general supply for other people, which is not so serious; but at the same time ought to be put right. That is the story of what has occurred up to date.

30526. Well, at all events you have proved, by the experiment that has been made that it is possible to save this holocaust of human life that has gone on in Australia year after year in the warm season?—It is quite definite. Anyone practically acquainted with the matter, who knows where the shoe pinches, will say a large quantity of the trouble arises from what happens to the milk when it gets into the houses of the consumer, and to meet that difficulty the Talbot Milk Institute appointed nurses to visit the homes and watch what was occurring. I will give one instance: a working woman who has done a hard day's work, who has got a baby to nurse and wants to give it a bottle during the night, avoids having to take the bottle from the kitchen by putting it under the mattress, and does not realise that she is incubating the milk—she does not understand. That is the type of difficulty that has to be overcome in the houses. A work woman who sends a child out with a baby—an elder child with a perambulator down to the sea-shore—puts the bottle under the mattress of the perambulator and incubates it that way. All these things have to be dealt with sensibly, and obviously little by little most valuable work is being done.

30527. Would you tell the Commission what points have been brought before the legislature for the purpose of enabling them to carry out in a broad commercial spirit what has been done in a small way by this philanthropic undertaking?—Unfortunately I never anticipated I was going to give evidence when I left Australia; the question never occurred to me, and I have not the exact recommendations of this conference. I will obtain them for you. Practically speaking it is this: They recommend or report on quite a number of things. The ideal to be aimed at is immediate artificial refrigerating on the farm; that, I think, is essential; the conveyance of that milk in covered wagons to the railway station, refrigerated cans on the cars and refrigerator depots in the suburbs. Now the effect of all this movement is that most of the dairymen who trade in the suburbs have got a freezing plant. That has already occurred.

30528. As a direct result?—Yes; he is bound to procure it for his own protection.

30529. What effect has that had on the price of the milk?—Very little indeed. It is done on a very large scale. The plant is not very expensive, and a man gets repute from the knowledge that it has been done in that way. The Talbot milk is sent to the private refrigerating stations, to different dairymen, who distribute it and are paid for the distribution. They work with the Talbot Institute in that way.

30530. So there is no hostility manifested against the movement by those engaged in the trade?—Only by one, and that was a farm which supplied pasteurised milk and keeps up a public fight of pasteurisation versus cold milk.

30531. Will you tell the Commission your own personal views with regard to the effect of pasteurisation of milk; are you in favour or opposed to it?—If it is conducted always as I saw it on the small scale in the Sitric Road depot in Dublin, where you are not dealing with milk from tuberculin-tested herds, it is the best thing under the circumstances; but to me pasteurisation is always the second best thing—better than neglect, but not as good as the provision of pure milk from a tuberculin-tested herd. I think it would be unfortunate to lose sight of the ideal by insisting on pasteurising. The experience of the householders in Melbourne—in my own family, of commercially pasteurised milk, has made me very, very careful. In the first place, it seems that the preliminary souring is eliminated, and the first warning you have that anything is wrong is when the milk smells. Before that stage is reached it is probably extremely dangerous. The danger from the commercial point of view is that it enables the dishonest vendor to put milk into circulation that ought to go down the sink. It is on the turn, and by pasteurising he can preserve the semblance of decency with it.

30532. Spread the consumption?—That is it.

30533. It is your view that if a pure milk supply could be obtained without recourse to pasteurisation, that is the better course to take?—That is the position. At the same time I should like to qualify. One is not a blind advocate of the impossible. If you cannot do the very best thing, the next best thing must be sensibly considered.

30534. At the same time you would regard it as the ideal condition to try and have milk produced and handled under perfectly hygienic conditions in all its stages rather than by subjecting the milk to pasteurisation after contamination takes place?—That is exactly my position.

30535. I take it that it would be your view that a commission inquiring into a question of this particular kind and making recommendations to the general public, should aim at the ideal in the beginning?—That is it, even if you recommend that for the time being the other thing has to be done.

30536. It would be well, however, to warn the public that they have not an absolute safeguard against the danger when they used pasteurised milk?—I should think that, if possible, the public should be warned that pasteurisation might bring hidden evils with it that may be very serious indeed. In my own family, when we used pasteurised milk for a time, my wife has told me that the milk has turned solid in the bottle, that sometimes it would smell so much that it had to be put outside. That is what has actually happened. I will say that the effect of the Talbot milk supply has been so to improve the general milk supply, or to improve the pasteurising, that such gross results as that have become very uncommon. The improvement in the general milk supply resulting from Talbot milk has been very marked indeed, coupled with the growing anger of the public with any dishonest vendors who adulterate.

30537. Is the adulteration of milk dealt with in a drastic fashion by the authorities in Australia?—It is not dealt with in as drastic a fashion as I should like, but far more severely than it has been. Fines of £20 are not uncommon.

30538. For adulterating the milk with water?—Yes.

30539. Have they ever had recourse to imprisonment?—I do not think so. We have been urging that this should be done, and I think the Act provides that if they are actually caught in the act of adulterating that they may be so punished; but I do not think that the public conscience is sufficiently aroused to the sense of potential murder involved as to inflict imprisonment yet a while. I do not think it is far away. But the effect of the prosecutions and agitation has been to enormously reduce the amount of adulteration: about that there is no question.

30540. I take it that your knowledge would not enable you to state the condition of the milk herds of the country; you are only familiar with city life?—Only indirectly. The Dairies Act provides for the most thorough supervision. There are a very large number of inspectors, and the pressure brought on the dairymen to improve the conditions in the dairies in the country is very great indeed, and is resulting in steady improvement.

30541. Are these inspectors under the control of a central governing body or under the control of local bodies?—Mostly under the control of the Agricultural Department—the Central Department.

30542. Of the State?—Yes; a very large department.

30543. And responsible to it alone for the administration of the duties they undertake to perform?—That is so, but at the same time there is power in the Board of Health to compel a municipality to take certain action, and if the municipality refuses to do it then—there are two bodies—the Agricultural Department and the Public Health Department.

30544. Are they then obliged to override the local authority after their failure to administer legislation which is provided for the public good?—I think as far as I can say that is avoided whenever possible.

30545. Have you known it to occur?—It would be difficult off-hand to say, but I feel inclined to say yes; but I think it is more often done quietly, silently, you perceive; that is to say, an attempt is made to get the work done pleasantly.

30546. And the moral force is found to be sufficient without having recourse to extremities?—It is the view with regard to great changes of this nature that it is an educational force you must rely to get your work done; an army of inspectors can't do it unless the public understands the nature of the issue.

30547. I take it there is no such thing as a scarcity at any season of the year: it is always procurable for money?—Yes; it is more scarce in the winter than summer, but there is no practical scarcity in Australia at all.

30548. It never reaches the stage where milk is not procurable for money?—In effect, never.

30549. Nor is any section of the population so poor that they are unable to buy for the needs of their children?—The Talbot Institute supplies a good deal of its milk gratuitously; it supplies a good deal more on partial payment. The difference is made up from the sources engaged—the State and Municipalities—where it is used, and the private individuals. There are people who are not well enough off to pay the very high price the Talbot milk costs.

30550. There is a contribution by the State, I take it, from what you have said?—Yes. The State, I think, is giving £1,000 a year.

30551. A general grant towards this philanthropic undertaking?—Yes.

30552. Have the local authorities ever been asked to contribute to the same object?—They do; some contribute £50, some £100, according to the amount of milk used in the locality.

30553. And they have really no control over the expenditure of the amount of their contribution; they simply pay it into the general fund, which is used for the purpose of carrying out this idea of distributing the milk below cost price to people who are in necessitous circumstances?—That is the position. You must understand this is under constant Government supervision.

30554. I was curious to know that?—That is to say the Government is co-operating. It has supplied inspectors from the Agricultural Department, who go out and supervise the milking, and see that the farm is properly conducted.

30555. Are representations ever made by the Talbot Milk Committee to the officers of the State with regard to conditions which come under their observation, where they believe there is laxity with regard to cleanliness or the other necessary conditions of having a pure milk supply?—The Talbot Milk Committee controls this matter absolutely. It receives these grants from the State, municipality, and public; it has the co-operation of the Agricultural Department, including the Director of Agriculture. He is on the Board, so that there is no need to make any formal representation if there is anything wrong.

30556. There is general co-operation of the State and the local authorities—all with a view to procuring the same end?—Yes.

30557. Do they ever inquire into the health of the dairy stock, or are any representations made to this Committee as to the condition in which the dairy stock are kept in regard to health or housing or feeding?—Do you refer to the dairy stock of the Talbot milk?

30558. Of the milk supplied, as to the city of Melbourne, for example?—The Talbot Milk Committee keeps to its own business.

30559. And does not go outside?—No; but the Agricultural Department inquires into the health of the dairy stock of the country.

30560. Is the public health controlled by the same department of the State that would be responsible for the control of the health of the cattle?—No; but there is a certain amount of interlacing. The health of the cattle would be primarily for the Agricultural Department, but if the Minister of Health became aware that something was wrong he would probably communicate with the Minister of Agriculture.

30561. No friction has arisen between the administration of these two departments?—None whatever.

30562. I take it your knowledge would not enable you to speak of the conditions prevailing in the rural districts outside the cities?—That is not my business. I went into this simply as an educationalist, as one who saw a large number of deaths occurring, and was interested in trying to create an organisation.

30563. From the public health point of view largely?—That is it. Though I am one of the trustees of the Institute I have taken no active part in its work. My work has been on the outskirts, in endeavouring to help it whenever it came into public notice.

30564. The public mind and conscience have been enormously enlightened by the procedure adopted by these?—Manifestly.

30565. And you also stated that this Committee had a very beneficial effect on those who were engaged in the commercial milk supply for the city?—That is so.

30566. And their methods have been altered because of what has taken place in connection with the administration of the Talbot Milk Committee?—That is it.

30567. You don't hold any appointment with regard to the administration of the public health of the city or local authorities?—Only to this extent: I am a member of an Advisory Committee appointed by the Government to advise the Minister of Public Health with regard to the control of certain contagious diseases; that is my only official connection with the Department.

30568. I was curious to know if there is in your country any condition analogous to that existing in ours, enabling public health authorities in certain large centres of population to go, if they have reason to believe that the milk supply of the city is a source of infection, into the district in which the milk is raised for the purpose of inquiring into the conditions under which it is produced?—Our authorities certainly have the power and they exercise it.

30569. That has never been questioned?—Never. Dr. Wood refers to it in his evidence; one in which there was an outbreak of over one hundred cases of typhoid due to milk supplied from a place some miles from Melbourne. They promptly impounded the carrier who caused it.

30570. Is it only necessary to carry out these precautions during your summer season?—The Talbot milk suspends its operations for the purpose of economy during the winter season.

30571. And the results to the public health have not been such as to demand that the effort should be maintained throughout the whole year?—The feeling was that it would have been better, but if we were limited to one period it was better to prevent deaths when most deaths could have occurred, and it was very much better to utilise the money in that way. That was the reason. The figures in Australia show that in the summer season the deaths occur from infantile diarrhoea, in the winter from broncho-pneumonia. The children specialists tell me that many of the broncho-pneumonia cases occur in children who have been nearly killed by infantile diarrhoea; broncho-pneumonia finds out those nearly killed in the summer. There again is an example of the total damage done by decomposing milk. You have an estimate of deaths in the summer, but the deaths in winter of broncho-pneumonia can't be accurately stated.

30572. Miss McNEILL.—Winter is practically over a hundred?—Yes.

30573. Dr. MOORHEAD.—That was; both declined since the introduction of Talbot milk?—Yes; the mortality from infantile diarrhoea has been going steadily down. It is now under 70 per 1,000 births during the first year of life.

30574. Miss McNEILL.—You said about 70?—My recollection is 70. I learned that just before I left Australia. We then estimated that at least eight hundred lives more per annum could be saved.

30575. The rate of 70, which is half what the present rate in Dublin is, and Belfast?—Quite so. It is 95 for Ireland altogether.

30576. Largest in the two cities?—Yes. In sub-tropical Queensland, 'if my recollection serves me—I must check it before you take it as gospel—the infantile mortality is less than in Victoria, probably because there the cities are small. So you see heat alone is not responsible, because Queensland is fairly hot. I may say that to me the milk problem is simply a problem of concentration of human beings in cities. In a small city with people not greatly crowded together, the people can get milk easily. Where the population exceeds three-quarters of a million, and goes up to seven millions odd, a new problem arises.

30577. Lady EVERARD.—How long will the milk cooled keep fresh?—If it is delivered in the morning it ought to be destroyed by nine that evening, because the ice will have melted. If milk is cooled efficiently it will apparently last several days, although it is unwise to keep it so long.

30578. You may have heard yesterday when such milk was going over to England that it was artificially cooled, and it had lasted quite thirty-four hours—

Miss McNEILL.—All pasteurised, he said, before cooling?—If fresh milk were cooled to from 34 to 38 degrees it would keep quite a long while; but in a private house you cannot keep it at 38; that is the difference. Once it gets into the private house it must be quickly consumed or thrown away. You can keep it for quite a considerable time before it gets to the house with proper refrigerators and plant.

30579. Dr. MOORHEAD.—The milk supply through this Talbot Institute; that is all of it from one herd?—Yes, the Hope herd.

30580. Is the milk all produced under cover in the stable?—Oh, yes; the buildings are excellent, well kept milking sheds.

30581. And they are actually stall-fed in the summer time?—There are a very large number of animals scattered in comparatively small ground.

30582. It is only twenty acres?—Yes, and about ninety cows.

30583. It could not graze them?—No.

30584. You can produce good milk under these conditions?—Apparently so.

30585. Is that the usual condition under which milk is produced in Australia?—No; it is only done because it is in the vicinity of Melbourne.

30586. The re-actors are put out of action at once?—Yes.

30587. Is the milk given pure to the children always?—That is again a matter of medical advice.

30588. If it is diluted it is diluted with ingredients prescribed by the doctor?—Yes, probably water; it is a matter for medical arrangement. It is supplied to a large extent to the neglected children boarded out under the provisions of the Neglected Children Act or Infant Life Protection Act—I have forgotten which.

30589. There is nothing added to neutralise the acidity of the milk?—Not as a rule.

30590. Nothing to make up the deficiency of the sugar?—I think sugar is added at times.

30591. You are satisfied the result has been an enormous saving of human life?—There is no question of it.

30592. You believe it is the right way to give milk in its purity?—Yes. Two years ago a public attempt was made to destroy the Talbot Milk Institute, and in their reply to the attack the whole staff of the Melbourne Children's Hospital lodged a public protest, and urged that the Institute should be continued at all costs and hazards. The whole profession practically rose to the occasion.

30593. Prof. METTAM.—At what temperature is the milk fed to the children?—It is kept in the ice chest until it is used. The mother then warms it up; she does not give it straight out of the ice chest to the child. I should think not.

30594. It passed through my mind that perhaps the object of the poor woman putting it under the mattress was to raise the temperature of the milk to that of the child?—I think her object was to save herself the trouble of getting up, but the details of what actually occurs in the house do not come under my notice.

30595. The Board of Agriculture is a Government Department?—Yes.

30596. With a Minister who is responsible to Parliament?—Yes.

30597. The Minister of Agriculture and the Minister of Public Health then have this matter jointly under their charge?—Yes; different divisions of it.

30598. What is generally the state of the milk which comes into Melbourne for general consumption, not required for Talbot milk?—In the winter it is all right. In the summer it is very much better than it used to be, but very far from being what is desired, and that is because the Australian milking hours and the distance are such that the morning's milk gets to the city in the evening.

30599. And the evening's milk is consumed in the morning?—Yes. Then on the Wednesday and Sunday half-holidays there is only one delivery. Unpleasant things happen from mixing the stale with the fresh; that has been one of the problems.

30600. Do the cowkeepers who provide the ordinary milk keep at their own charge their stock free from tuberculosis?—A certain number of them do.

30601. Using the tuberculin test?—Yes.

30602. Mr. Cameron has charge?—Dr. Cameron is Director of Agriculture; he was the principal veterinary officer.

30603. Are the inspectors he employs lay inspectors or men trained on scientific lines, veterinary surgeons?—I could not answer that specifically, but my general impression is that they are very capable men indeed.

30604. Probably with a certain training for that particular work?—Without knowing specifically, my general knowledge of the department is such that I should say it is very well done.

30605. I think anything Cameron takes in hand he would do well?—That is what I mean.

30606. Sir STEWART WOODHOUSE.—Is the general supply of milk to Melbourne cooled before it goes into the city?—It is only cooled on what is called a cooler, which always seemed to me an abomination, because it can't reduce much below 65 to 70.

30607. Is it running water?—It is a corrugated piece of metal (with water on one side), over which the milk runs. They generally use well water, which is relatively cool to the temperature outside, but is not very cool, and when the milk gets to Melbourne it goes now into cold storage. But it is what happens to the milk between the farm and Melbourne which is the difficulty, and the next step will probably be the provision of proper refrigerating plants on big farms or groups of farms.

30608. Prof. METTAM.—Is it brought in refrigerating trucks?—No, that has to come. The State owns the railways, and you would think there would be no difficulty, but a State-owned railway is sometimes not as easy to deal with as the privately owned. It will be done, I think.

30609. Sir STEWART WOODHOUSE.—Is ice very frequently used in Melbourne?—Yes, but owing to the long summers these refrigerating plants are getting fairly common, and mechanics learn to handle them very well indeed.

30610. Do the mass of the mothers in Victoria nurse their infants?—Yes, I think so. A very great impetus has been given to a movement in that direction. The bulk of the babies die before they are six months old, and there is a general tendency, backed by the medical profession and all sensible women, to get mothers to nurse their babies for six months. That has eliminated much of the trouble.

30611. Prof. METTAM.—It is almost impossible for a woman engaged in some occupation during the day to breast-feed her child?—Yes; that happens. To meet that a system of day crèches has been developed.

30612. Sir STEWART WOODHOUSE.—Is the Widal test used in cases that are under suspicion? You mentioned a case where a carrier was impounded; is there any test?—No, the Widal test is not in general use.

30613. Is the good at Melbourne extending to other cities; Ballarat, for instance?—I think so. The action of the National Council of Women has been far-reaching. The women have begun to understand that this is their problem, and that they must deal with it.

30614. Dr. MOORHEAD.—In regard to cows which have passed away from the Hope herd at the end, which are tubercular, and which, as Dr. Wood told us, probably passed to another herd, I am anxious to know whether the Committee which sat to consider the

work to be done in Melbourne, took into consideration the possibility of that milk getting into the ordinary supply and what they would have recommended in case it did go into the ordinary supply. Obviously these cows will not be put out of work?—They usually kill them. If an animal was known to be tubercular you could not sell it to anybody—nobody would buy.

30615. I asked Dr. Wood if they had compulsory powers to seize, and he said, I don't know; if you were to put out every cow charged there would be a milk famine. That is where the bother comes in, as to whether the milk goes into the ordinary supply?—I don't know precisely what occurs. Dr. Cameron would answer that question if the Secretary dropped him a line.

30616. It would be interesting to know. Where you have a large number of tubercular cattle some of the milk yield must contain a fairly dangerous amount of tuberculosis?—Quite.

30617. I was anxious to know whether that point had come under the consideration of the Committee who were advocating the pure milk supply, and, if so, what recommendation they made?—I am sure it has come under their notice. Dr. Cameron could say quite easily what recommendations were made.

30618. The CHAIRMAN.—Would it be possible to procure a copy of the recommendations?—Not the least difficulty. Ask the Secretary to write to-day and catch the outgoing mail to-morrow. You would have the information in eight weeks.

30619. Dr. MOORHEAD.—Is tuberculosis common amongst the cows?—Fairly.

30620. Prof. METTAM.—Do the inspectors that Dr. Cameron sends out from his department go and see the cows that are supplying the general milk supply of the city?—Yes.

30621. Is it not likely that these men, being trained men, would be able to spot if these animals have tuberculosis or not?—I believe they would.

30622. And if an animal had been tubercular in one herd and got by some means in another, they would be able to detect that?—Without specific knowledge I would not be able to answer, but I should say for certain that Dr. Cameron has dealt with the matter, and dealt with it effectively.

30623. Sir STEWART WOODHOUSE.—Are preservatives allowed?—No, they have been stopped.

30624. Even in cream?—I am not sure how far the power affects dairies in that direction. In milk, no. I know that. The Pure Food Acts contain very stringent precautions. The legislation obtained forbids putting boracic acid into milk as well as watering it.

30625. The CHAIRMAN.—Has that been severely dealt with?—Very.

30626. Miss McNEILL.—I think you intimated you had experience as to the nutritive value of heated milk?—My experience is simply that of a parent. One of my children was fed on a mixture of one of the artificial foods with milk, and owing to the risk of infection the milk was boiled or scalded, and the child developed scurvy rickets.

30627. It was not fed on milk alone?—It had in addition one of the carbo-hydrate foods; it developed definite scurvy rickets.

30628. You attribute that to the milk?—It was very difficult to what else to attribute it.

30629. Because the point was raised here, and we found out in the Pasteurised Milk Depot in Dublin fairly considerable experience—and in one case we have a case of rickets, but no case which could be fairly and unquestionably attributed to the use of heated milk?—First of all, in Australia gross rickets is almost unknown, almost unheard of; only attenuated forms like scurvy rickets exist, and when it occurred in my own family through an excess of caution it was a very striking instance.

30630. Scurvy rickets is not at all common with us in Dublin, we have got very few cases of it. I know that it is rather a point of rejoicing when a case turns up for clinical purposes. We have heard in evidence Dr. Lumsden, who has all along, from the beginning of the Pasteurised Milk Depot, been particularly careful in noting the effect of the milk on the children, and in evidence he states that 120 children of the dispensary—ordinary working class children who came to him in the ordinary course as requiring medical treatment either on their own account or because of their being children of delicate mothers, and in all these 120 cases he had never noticed any case of

rickets or scurvy. I quote him again. In every case he has treated these children at least fortnightly all through, and he has had them all even afterwards—during four years he has not lost sight of the children after they were beyond the stage of infancy; there was not subsequent rickets developed. There was one case which was quoted in Dublin as offering very strong proof of the tendency of rickets following the use of pasteurised milk; the only difficulty in proving it was that the child had been breast-fed all the time?—I see in Dr. Lumsden's evidence, he recommends fruit juice as a corrective.

30631. He recommended—I happen to know from knowledge of the mothers—in a number of cases they did not get the orange juice. As a matter of fact, we know they did not get it—it was not used as a regular corrective, nor in the majority of cases—not one-half got it done. If we had to depend on the milk being modified at home it would not be done regularly?—There was no chance of the children putting their fingers into butter or other fresh foods.

30632. All this pasteurised milk is modified approximately right, chemically even?—Quite so.

30633. That is the point I wanted to bring out, the value of that, the importance of that in the consideration of rickets, which people don't realise. With regard to the extension lectures which you were able to arrange in the University, I am rather interested to know how that may have been explained—as to the amount of co-operation you found the University willing to give you in the first instance, or whether you had any difficulty in persuading the University to look on that as a branch of University work?—I went up to see the lecturer in bio-chemistry—he is a personal friend—and said, will you give the lectures on the ordinary terms and to as many ladies as may like to attend.

30634. There were no University graduates—it was university extension?—None of them were graduates.

30635. Was a fee charged to cover expenses?—The expense was made up from public subscription quietly, and the lecturer was paid, and then anyone was at liberty to go who liked.

30636. How many lectures?—Six extension lectures were given by him. The bio-chemist who gave them—the chemistry of milk has been his special subject—is a man of the first order; he has, in addition to the most thorough knowledge of the milk problem, the gift of popular exposition. There was no difficulty whatever about the arrangement, and they can have more lectures whenever they like. I think it was very valuable.

30637. Do you know what is done, was anything done, and what is done other than by the Talbot Milk Supply in providing milk for individuals and parents who may be under the poverty line?—Yes. An opposition undertaking, a commercial one, which provides pasteurised milk.

30638. Pasteurised in bulk?—I can't give you the whole of the details; it is supplied in bottles, and is supplied to one or two of the suburbs. It is certainly supplied to one suburb, because their health officer prefers it to the Talbot milk, and in that particular suburb he claims to get excellent results from the milk. But the bulk of the suburbs, because of medical opinion, prefer the Talbot milk.

30639. I can't imagine anyone choosing pasteurised milk to milk produced under such conditions as the Talbot milk?—He is their medical officer, is a very good practitioner, and prefers the pasteurised milk for his particular suburb.

30640. Is there any provision in that for their poorer children?—It is the same there as elsewhere, the Municipal Council pays so much a year for infants milk for the necessitous. In the other suburbs they pay so much for Talbot milk.

30641. And it is for that purpose the municipalities give their grants?—Entirely.

30642. To meet these necessitous cases?—Yes; the sentiment is that it is cheaper and better to save these babies and bring up Australian citizens than pay money to import emigrants.

30643. Lady EVERARD.—How are the grants given?—The grants for Talbot milk are given to the Talbot Milk Institute, which then distributes. In the distribution it acts on reports from leading philanthropic societies which are acquainted with the necessitous cases. The person who recommends the pasteurised milk is the medical officer, and he knows where to put his hand on the necessitous cases.

30644. What is the grant per person?—I do not know. The grant from municipalities varies from about £100 a year.

30645. Supposing there is £100 from Victoria, would it be proportioned, say, £70 for Talbot milk and £30 for the other?—No, that never happens in a municipality. But this curious result has happened in one municipality which determined to supply the pasteurised milk. In spite of that the demand of the people of the district was such that the Talbot Milk Institute went on supplying their milk gratuitously. The mothers did not want pasteurised, but the Talbot milk, although they did not know much about the cause of its general repute. The expression Talbot Milk and Talbot Baby has become quite general. You continually hear of a baby as a Talbot Baby, because it is brought up on Talbot milk.

30646. Dr. MOORHEAD.—The Talbot Baby has almost an absolute immunity from sickness?—He is relatively immune, especially when you consider the class of population from which he comes.

30647. The CHAIRMAN.—Do you find the municipality ever has to quarrel with the administration of the Talbot milk committee by reason of giving preferential treatment to one district of the city as compared with another?—No, I never heard of that point being raised at all.

30648. Have you a number of municipal authorities controlling the same city, or is it all under central control?—The city of Melbourne, like most Australian cities, is a congeries of municipalities. In its own department the municipality is absolute; a conflict of authority does not arise.

30649. Apparently there is no analogy to the conditions obtaining in this city and those prevailing in your locality. Are the poorer population mostly located in one district in the city?—To a large extent they are, and roughly the infant mortality is proportioned to concentration and poverty.

30650. Has the housing problem been regarded there as a factor in producing unfortunate results with regard to public health?—Yes, the housing problem has to be faced now in Melbourne. They have demolished buildings; they have created a number of spaces, and regulations have been made for putting houses on specific areas.

30651. Is there any of the milk consumed raised in the city itself?—Very little.

30652. All comes from the country?—Yes, and some from very great distances. If it comes 120 miles from Coolac in tins without protection from the sun at the railway station, and with the temperature of the air around at anything from 80 to 105, the problem becomes a very live one immediately.

30653. Miss MCNEILL.—You alluded to action taken by an association of women—the National Council of Women—in bringing pressure to bear on candidates for election?—Yes.

30654. Can you give us any indication how they set about it?—The National Council of Women can take no part in party politics, but to practically every candidate—certainly for Melbourne and certainly in the country—they put a set of questions which amounted to this: Are you in favour of arranging for a double milk supply? Are you in favour of the municipality controlling the milk supply?; and then they asked them whether they were aware that 800 babies were going to die. That was done everywhere, and of course everybody answered yes to these two questions.

30655. What was the nature of the control suggested?—That arises out of the information you will get from Dr. Cameron, the details of which have slipped my mind. The suggestion has been frequently thrown out that the municipality should establish in each municipality cold storage works, with a bio-chemist in charge, and that the municipality should distribute the milk, but should not produce it; that it should take the milk it inspected and distribute it with vans from house to house. At present each cart goes round the consumers' district, and the result is the cost of distribution becomes enormous. The bulk of the cost of the milk consumed is the cost of getting it from the railway station to the consumer with the high wages paid. If you could be sure of your supply, and the municipality sent one car down the street regularly to distribute, it would be very much more economical. Of course, such a complete development has not been seriously faced.

30656. Do you think they will succeed in securing that municipal control?—I could not say. It depends on political considerations.

30657. I suppose the National Council won't let it drop out of sight?—I don't think there is any likelihood of that.

The CHAIRMAN.—Thank you very much, Dr. Barrett. We are very much indebted to you.

The Commission adjourned.

FIFTY-FOURTH DAY.—THURSDAY, 7TH NOVEMBER, 1912.

The Commissioners met in the Town Hall, Manchester, at 10 a.m.

Present:—P. J. O'NEILL, Esq. (Chairman); LADY EVERARD; MISS MARGARET McNEILL; Sir STEWART WOODHOUSE, M.D.; J. R. CAMPBELL, Esq., B.Sc.; and Professor METTAM, B.Sc., F.R.C.V.S.

S. W. STRANGE, Esq., *Secretary*.

Mr. J. W. BRITTLEBANK, M.R.C.V.S., D.V.S.M. (Viet.), examined.

30658. The CHAIRMAN.—You are the veterinary inspector under the Manchester Corporation?—Under the Sanitary Committee.

30658a. Would you kindly tell the Commission, briefly, the duties imposed by that position?—Originally, the duties were to inspect and supervise the housing of cattle within the city, and to carry out the working of the Manchester Milk Clauses, which were obtained under the Manchester General Powers Act, 1899. Those are my duties connected with milk. There are other duties.

30659. Those are the duties in which the Commission is mainly interested?—Yes.

30660. What proportion of the milk consumed in the City of Manchester is raised within the city area?—A very small proportion; about a twenty-fifth part of the entire quantity consumed.

30661. Has that been a diminishing quantity; and is a smaller proportion of the milk raised in the city now, as compared with ten or fifteen years ago?—In answer to that question, I should say that the conditions are hardly comparable. The city, as it existed ten years ago, and the city as it is to-day, are two entirely different places.

30662. Different areas?—Yes. If I were to confine myself to the area of the city when I was appointed, twelve years ago, I should say, certainly, that the amount of milk produced in this area has been diminished.

30663. Has it been the desire and aim of the Corporation of Manchester to secure a supply of milk from the rural, rather than from the city, area?—There has been no definite policy expressed under that head. With certain qualifications, I should say rather the reverse. We have attempted to abolish, and have succeeded in abolishing, all cowsheds within the centre of the crowded population of the city, and we have now got all our dairy farms on the outskirts of the population. So long as a man is so situated as not to make his calling a nuisance, he is encouraged in every possible way to continue that calling. We regard it in the light that it is better, from the point of view of public policy, to have a fair percentage of cows near home, so that you may inspect them the more frequently.

30664. Have you subordinate officers under you, to carry out the duties you have indicated?—We have no qualified men.

30665. You have no qualified men; but have you no lay inspectors?—We have a sanitary inspector, who is an inspector of dairies and milkshops, with regard to their compliance with the Manchester regulations, and who also assists in inspecting cattle, but merely with regard to cleanliness.

30666. Yes; I quite follow you. Are you familiar with the conditions which obtained previous to the time at which the Manchester Corporation obtained the powers now vested in them, under the Act of 1909?—I am familiar by reading practically all the reports which were written, leading up to the powers which were obtained at the commencement of the work. These are the Manchester Regulations, which we work on in the city (copy handed in).

30667. Thank you. If you would be kind enough to state, briefly, the conditions at that period, the period previous to this new legislation, I am sure it would be very interesting to the Commission?—With your permission, I will read you a few notes I have here—extracts from reports, and so forth.

30668. Thank you so much?—It would be safe to say that, practically, the work of supervision of the milk supply commenced at the date of the appointment of

Dr. Niven as medical officer of health. That was in 1891. It has been carried on ever since. At the time of his appointment the condition, generally, of the housing of milch cows was unsatisfactory to a degree. Many cows were found to be suffering from tuberculosis, and the pollution of milk from other sources was of no slight extent. Dr. Niven personally visited all the cowsheds in the city, and, having satisfied himself that a full and complete investigation of the state of the cattle housed therein was necessary, he requested the late Mr. King, a member of the Royal College of Veterinary Surgeons, and then chief veterinary inspector to the City of Manchester, to carry out such an inquiry. Commencing in the early part of 1896, Mr. King carried out a systematic inspection of ninety-five farm premises. The number of cowsheds inspected was 185; of these 9 were unoccupied cowsheds. Of the 176 occupied cowsheds, 127 had a cubic allowance of less than 600 cubic feet per stall. Dr. Niven further states that in a large proportion of the cases the sanitary conditions were bad. He also states, from his own experience, that in a considerable majority of the cowsheds (these are his own words), "the floors were badly constructed, and such that dirt was bound to accumulate and soak into the floor." As a result of Mr. King's inspection of the cows, a considerable number of cows—36 in all—were removed from the cowhouses of the city. Of these, 30 were slaughtered; 7 were found to be suffering from tuberculosis of the udder; 14 from generalised tuberculosis; and the remainder from other localised forms of tuberculosis. It should not be forgotten that for some time previously, and also during the course of this investigation, Professor Delépine had been at work on the bacteriological side. I understand he is to give evidence himself, and, no doubt, he will deal with this aspect. The whole of this preliminary investigation was the subject of a most comprehensive report by Dr. Niven to the Sanitary Committee in 1897. The report is briefly summarised thus:—(1) The state of the cowsheds is bad, as regards crowding, ventilation, and lighting. The floors also are often bad. The cows are not infrequently dirty. (2) There is much disease in the cowsheds. (3) The milk, in a considerable portion of selected instances, has been shown to be highly dangerous, to young children especially. From now onwards, a steady and persistent campaign against the insanitary cowsheds was carried on by Dr. Niven, and much work was done in the direction of improving the existing conditions. Many cowsheds were closed, and others were altered to comply with the Manchester Regulations, made under the Dairies, Cowsheds, and Milkshops Order. While this work was being pushed on, much work was being done by careful observation and investigation, on the part of both Dr. Niven and Professor Delépine, to show the necessity for securing some control of the supplies of milk which came from outside the city. I do not know whether you wish me to deal with the work which led to the obtaining of these powers.

30669. I think it would be of great interest to the Commission?—The results of these investigations are contained in Dr. Niven's "Statements in reference to the proposed Manchester Milk Clauses." In section IV. of this statement Dr. Niven records that "in 1897 and 1898 108 samples were obtained at the Manchester railway stations, of mixed milk coming from farms outside the district.

30670. That is outside the Manchester district?—Yes. Of these 108 samples, 20 proved to be tuberculous. The examinations were conducted by Professor Delépine, who has bestowed the greatest care on this matter. Thus, the percentage of samples taken which

were shown to be tuberculous was 18.5 per cent., a sufficiently serious figure. When the examination of the first 98 samples was completed, Mr. James King visited sixteen of the first seventeen farms from which the tuberculous milk was derived, and on fourteen of the sixteen he found one or more cows with indurated udders. Sufficient information had now been obtained to demonstrate that, at all events, a considerable quantity of tuberculous milk was being sent into the city, and that a fair proportion of the cows actively infective could be reached by taking samples of the milk sent into the city area, and then following the infected samples to their source. When the report of the Royal Commission on Tuberculosis was presented, it was evident to the Sanitary Committee that some powers similar, in fact, to sections 24-27 of the Glasgow (Police Amendment) Act, 1890, should be conferred upon local authorities, with power to slaughter diseased cows, subject to compensation, and the City Council confirmed their recommendation to apply for similar powers. It is, I believe, correct to say, that owing to the fact that Manchester was taking a very prominent part in these new proposals, a very special effort was made by those interested to throw out these clauses at the meeting of ratepayers. The opposition did not quite succeed in rejecting them entirely; but only amended clauses were approved. Clinical tuberculosis was excluded, and the scope of the proposed clauses was confined to dealing with only those cows which were suffering from diseases of the udder. Further, when these clauses came before Parliament, it appeared probable at first that they would be rejected entirely. But the Local Government Board, being of opinion that some such powers were required, suggested an entirely new set of clauses, which were adopted as model milk clauses, and which all authorities might apply to adopt. These ultimately became law in 1899, and, with one amendment, they have been in force ever since. There was an amendment in 1904. On October 2nd, 1899, Mr. J. S. Lloyd was appointed to act as veterinary surgeon under the milk clauses, and to deal with the city cowsheds, and he carried on this work continuously, until he was appointed to the City of Sheffield in 1901. Mr. Lloyd vigorously carried forward the work which had been initiated and carried out by Dr. Niven for some years previously. A fair proportion of the city farms were reconstructed, and some were closed. When I took up my duties here, in May, 1901, it fell to my lot to continue the work. This work of reconstructing city cowsheds was continued on very similar lines to those adopted by Dr. Niven in the first instance. The farms were all submitted to critical inspection, careful measurements were taken, and finally, if alterations were decided upon, the nature of them was set forth in plans and specifications, prepared by Inspector Hyslop, of the Sanitary Department. These were provided for the help of the occupiers. The procedure in obtaining the required reconstruction was, of necessity, slow, in order that no unnecessary hardship should be inflicted on the farmer, and in every case, where no agreement could be arrived at with the owners of the property to reconstruct, the farmer was given sufficient time to enable him to look round and find other premises, either within the district or outside. That is to say, in no case was a summary order made on these people, who had invested their capital.

80671. Do you know whether or not the improvements suggested by you were carried out by the landlord, or the occupier of the farm?—I proposed to give you a little information as to that later on. The requirements asked for may be briefly enumerated:—(a.) A cubic space per stall of 600 cubic feet for reconstructed old buildings, and 800 feet for new, with a floor area of not less than 50 square feet per cow. (b.) The provision of an impervious floor, so constructed as to be easily drained and cleaned. (c.) The cowshed to be properly lighted by windows, which must be made to open freely. Under this head we took the wide powers given us under the Dairies, Cowsheds, and Milkshops Order in a very literal sense, and we never attempted to specify that any kind of square area of light should be provided per cow. We were urged to do so at one time, but we very strongly objected, as under special conditions, as you may imagine, we preferred to retain the right of saying whether the cowshed was properly lighted or not.

80672. That was left to the discretion of the officer appointed to make the inspection?—That is so. The other requirements were:—(d.) The cowshed to be efficiently ventilated; the provision for ventilation to be

independent of the windows and doors. I have rigidly adhered to this provision, and when architects, owners, tenants, and so on, have submitted plans, I have insisted that they should submit a scheme of ventilation, entirely independent of the natural openings, that is to say, of the windows and doors. (e.) No cowshed to be constructed without a feeding passage in front of the cows. (f.) A properly constructed dairy, separate from any other building (not communicating), for the keeping of milk. (g.) The provision of a can washing room. (h.) A properly constructed midden, at a suitable distance from the cowsheds, dairy, and other buildings. In practically all cases these requirements were obtained at those farms which existed in the area of Manchester, as it was constituted when I was appointed in 1901. The further object aimed at was to keep the dairy farming on the confines of the city, in those areas where ample pasturage for the cattle could be obtained, and this object has now been practically obtained, though not absolutely; in fact, there is one small cowshed remaining in the centre of the city, which is occupied by a cattle dealer who supplies a very large percentage of the farmers with cows. I am not disposed to recommend the closing of this place, as it affords a very convenient method of examining many cows before they are sent on to the farms. Of late years the area of the city has been very considerably extended, first in November, 1905, by the addition of the Withington and Moss Side districts, and later, in November, 1909, by the inclusion of Gorton and Levenshulme. The cowsheds in the district of Withington have required very little alteration, for, principally owing to the efforts of the late Dr. Raillon, medical officer of health for the district before incorporation, they were mostly in admirable condition, and had been well inspected in respect of cleanliness. In the district of Moss Side there were three small cowsheds, all insanitary, and these have all been closed. In the districts of Gorton and Levenshulme, which have only recently been incorporated, much remains to be done. The total number of farms in the Manchester area now is 118, and on these there are 281 cowsheds, housing, approximately, 1,800 to 2,000 cows.

80673. When you speak of the Manchester area, do you mean the area from which the milk supply of the city is obtained?—No; the area of the city of Manchester.

80674. The city area?—Yes. The systematic inspection of these farms has been carried out, and the number of visits paid during each year has been between 400 and 500. I have had no system of inspection in any regular order, every visit being devised so as to be a surprise visit. Nor is any attempt made to inspect each place the same number of times, the visits being based, principally, on my personal knowledge of the farmers themselves, as it naturally follows that a percentage will be of the class of individuals who have to be repeatedly visited, while there are others for whom little inspection is necessary. On the whole, the standard of cows now kept in the city is a very high one. But this was not always so. When I first started visiting the Manchester farms I was impressed by the number of aged cows which I came across. Many of them were cows which had seen their best days on the country farms, and which were then turned out to be sold under the then well-understood trade description of "town cows." It was regarded at that time as a perfectly correct proceeding, and it was, no doubt, profitable. Of course, the special conditions of town keeping, where practically all the food has to be bought, where there is no rearing, and where the duration of a cow's existence is only a limited one, did much to encourage the trade custom. At this early period I determined to proceed to get rid of as many of the old cows as possible, and to encourage the farmers to purchase only young, and, as far as possible, healthy cows. Old customs are difficult to break down, but by steady effort, much persuasion, and education, my object has been very largely attained. There can be little doubt that in this introduction of younger animals, coupled with their short existence subsequently, and the systematic cleansing of the cowsheds, lies much of the security for the freedom from disease of the milk produced within the city. It will be seen that only a comparatively small number of cows suffering from tuberculosis of the udder have been found in the city during the last ten years. It does not follow that the number of cows found suffering from tuberculosis of the udder represents the total

Mr. J. W. BRITTLEBANK.—7th November, 1912.

number of cows found suffering from tuberculosis. On the other hand, each year, by my orders, a number of cows which I find, in my opinion, to be tuberculous, are removed, and these are invariably slaughtered at the city abattoirs. The methods pursued are familiar to all veterinarians, but I may say that I place great reliance on the physical signs revealed by auscultation of the lungs, and, frequently, I carefully auscultate every cow in the herd, not necessarily to condemn any animal at once, but to keep suspected animals under observation for a short time. To do this effectually with all cows would be absolutely impossible, unaided, as I am, but, under the existing conditions, it is, in my opinion, very essential. We have no tuberculin tested herds within the city. I have made many attempts to secure such herds, but the farmers will not do it at their own expense. Many are quite willing to enter into an arrangement to clear their farms of tuberculous cattle, if the municipality will pay the cost, and if I can apply the test.

30675. Do you refer to the cost of applying the test, or to the cost of the removal of the cattle?—The cost of the test.

30676. Sir STEWART WOODHOUSE.—They are willing to allow you to apply the tuberculin test, if the Corporation will pay the cost?—Yes.

30677. The CHAIRMAN.—When you speak of the cost, it is the cost of the application of the test, not of paying compensation?—Yes.

30678. They are willing to submit their herds on that condition?—Yes.

30679. Mr. CAMPBELL.—Some of them are willing to submit their herds for the test of the Corporation, but, the test having been made, what is to become of the cattle which react?—When I first drew up the schedule for the sanitary committee, I prepared what I thought was a comprehensive scheme for dealing with the herds that might be subjected to the tuberculin test. The provision I made for cases which reacted to the test was that the cattle should be temporarily isolated, and fattened, and then sent into the city abattoir for slaughter. There was no difficulty about that, because there is no breeding in the city; there is no calving of cows in the city, and the life-history of a cow in this city is never much more than twelve months, in most cases less.

30680. But suppose your cow was a young cow, which had just been purchased, and which had just calved; she has been on the farm a few weeks, and you apply the tuberculin test, and she reacts; you would not send her to the butcher then, would you?—Yes.

30681. At once?—Oh; not necessarily at once, if her condition could be improved by feeding.

30682. But, in the meantime, her milk would not have to be used?—No; unless the farmer chose to set up a suitable sterilising apparatus.

30683. But it would be a very substantial loss to the farmer. Suppose he pays £20 for a cow. He puts her dry, and then he sends her to the butcher. The price would drop to £4 or £5?—Quite so.

30684. Was the farmer willing to bear that?—Yes. Of course, it must be understood that we had definitely selected certain farms, on which we hoped to start, and we had selected farms which we had been preparing for some time previously, and where they had got very little but heifers and second-calf cows. We therefore anticipated that our reaction rate would be a fairly low one.

30685. A member of the Public.—Mr. Chairman, I would like to ask the witness's opinion on a case of this kind. You clear a cowshed of tuberculous cows, and you put in a fresh lot of cows, which have been tested, and which have been proved sound. If the cowshed is not all right, I should like to get his opinion whether those cows will not become tuberculous because of the insanitary condition of the cowshed?

The CHAIRMAN.—I am sorry, but I am afraid this is somewhat irregular. We are all anxious to elicit information, and if the gentleman who has spoken will kindly give me his name, and any question occurs to him which he would wish to have answered for the information of the general public, I shall be very glad to put that question to the witness; but I must ask that such questions shall be first submitted to me on paper. We have asked Mr. Brittlebank to give evidence before the Commission in his official capacity, and it would be hardly fair to him to allow him to be examined by persons who are not members of the Commission. I will consider any questions that may be

submitted to me on paper, but I could not press Mr. Brittlebank to answer such questions.

The Witness.—I shall be perfectly willing to answer the question; but I was going to deal with it later on, in connection with the clearing of definite herds.

30686. The CHAIRMAN.—I think that will probably satisfy this gentleman?—As I was about to say, these farmers require facilities. They also require some tangible evidence, in the shape of an official certificate, which they may use as advertisements.

30687. Mr. CAMPBELL.—That is to say, they might get a certificate and recoup their losses by advancing the price of milk?—There is no objection to that. The chief objection raised is the difficulty of controlling the other milk which would be brought on to the farm, and which might come from animals that had not passed the tuberculin test, and you would have great difficulty in controlling that.

30688. The farmer might get his milk from other districts?—Absolutely. Up to date it has not been found possible to offer these facilities, and there is no doubt that the view of the sanitary committee is a correct one with regard to the difficulties such a scheme presents for the time being. The breed of cattle most favoured in the city herds is the shorthorn, and a great many are of Welsh or North-country origin, with a fair percentage of Irish cows. Much work has been done to try and secure a high standard of cleanliness all round. The cleanliness of the sheds and cattle has been maintained of late years at a fairly satisfactory level, although, of course, the casual delinquents are not rare. As a rule, a word of warning is sufficient to ensure attention to the necessary details for some time. We hesitated considerably about prosecution. If we can secure our object without it, it is better to do so. If we prosecute a man living within the city area it means ruin of his business, and that is rather a drastic penalty. I should add that occasionally, where difficulties crop up with these people, they are summoned or called to appear before the sanitary committee.

30689. The CHAIRMAN.—Before your own committee in camera?—Yes. And if they give satisfactory assurances of their willingness to comply with the notices served upon them no further notices are served upon them in that form. The only method of cleaning the cattle recommended is thoroughly to groom them. Many when they first come into the city are in a very dirty condition, having their tails and thighs plastered with dung, and often with dirty udders. In these cases it is often necessary thoroughly to wash the dirty parts. I should say that I have never attempted to secure a general washing of cows' udders under the conditions under which we labour here—the class of labour that these men have to employ. Many of these cows would suffer a good deal if their udders had to be washed and not properly dried, as is required in all cases. I have relied entirely on rough grooming. That is done in every case of the city cows now, the chief object being to remove loose hairs and rough dirt.

30690. Mr. CAMPBELL.—In regard to washing cows at farms, they are just as liable to suffer inconvenience in the country as in the town. Would you not be perfectly satisfied if the brush were properly used and dispense with washing. What is the difference in regard to this point between a farm in the town and one in the country?—I constantly have to have cows' udders washed in the country before I will take a sample of milk.

30691. The CHAIRMAN.—That is because of moist dirt?—There is moist dirt and old dirt.

30692. Mr. CAMPBELL.—That can be taken off with a regular application of the brush?—It is not easy when cows have long hairs at the back of the udder and there is dirt among them. They are not easily removed by the brush, and they have to be pulled off. In so far as the character of the milkers on many farms goes, I am afraid I have nothing very satisfactory to report. The question of labour is a very difficult one with many farmers, and of necessity they often have to employ men of a very low class, whose habits are anything but satisfactory. Some few years ago an attempt was made throughout the city to get the cow-keepers to provide clean milking-smocks for the milkers, but while a few had no difficulty, many were faced with the point-blank refusal on the part of the employés. This question of clean milkers is no doubt a very serious one, but while by continued vigilance

it is possible to ensure that they wash their hands, it is hardly sufficient to let it end at that. It may be thought that it would be comparatively easy to get plenty of cleanly young country labourers to come in for city employment, and it was at one time fairly easy to get such men, but they very soon left to go to some other class of employment where the hours are not so onerous. The powers under which the supervision of the city cows is administered are the Manchester regulations, made under the Dairies, Cowsheds, and Milkshops Order. I have put down one or two things here as to what I consider desirable amendments in connection with this Order.

30698. The CHAIRMAN.—Yes, please continue.

The Witness.—This first one deals with a question you have already asked me. The responsibility under the regulations for a structurally insanitary cowshed is upon the occupier, and not the landlord. This, in my opinion, should be reversed, for it is often very difficult to get necessary work carried out, and it is impossible to administer these regulations without at times inflicting hardship on a man who may be an entirely deserving individual. Our experience under this head is this. In by far the great majority of cases we have got the landlords to do the work, but the negotiations have been very lengthy, and in many cases unnecessarily so. In some cases they have come to us after we have threatened proceedings, and they have given undertakings that the work should be carried out in a certain specified time. In only a few cases were these undertakings honourably observed in regard to time. We have never asked for this work to be done at unreasonable periods, but always in the summer months.

30694. The CHAIRMAN.—When the byres are empty?—Yes. There are certain cases where the landlords have declined to do enough, and we have simply had to close the place as a dairy. In one or two cases the man gave up keeping cows, and went in for carting or something of the kind.

30695. These cases are all in the city proper?—Yes.

30696. Has it been in consequence of financial inability to carry out the suggested alterations that the occupier has refused, or because of his having an unsatisfactory tenure of the place occupied?—Insecurity of tenure chiefly. There are a few cases I know where the tenure is annual. In some cases it is quarterly.

30697. The landlords think it may always be possible to put the place to a more profitable use?—Yes. Continuing with the amendments which I think ought to be made, it is obligatory on the part of the sanitary authority to place upon the register any man who chooses to apply for registration. This should, in my opinion, be altered, and a system of licensing introduced instead. There might, of course, be a fear that such a system of annual licensing would be harshly administered by the controlling authority, but I do not think it would be difficult to safeguard the interests of the trade, even if there were any such risk. It may be thought that such a system might be used gradually to abolish cow-keeping in urban areas. On the other hand, I am of opinion that where there are facilities for control, and the general conditions are satisfactory, cow-keeping should be encouraged. I am further of opinion that the sub-section which provides relief from registration for such persons as sell milk from their own cows for the accommodation of their workmen or neighbours should be deleted, as there is no reason why such cattle should be exempt from supervision. Then, again, the whole of the powers conferred by the Dairies, Cowsheds and Milkshops Order should be compulsory, and not permissive. I further think that the power to carry out such regulations should be vested in the county councils, and not the smaller boards.

30698. Would you be disposed to go a step further and have these councils centrally controlled in order to ensure uniformity of administration?—I do not know how far you mean centrally controlled.

30699. Well, it is surely undesirable to allow each authority to set up a standard of efficiency for itself. There should be some common regulation which would apply to all vendors of milk. Should it not be mandatory on local authorities to enforce such uniform conditions?—That I might agree with.

30700. Till such a provision is made, does it not seem likely that in one district you will have a proper

standard of efficiency, in a neighbouring district a lower standard, and in a third a miserably inadequate standard?—Yes. We meet that every day.

30701. You do. But if the same standard is to be instituted there must be some controlling body. It could then be relied upon that the same conditions were being enforced in outer and in central areas?—Uniformity of supervision and conditions are essential things. At present the control of milk from outside the city is directed chiefly to the prevention of tuberculosis, and, as I stated earlier, the powers under which the work is carried out are the Milk Clauses (Manchester General Powers Act), 1899-1904. The procedure adopted may be briefly described. Samples of milk supplied by farmers residing outside the city, and sent in by either rail or road, are collected in special outfits provided by Professor Delépine, by the Food and Drugs Inspector. (Outfits produced.) The Inspector at the time of collection obtains as much information as possible, and fills up a form for each sample collected.

30702. Mr. CAMPBELL.—Does he take it at the farm?—At the railway station. We try to collect the milk before it has been touched by anyone else.

30703. The Chairman.—You are not obliged to wait for Sessions; you simply have an order signed like an ordinary summons by a justice of the peace?—Yes.

30704. You go to a rural district and to a justice of the peace there. Have you ever been refused?—Yes, we have been refused; but, of course, there are other justices. Some of the cases of refusal have been rather bad, the people implicated happening to be relatives.

30705. Do you ever have recourse to the tuberculin test?—Very rarely. We find that we have to get the permission of the farmer in the first instance to apply it, and it is not readily given. Practically, I find that in herds of considerable size you are very little nearer your object when you have applied it; you get such a large percentage of reactions.

30706. You would not be of opinion that every animal reacting to the tuberculin test would necessarily yield milk that would be a danger to human beings?—Certainly not. The samples of milk taken as I have described are then brought to the tuberculosis department, and the inspectors' forms are copied, and distinctive office numbers are placed on the forms. The samples are then sent to Professor Delépine, who submits them to the biological test, and in the course of from 24 to 28 days, reports the result of his examination to the medical officer of health. If a particular sample is reported to be tuberculous the medical officer of health, or his representative, bearing his authority in writing, accompanied by the veterinary surgeon, proceeds to the farm, having first obtained from a justice of the peace an order authorising such entry and inspection. The usual procedure at the farm is, if the cows are at pasture, to request the farmer to bring them up into the cowshed for inspection. Then a detailed plan of the cowshed is made, denoting the position of each cow. This is important for purposes of identity, and for specifying sanitary defects. Then the veterinary surgeon proceeds to make a manual inspection of the udders, and if a cow having any suspicious symptoms is found, a sample of the milk is procured in a sterilised outfit, careful record of the suspected cow or cows is made, and this sample is again submitted to Professor Delépine. In many cases it is possible by clinical diagnosis to say that a very grave suspicion attaches to a certain cow or cows, and the farmer is notified of this, and requested to isolate such cow, and refrain from sending any more milk from her, but in every case the clinical examination of the veterinary officer is confirmed or refuted by the bacteriologist, so that there shall be no risk of mistaken diagnosis. This rule as to confirmation by the bacteriologist has been rigidly adhered to.

30707. Of course. It is a question when it does become open tuberculosis?—Yes. I think it very often becomes open tuberculosis long before it is diagnosed.

30708. Lady EVERARD.—Do you consider that sound cattle brought into an infected farm will contract the disease through being brought into contact with other cattle suffering from tuberculosis?—Not necessarily, but I should say that a considerable percentage will.

30709. Sir STEWART WOODHOUSE.—You consider that a cow may give tuberculous milk without having tuberculosis of the udder. Have you had any considerable proportion of cases where, with apparently sound udders, the cows have yet given tuberculous milk?—

We have had a small proportion of cases which have given tuberculous milk, although udder lesions were not apparent on palpation. But in all these cases we have found lesions on the *post mortem*.

30710. In the udder?—Yes. It should be understood, of course, that in some cases a considerable interval elapses between the taking of an infected sample and the slaughter of the cow—sometimes as long as a month.

30711. The CHAIRMAN.—And, of course, the development of the lesions becomes more rapid in the advanced stages of the disease?—Yes. In some cases the lesions have been extremely difficult to find. In one or two cases they have been found on microscopical examination. I now propose to give you some details as to the area from which the Manchester milk supply is drawn. The area outside the city from which it comes is of some importance as showing the distance which some of the milk has to travel to the city. The chief supply is from the County of Cheshire. Derbyshire sends us a considerable quantity, and so does Staffordshire, while the Counties of Lancashire, Shropshire, and Yorkshire also contribute a certain amount, and occasional quantities come from Lincolnshire, North Wales, Cumberland, and the South of Scotland. Cheshire is, however, the county from which the greatest quantity of milk comes. Before discussing the special conditions applicable to each county, I think it would, perhaps, be as well to point out what has been done to acquaint the farmers supplying milk to Manchester with their special responsibilities when sending milk to the city. In the first place, as required by the milk clauses, those clauses were advertised in all the papers circulating in the areas from which our milk supply is drawn. In addition, the medical officer of health prepared an explanatory letter, and also a letter of advice to farmers, copies of which were sent to every farmer known to be sending milk into the city. At a somewhat later period it was thought that, perhaps, many had been missed to whom these explanatory circulars should be sent, so with the aid of the directories a special effort was made to get at every producer of milk who sent to the city. Something like five thousand circulars were sent out at that time. The net result of all this is, that we now have a fairly complete list of those who send their milk to Manchester, and in most cases we know how many cows they have, and to whom their milk is consigned. This information has been extremely useful, as by the card index system we have a fairly complete record of the history of a large percentage of our milk farmers outside Manchester. These records are also of some value to us in estimating the extent of our supply from outside sources. It would be natural to conclude that at the outset of the Manchester operations a good deal of opposition was met with from those who had to have their farms inspected. But, on the whole, the opposition was not serious in character, and while at first a good deal of unpleasantness had to be met with, it is only just to say that in later years the work has proceeded as pleasantly, and with as little friction, between the farmers and the Manchester Sanitary Authority as any work of inspection could do. In only one case has there been an absolute refusal to permit inspection. In that case a prosecution was instituted and a fine inflicted. The inspection was subsequently completed. Under the milk clauses there are two distinct offences specified with regard to the sale of milk. The first is for a farmer to sell milk knowing that it is tuberculous, and the second for failure to notify the presence in a herd of a cow or cows suspected of suffering from tuberculosis of the udder. It may be stated briefly that, so far as the first offence named, that of knowingly selling tuberculous milk, is concerned, the clause has been valueless. It was recognised at the outset that the actual proof of such knowledge on the part of the farmer was a matter of grave difficulty. With regard to the clause requiring notification of suspected specific udder disease, it has been of some value, a fair number of prosecutions for offences under the clause having been instituted, and fines inflicted. To say that this clause has been as successful as might have been anticipated in the direction of securing notification would be untrue. It has, in fact, been almost entirely unsuccessful. It would seem somewhat difficult to say why this should be so. One would have thought that most farmers would have been only too glad to call in skilled assistance at no cost to themselves, and, at the same time, to remove from their own shoulders the responsibilities they were

under. But, as a matter of fact, the number of notifications received each year has been infinitesimal. In many cases where notifications have been made I have had the impression that those who made them knew perfectly well that what they were notifying was in no way to be suspected of tuberculosis, but that they thought they might as well notify something and keep themselves in the good books of the Manchester Sanitary Authority. It has been pointed out repeatedly to the farmers that the Corporation desire to co-operate with the producers of milk to obtain a purer supply, and that they would much prefer farmers to notify even the most unlikely conditions rather than have to proceed in the manner which they have to adopt to find the sources of infection. But it has all been to no purpose. There is no doubt that the inherent agricultural instinct of suspicion of ulterior motive is largely responsible for this. There can be little doubt, either, that if this notification clause had been responded to in anything like a generous spirit, a very great amount of work could have been done to assist farmers. In place of this, what actually happens is that many farmers, on the merest suspicion, dispose of cows which may be the subject of the most benign conditions imaginable, and in many cases at no inconsiderable loss to themselves. There can be no doubt that in the early days of our operations any animal, however emaciated, however diseased, so long as she could produce milk, was regarded as quite good enough. It was rare, in fact, to go to a farm where no animal presenting marked signs of disease could be found. This is now changed, and it is now just as rare to find "slink" animals as it was common in former days. This improvement, I am bound to say, is almost entirely, if not solely, due to the operation of our clauses, and, if they have accomplished nothing else, they have fully justified the money spent on their administration.

30712. Mr. CAMPBELL.—Before you leave this subject, I gather that, as a result of the operation of these clauses, the herds in the country from which you draw your milk supply are now composed of fairly good, healthy cattle?—Yes; on the whole they are fairly good cows.

30713. I suppose what has happened is that the farmers have sold their inferior stock to persons supplying other districts where the administration is not so rigorous as it is in Manchester?—That, I think, is quite a natural conclusion. Of course, this history I have been speaking of is not a recent one. The improvement of which I have spoken has been apparent for some years. But in the first instance these "wasters," these "slink" animals, were undoubtedly sold to other districts. If necessary, I can give you a case to illustrate the way in which they were disposed of. It arose out of the investigation of a very large supply of milk, part of which came to this city and part going to a big city in the South. The number of cows examined was over 3,000, and I examined them on 136 farms. As bearing on your question, I will, with your permission, read a short extract from the report I then made: "The total number of cows suffering from tuberculosis of the udder was eleven. I can say distinctly that these numbers do not represent anything like the actual number of cows suffering from tuberculosis of the udder which were present in these herds at the commencement of the inspection. The news that an inspecting officer is about travels fast in country districts, and there is little doubt that, following my first inspection in April and May, farmers commenced to examine their cows more carefully with a view of disposing of suspicious animals before my arrival to inspect; in fact, I had a statement in two cases where this was done. Further, I was distinctly informed by people whom I could trust that this exodus of diseased cattle actually commenced immediately after my first arrival; quietened down during the period the inspection was in abeyance, and commenced again when the inspection was resumed. Of this I also had a certain amount of ocular proof, for the cattle market, which was held every Wednesday, contained many poor wretches whose carcass value could hardly repay the owner for the trouble of having the beast brought in and submitted for auction. That there was a considerable trade normally in sink cattle from this district I was convinced from the number which were collected together every week in the auction mart, and it bore testimony to the fact that they would find ready purchasers. To an interested onlooker, like myself, there appeared to be a small ring which was all too apt, at the bidding of the unwary outsider,

to enter into competition, at times unwarrantably brisk. Prices ranging from 10s. to 35s. were common, these being paid for actual wasters. Further, there was a brisk trade in worn-out old cows, at prices ranging from £2 up to £5. The chief purchasers of these delicacies were, I ascertained, two men who came from the Potteries, and another who came from near Derby. A fourth individual was occasionally interested in the trade, and removed his purchases, I am informed, to —, to sell to poor people. On a certain Wednesday morning I very carefully watched the sale of these animals, and of the first seventeen animals sold I should not have had the slightest hesitation in certifying fourteen as suffering from advanced tuberculosis. Further, nine of these had undoubtedly tuberculosis of the udder. A fortnight later, of the first fifteen animals to pass under the hammer, eleven were tuberculous, six having tuberculosis of the udder; the purchasers of these animals, in almost every case, being one of the four individuals I have referred to. I may say that I witnessed this at only one auctioneer's section of the market, there being three or four auctioneers in the same market, and also many cattle being sold by private treaty, so that the full extent of the business in diseased and worn cattle is not easy to estimate." That is an experience in connection with a big inspection.

30714. Professor METTAM.—What was the ultimate fate of these animals?—I have no doubt they went into areas which were not inspected, and were sold for human food.

30715. Lady EVERARD.—Sausages?—No; I think not. One of the areas which I have reason to think they went into was a very crowded and very poor area where, at that time, they had no inspection, and I think a good part would be sold as beef. It would, perhaps, now be well if I were to deal *seriatim* with the conditions under which milk production is carried on in the areas outside the city. As I have already stated, the chief sources of our supply are Cheshire, Derbyshire, Staffordshire, and Lancashire, the other counties only supplying limited quantities. The class of cattle kept in all these districts is very much the same: mixed breeds of various varieties, with the shorthorn predominating. I should add that within the last two or three years the Holstein seems to be becoming very popular in these areas.

30716. Professor METTAM.—Bull or cow?—Cow. I think I need not specify the physical characters of the areas implicated as they are sufficiently well-known to most people. Cheshire, as a county, has been pre-eminent for many generations as an important centre of the dairy industry. It is admirably adapted for the purpose. Its pastures are excellent; it is well supplied

with ample water, and it has railway facilities for the distribution of its produce to the large centres of population such as are possessed by few other counties. As a result, the production of what I may call a highly specialised animal for the production of milk has been for many years practically a religion. Well-known strains of cattle, of high milking capacity, have been inter-crossed to such an extent as to produce a very highly organised "milking machine," whose power of resistance to the invasion of pathogenic organisms is low, with the result that it is a ready victim to a disease such as tuberculosis. Its very history has, in fact, invited such a disease. On inspection of the actual figures what do we find? For purposes of simple comparison, I am taking the decennial period of 1902-11. We find that of the Cheshire farmers, whose milk was submitted for examination, an average of 9.88 per cent. had sent us tuberculous milk.

30717. Mr. CAMPBELL.—That is the average for Cheshire?—That is for Cheshire alone. During this period, in following up these tuberculous milks to their origin, 4,929 cows were examined, and of these 3.87 per cent. were found and proved to be suffering from tuberculosis of the udder.

30718. Professor METTAM.—3.8 per cent.?—Yes, of the cows examined on infected farms.

30719. Mr. CAMPBELL.—Out of more than 4,000 examined?—Nearly 5,000. It should be carefully noted that these cases are cases of farms the milk supplied from which had been proved to be tuberculous. Derbyshire is also a county with a comparatively old dairy history. In the ten years under review, in following up infected samples to their origin in this county, 1,132 cows were examined, and of this number the percentage of cows found to be suffering from tuberculosis of the udder was 3.15. The average annual percentage for the ten years I have mentioned of farmers from this county sending tuberculous milk was 67.14. Staffordshire also has a considerable dairy industry. We find there that during this same period the average annual percentage of farms sending tuberculous milk was 7.57. When these farms sending tuberculous milk were visited the total number of cows examined was 769, and the percentage of cows found to be suffering from tuberculosis of the udder was 4.42. There are some additional figures for a special inquiry into the condition of 136 farms in this county, entailing the inspection and examination of 3,019 cows, which can be quoted separately, if necessary—it was the big inquiry to which I have already referred. The reason these figures are not included in the Manchester totals is that only part of this supply came to the city, the remainder going south. The following tables, which I have already referred to, may interest the Commission:—

TABLE showing number of cows examined on farms which had been found to be sending tuberculous milk.
(Figures in brackets indicate number of farms).

Year.	Cheshire.		Derbyshire.		Staffs.		Lancashire.		Salop.		Yorks.	
	Farms.	Cows.	Farms.	Cows.	Farms.	Cows.	Farms.	Cows.	Farms.	Cows.	Farms.	Cows.
1902 ..	(25)	450	(9)	162	(1)	18	(1)	18	—	—	—	—
1903 ..	(31)	589	(7)	133	(5)	95	—	—	(2)	38	—	—
1904 ..	(21)	399	(5)	95	—	—	(1)	19	—	—	(2)	38
1905 ..	(35)	665	(6)	114	(3)	57	(2)	38	—	—	(1)	19
1906 ..	(25)	600	(6)	144	(8)	192	(2)	48	(1)	24	—	—
1907 ..	(27)	540	(3)	60	(5)	100	(2)	40	(1)	20	—	—
1908 ..	(20)	360	(2)	36	(3)	54	(1)	18	—	—	(1)	18
1909 ..	(15)	300	(8)	160	(6)	120	(1)	20	(1)	20	—	—
1910 ..	(17)	323	(10)	190	(3)	57	—	—	—	—	—	—
1911 ..	(37)	703	(2)	38	(4)	76	(5)	95	(1)	19	(1)	19
Totals ..	(253)	4,929	(58)	1,132	(38)	769	(15)	296	(6)	121	(5)	94

TABLE showing ratio of tuberculous cows to cows examined (outside Manchester), on farms proved to be sending tuberculous milk.

Year.	Cheshire.		Derbyshire.		Staffs.		Lancashire.		Salop.		Yorks.	
	Cows.	Per cent.	Cows.	Per cent.	Cows.	Per cent.	Cows.	Per cent.	Cows.	Per cent.	Cows.	Per cent.
1902 ..	(19)	4.22	(7)	4.32	(1)	5.55	(1)	5.55	—	—	—	—
1903 ..	(20)	3.39	(4)	3.00	(4)	4.21	—	—	—	—	—	—
1904 ..	(10)	2.50	(4)	4.21	—	—	—	—	—	—	—	—
1905 ..	(26)	3.91	(2)	1.75	(2)	3.50	(2)	5.26	—	—	—	—
1906 ..	(23)	3.83	(2)	1.38	(4)	2.08	(1)	2.08	—	—	—	—
1907 ..	(23)	4.25	(2)	3.33	(6)	6.00	(1)	2.50	—	—	—	—
1908 ..	(19)	5.27	(1)	2.77	(3)	5.55	—	—	—	—	—	—
1909 ..	(6)	2.00	(8)	5.00	(15)	12.50	—	—	—	—	—	—
1910 ..	(16)	4.95	(6)	3.15	(2)	3.50	—	—	—	—	—	—
1911 ..	(31)	4.40	(1)	2.63	(1)	1.31	(5)	5.26	—	—	—	—
Average—												
1902-6 ..		3.57		2.93		3.07		—		—		—
1907-11 ..		4.17		3.37		5.77		—		—		—
		3.87		3.15		4.42		—		—		—

I have some other figures, concerning a somewhat wider area of operations, which may be of value to the Commission. The figures I have already quoted refer only to those farms from which tuberculous milk was found to be coming. Many additional cattle are examined each year from various causes, and I find that during the same ten years period the total number of cows examined by me outside Manchester was 27,204. Of these, 298 were found to be suffering from tuberculosis of the udder, giving a percentage of 1.09 of cows suffering from tuberculosis of the udder.

30720. Sir STEWART WOODHOUSE.—Whether on farms from which tuberculous milk came or not?—Yes; that is so. Of course, there are many causes, such as an outbreak of scarlet fever, that take us into the country, and whatever we are looking for, we look for tuberculosis among the cattle as well.

30721. These were farms that were suspected, for some reason or other?—Yes; for some reason; not necessarily for tuberculosis. The character of the housing of the cows may be a matter of some interest to you. In speaking of this, I do not propose to separate the counties for discussion. It would be safe to say that at the outset of our operations the housing was almost wholly bad. In 1901 I attempted some dissection of the sanitary condition of 111 cowsheds inspected during the latter eight months of that year, and I find that I reported 48 as very dirty, 53 as dirty, and only 10 as clean. The lighting was either defective or absent in 66.6 per cent., and the ventilation deficient in 61.26 per cent. This may be taken as fairly representative of the conditions at that period, and there is no doubt that in some districts the same conditions hold good to-day. It would only be fair, however, to say that in some districts great improvements have been carried out, and conspicuously does this apply to the Cheshire areas. Public spirited landlordism is not always a prevalent feature of either country or town life, but some of the Cheshire landlords have, in no half-hearted manner, put their farms in order. One conspicuous example is afforded by Earl Egerton of Tatton, most of the farms on whose estate are admirable. It has only been necessary to point out to those responsible that certain structural alterations were required, and the work has been carried out, in no spirit of higgardliness, and without imposing, as an additional annual rental, a percentage of the cost of such alterations.

30722. Mr. CAMPBELL.—I notice that, in describing these country cowsheds, you mention light, cleanliness, and ventilation, but you do not mention cubic space, as you did earlier on, in your statement with regard to the Manchester cowhouses?—I am sorry I have not the report by me, which gives the details. But in another report which I have here you get a fair sample of the conditions that prevailed. Thus "5 farms out of a gross total of 136 were clean; 68 were in a fair condition of cleanliness; and the remainder were dirty. No high standard was expected." Again—"in these farms, in their different classes, the total number of cowsheds inspected was 843. Of these 343 cowsheds, in 285 the cubic area was considerably less than is considered adequate."

30723. That is to say, less than you thought adequate?—Less than 600 cubic feet.

30724. Would you ask for 600 in the country?—Certainly.

30725. Even supposing the cowshed was well ventilated, would you still insist on 600?—Well, as to insisting, we have no standard for the country.

30726. But I want to know what you, personally, think?—My personal view is that no cowshed should be passed in the country, or anywhere else, with cubic accommodation per cow less than 600 feet. I prefer more than that, even in the country.

30727. But, assuming that the ventilation was all right, would you accept 600?—I should accept it, if I could not get any more.

30728. You would pass it, at any rate?—I should have to, I suppose. But I do not take very much notice of the so-called cubic area, so long as one can get plenty of floor room. I think the lack of that is one of the greatest defects in cowsheds. If you give me a 600 feet cowshed—that is 600 each way—and ample floor space, I am perfectly satisfied. But if you expend a good deal of that 600 feet on the width, your cowshed will not be very high.

30729. Quite right. You would require, I take it, 3½ feet for each cow?—Yes; the regulations say 6 feet 8 inches for two cows.

30730. Yes, that is 3½ feet and 3½ feet into your 50 square feet, which you ask for, would give, say, a width of a little over 15 feet?—Yes. We never accept a single-stall cowshed here less than 18 feet wide.

30731. Then you want 4 feet in the front of the cow for the passage?—Yes.

30732. For the trough you want 18 inches, or 2 feet, and for the stand you want 6 feet?—We take it from the head-rail to the heel-stall.

30732. And how much do you ask for?—An average of 7 feet to 7 feet 3 inches. Then we take 2 feet 6 inches for the dung channel; the remainder for the walk behind.

30733. You cannot do with less than 5 feet behind?—We should have; 4 feet 6 inches we say, beyond the scale I have given you.

30734. 18 feet you say then?—Yes.

30735. You cannot do it in less, if you are going to have a food passage?—I regard a food passage as very essential, not so much for feeding the cows, but as a factor in ventilation.

30736. The CHAIRMAN.—You do not like the cow to be tied up against the wall?—No.

30737. Mr. CAMPBELL.—I am interested in this, because I am bound to say that, from another point of view, I am not so favourable to the idea of a passage in front of the cow; she can get her head forward?—You can easily prevent that by putting up rails about 5 feet high. If you like, I can submit a model plan of cowshed construction. Our whole principle is to make the bed the place in which the cow is going to stop. We put up rails 5 feet from the floor, and just so far apart as to prevent the cow getting her head through, and hanging herself. Then behind the cow we never take a drop less than 6 inches into the dung channel; 8 inches, if we can get it. We find by that that we

not only keep the cow to the bed, but we keep her very much cleaner. I must confess that, while the low rails in front were responsible for a great deal of the dirt one found in the cowshed, the cows were cleaner in some of the old cowsheds, where there was no feeding passage, than they are in some of the modern sheds, where they have feeding passages.

30738. There is the difficulty of getting the food in?—We have a sliding board to the manger.

30739. I think that is absolutely necessary. But, on the other hand, if you have a solid partition in front of the cow, you are not much better off?—We are trying to abolish all solid partitions in the sheds, even between the cows. We are trying to get them to put up just a head post with a cross rail to the heel post, and a middle rail to it. Our object is to minimise the lodgment of dust, and to provide a free circulation along the floor of the shed. I was speaking of the improvement that has taken place in the Cheshire cowsheds, and I should like to add that during the last three years the greatest assistance has been received from Dr. Meredith Young, the Medical Officer of Health for Cheshire, who has taken up this question with great energy, and who has always been ready to render assistance. There is no doubt that Cheshire is improving very rapidly, and in a few years the results of the work done should be apparent. At the outset this county had a very high percentage of old cows in its herds, and it wants no experienced eye to see the change that has been going on from year to year. But, of course, to obtain the progress required, much remains to be done, in the way of educating the farmers in regard to the prevention of disease. The County of Derbyshire, I may say, as my inspections show me, is almost wholly bad, in so far as the state of the cowsheds is concerned. The very nature of the climate seems to have induced the farmers to believe in keeping their cows in dark, hot, overcrowded sheds. The same applies to many parts of Staffordshire affected by our operations. Many times attempts have been made to secure better conditions, but without any real success. I should point out here that the figures in regard to this county are most misleading, as whole districts, which used to send milk to Manchester, have diverted their supplies in other directions, principally to the South. So far as the systematic cleaning of cowsheds is concerned, I think I may say that little is done beyond the daily removal of the excreta, and soiled bedding; the very nature of many of the sheds renders work such as washing almost impossible.

30740. Before you leave the cowhouses, what about the floor, what do you say about that?—We insist on an impervious floor, and in every case we ask for concrete.

30741. Even under the knees you find no ill effects?—No.

30742. You have not had complaints that cold concrete was responsible for trouble in the quarters. Have you ever tried any other kind of floor?—Yes, we have tried asphalt, puddled clay, cinders, flags, all sorts of floors, with the possible exception of granite sets, and the conclusion I have come to is, that the best material, undoubtedly, for our purposes is cement.

30743. Finished rough. Have you had any difficulty with the setting?—Some few men used to do the skimming with a steel skimmer, instead of a rough wooden one, but we taught them that these floors could be made perfectly impervious on the rough principle, and then we began to get what we were after—non-slipping floors. With one of the first floors we had a serious difficulty. Shortly after the place was occupied one of the cows fell down, and the last state was worse than the first.

30744. Now it is finished with a wooden skimmer in grooves?—Yes.

30745. Parallel with the cow?—No, diagonally, to give the cow a grip when she gets up. A few words as to the breeding and rearing of young stock may not be out of place. And the first thing which strikes the observer is the absolute lack of appreciation on the part of many, or most, of the farmers, of the importance of special attention to young stock during their early periods of growth. Commonly it is thought that any dark, damp, dirty hole is good enough for calves, with the added pleasure of suckling cows which have diseased or defective udders. Who has not heard a farmer explain that a cow had a bad quarter, and

that the extract was to be given to the calves, or that they should have the privilege of suckling such an udder? I cannot too strongly condemn the almost general neglect of the early life of calves. In Derbyshire a particularly reprehensible system is in vogue of tying young calves, to whom the very essence of healthy growth is activity and fresh air, in narrow stalls like miniature cow stalls, with the accumulated filth of days and weeks under them, and an utter absence of light and air. I may say here that at every farm visited no effort is spared in trying to convey some elementary facts with regard to the prevention of disease, and I may say that I regard this as one of the most important parts of the work which I have to carry out. It is gratifying to know that not a few have profited by the advice given. I can quote examples of this. Most of the milking is now done by men, and it is comparatively rare to see women milkers. The reasons for this are too well known to dilate upon. I have nothing to say in favour of many of the milkers seen. It is true that most of them wash their hands before milking, but with dirty clothes, and dirty habits, this might appear an almost useless detail. It may not be out of place to draw attention to the entire lack of supervision of stock exhibits for sale at many of the markets. Many could be specified where a large number of cattle, undesirable in every respect, are exposed for sale, and find a ready market. The point I wish to bring before you now is some work which we are carrying out in connection with the eradication of tuberculosis—the keeping of a herd free from the disease. We have a special source of supply to all the hospitals of the city, under the control of the Corporation. Some years ago it was decided that special conditions should be asked for in connection with this milk; that it should be of a certain definite quality, and should contain not less than 3.25 per cent. of butter fat, and should be only supplied from cows which had passed the tuberculin test. The farm selected was a large one, well equipped, the farmer being a highly intelligent man, of proved integrity, and one who was willing to attempt to carry out such conditions. In the early period of our experience we had some difficulty with this work, and we entered upon this contract in 1902, for a period of three years. The herd of cows was a fairly large one, the number varying from 90 to 110. I have figures for the test of this herd before we dealt with it. It was originally tested in 1899, and at that time over 40 per cent. of the cows reacted. At a later period the farmer made up his mind that he would get a tuberculous free herd. Certain elementary principles were neglected, and at a later period when it was tested again the percentage of reacting cows was slightly less than before—that was six months after. He was advised that the first essential was to get his cowshed reconstructed. This he did, and again had his cows tested, getting a reacting percentage of just under 20 per cent.. In April, 1902 I took charge of this herd, and it has been under my charge ever since. I tested the stock of 97 animals, and the number reacting was 17. I deal merely with the herd proper, and not with younger animals that we added to the herd. In October, 1902, 91 cows were tested, and 11 reacted. Every precaution we could think of was taken, in the way of keeping the place clean, and still 11 cows reacted. Two or three days after I got the permission of the Chairman of the Sanitary Committee to take plenty of men from our disinfecting station, and we set to work to disinfect every building on the farm. This was done with common chloride of lime solution.

30746. Am I to understand that after each test reacting animals were removed?—Yes.

30747. So just after your test they were perfectly free?—Yes. In October, 1903, 98 cows were tested, and one reacted. From that period onward we have never had in this herd more than one or two reactions. But to ensure success with this herd we have had to divide it into three branches—(1) the herd proper; (2) probationary animals tested once; (3) probationary animals not tested at all. What we do now—and it is a source of a great deal of our security—is with regard to probationary animals, that no animal is added to the herd till she has been tested twice at intervals, not less than one month after the first test. We still get a high percentage of reactions from probationary animals, often on the second test. The following tables may interest the Commission:—

TABLE III.—Showing the result of tuberculin testing on farm specified.

Date of Test.	Total Number tested.	MILKING HERD.				PROBATIONARY ANIMALS.				Total Number of Animals passing test.
		Animals having been previously tested.				Animals not previously tested, but purchased subject to passing the test.				
		Number tested	Number re-acting	Number passed	Doubtful re-actions	Number tested	Number re-acting	Number passed	Doubtful re-actions	
April, 1902 ..	116	98	17	81	0	18	7	11	0	99
October, 1902 ..	108	91	11	80	0	10	4	6	0	86
October, 1903 ..	108	98	1	96	1	10	4	5	1	101
April, 1904 ..	103	76	0	76	0	27	10	17	0	93
October, 1904 ..	103	85*	0	84	*1	18	4	13	1	97
April, 1905 ..	102	87	0	87	0	15	4	11	0	98
October, 1905 ..	98	84	0	84	0	14	5	9	0	93
April, 1906 ..	107	91	0	91	0	16	6	10	0	101
October, 1906 ..	102	73	1	72	0	28	7	21	0	94
April, 1907 ..	132	95	0	95	0	27	19	8	0	103
October, 1907 ..	119	81	0	81	0	28	13	15	0	96
April, 1908 ..	122	88	0	88	0	33	25	8	0	96
October, 1908 ..	123	91	1	90	0	32	16	16	0	107
April, 1909 ..	119	88	2	86	1	31	15	16	0	101
October, 1909 ..	115	93	0	93	0	22	14	8	0	107
April, 1910 ..	104	87	0	87	0	14	8	6	0	93
October, 1910 ..	107	91	1	90	0	16	9	7	0	98
April, 1911 ..	102	83	1	82	0	19	8	11	0	94
November, 1911 ..	122	85	1	84	0	37	34	3	0	88

*Animal tested, but developed Bronchitis during test.

GENERAL TABLE.

Year.	Number of mixed milks tested.	Number of Farms represented in the first col.	Number found to cause tuberculosis.	Number of Cows outside Manchester examined by Veterinary Surgeon.	Number of Cows proved to be suffering from tuberculosis of udder.	DISPOSAL OF COWS.					Number slaughtered.	Country Cows found as result of notification or otherwise.	Number of Cows with tuberculosis of the udder found in City cowsheds.	Number of Cows with tuberculosis of the udder from all sources.
						Sold or not traced.	Died.	Slaughtered.						
								Carcass passed.	Portion only passed.	Con-demned				
1902 ..	420	345	36	1,236	31	15	-	5	-	11	16	1	2	34
1903 ..	432	329	45	2,537	28	6	2	6	-	14	20	1	-	29
1904 ..	432	318	29	2,615	16	2	-	6	-	8	14	2	1	19
1905 ..	764	565	47	3,241	31	8	-	8	3	12	23	2	1	34
1906 ..	677	542	42	2,855	30	9	-	8	-	10	21	1	-	31
1907 ..	662	562	38	2,547	28	6	1	5	2	14	22	1	1	30
1908 ..	314	289	26	2,423	23	1	2	6	3	13	21	2	1	26
1909 ..	623	535	32	4,707	31	1	-	1	1	22	24	-	1	32
1910 ..	519	468	30	2,450	24	-	-	5	-	19	24	-	1	25
1911 ..	588	494	50	2,593	46	-	-	9	4	33	46	-	2	48
Totals ..	5,431	4,447	375	27,204	288	48	5	59	13	156	231	10	10	308

*A number of these cows were found under special circumstances.

30748. Professor METTAM.—You don't think that one application of the tuberculin test is sufficient?—Not to ensure freedom. I look upon it that you have, possibly, an incubation period, in which you may not get your reaction. We have attempted in recent years to abandon the procedure of purchasing outside cattle altogether, and rearing our own. Ninety-one head of cows, heifers and calves reared on this farm have been tested with no reaction. We did not begin rearing till five years ago.

30749. Mr. CAMPBELL.—Have you bought since then?—We have bought very little in the last two years. Up to that time our difficulty was from cows we did not want to pass the test. Non-profitable cows passed the test, and animals that you wanted reacted. There is also a difficulty in getting bulls free from tuberculosis. We change these bulls very often. We have one stock bull, and one young bull.

30750. Do you dread the reacting bull; would you not dread the reacting cow more?—Yes, because she

is living among others. In almost every case where young bulls were submitted to me, which had been tied up on Cheshire farms with the cows, they failed to pass the test.

30751. The CHAIRMAN.—Would you attribute that to the probability of the tuberculous germs being present in their systems, or to direct infection from the cows?—I think the latter is the explanation. I am inclined to put infection as the cause entirely of the spread of tuberculosis.

30752. Mr. CAMPBELL.—From infected animals?—From infection in the cowshed. Finally, I may record that in not a single instance has one of these home-reared cattle reacted to tuberculin. The whole of the work has been conducted on a commercial basis, and the only assistance given to the farmer has been free tuberculin, and my services, unless the enhanced price paid for the milk can be considered under this head. It is an unquestionable financial success, and the gain in many directions has been great. The incidence of disease, other than tuberculosis, has been enormously

reduced, to specify only two conditions—epizootic abortion and pneumonia. Pneumonia has practically disappeared. Epizootic abortion was extremely rife in the herd, and this also has disappeared. But we still take the most stringent precautions against its introduction. I have omitted to state that the systematic disinfection has been carried out four times per annum since the cowsheds were first disinfected.

30753. Lady EVERARD.—What do you disinfect with?—A chlorinated lime solution.

30754. How often do you disinfect on the particular farm you spoke of?—Four times a year.

30755. How do you disinfect?—In the first instance it was done by hand—Turk's head brushes—but subsequently we purchased a spraying machine. It has been in use ever since, and the work has been done very efficiently by this method.

30756. The CHAIRMAN.—Would you consider sulphate of copper solution a useful disinfectant?—I should not.

30757. Carbolic acid?—Yes; carbolic acid is not a bad disinfectant.

30758. I was asking your opinion for a special reason, because, curiously enough, sulphate of copper is the one disinfectant that is in every farmer's house in Ireland?—I know it was the one thing used in many districts in this country some years ago as a spray for getting rid of charlock.

30759. That is right. That is why the Irish farmers keep it still.—It was in common use as a disinfectant.

30760. You have finished your notes now, Mr. Brittlebank?—Yes.

30761. Then let me express to you our very deep indebtedness for the enormous trouble you have taken in preparing such copious and such very valuable information, and for presenting it in a way which makes the task of the Commission very light indeed. There are just a few questions I would like to ask you. Is it your experience that cows kept in the country are more healthy than cows kept in the city area?—No; it is not.

30762. They are quite as bad in the open country as they are in the city?—I should say that under the special conditions which exist in Manchester the cows in the city are healthier than the cows in the country. But it must be distinctly understood that in those parts of the city where the cows live there is often as much country as there is in the rural districts.

30763. They are not housed in the grimy back lanes that one has seen in some places?—Oh, no; we have stopped all that. We have closed all those places.

30764. And none of your byres in the city area at the present time are overshadowed by high buildings, or have the light and sunshine shut out by high walls?—No; with the exception of the small cowshed in the centre of the city which I have mentioned as a convenient place for the examination of many cows before they are sent out to the farmers.

30765. And that is allowed to remain there for a special purpose?—Yes.

30766. Is there a market for the sale of milk cows in Manchester?—No; there is a big market in the adjoining borough of Salford where they are bought and sold in large numbers.

30767. Is there much loss from abortion in the dairy herds from which your milk supply is derived?—Yes; considerable.

30768. Is it increasing or diminishing?—I do not think it is increasing. My experience is that with greater cleanliness it is certainly diminishing in many stocks. I know that in the case of the particular stock I have referred to as having passed the tuberculin test, when I first took it in hand contagious abortion was simply rampant. But we have never been troubled with it seriously since we took the sanitary precautions which I have described. Of course, we have always kept a sharp look-out for any cow that might have been accidentally introduced with contagious abortion. A regulation very stringently applied was that the cow must be removed from the shed before she aborted, and if the cowman did not find her he was made to understand that he had been guilty of a serious fault.

30769. Lady EVERARD.—Do you think the farmer realises how serious this disease is?—Yes; in many places I think he does.

30770. And in many places he does not?—In Cheshire, particularly, we have a very excellent class of man who realises the scientific aspects of a good many of these conditions.

30771. The CHAIRMAN.—Has the increased cost, if there has been an increase consequent on the inspection, carried out by the Manchester authority, in any way increased the price of milk in the city?—I can hardly answer that with precision. But my impression is that the cost of the operations has not increased the price.

30772. Whatever loss has arisen has been borne by the milk retailer or the cowkeeper?—Yes; I think so. There is a partial explanation of that. If the area of supply was a permanently fixed area, not liable to extension, it is imaginable that prices might have increased. But our area has grown so enormously, and there are so many people continually coming into the supply, that the price has been kept more or less at the same level.

30773. New producers?—Yes.

30774. I suppose it is impossible for you to keep any record of the number of persons sending milk into the city by rail?—We have a record.

30775. It must vary considerably from time to time?—Yes, it varies so considerably that the record is not of much value. But we have estimated the number at somewhere about two thousand.

30776. Do the majority of these producers sell direct to the consumer, or do they sell through a milk dealer?—Outside the city you mean?

30777. Yes.—With the exception of very few cases, it is sold through the milk dealer.

30778. Is any of it brought in by road?—The farmers who bring in their milk by road generally have their own milk sent round in the city.

30779. Lady EVERARD.—What is the price of milk in Manchester?—It varies in certain districts and also with the seasons. You might say that it ranges from 2½d. to 4d. per quart.

30780. The CHAIRMAN.—Would 4d. be the maximum?—Yes.

30781. Even in the best residential districts?—Yes; but there it is common to get the same price all the year round.

30782. Is the milk supplied in sealed vessels?—No; except in two cases. The gentleman who was here this morning, and who put a question, does a considerable business in sealed bottle milk.

30783. Is it sold largely for the use of infants?—Oh, for the use of anybody who chooses to buy it. We have not fostered this or any other method of sale.

30784. You do not encourage it?—No; we do not attempt to encourage any particular branch of trade. Our operations are directed entirely to getting at the milk at the source.

30785. Have you much trouble in ensuring that the dealers themselves are careful and cleanly in dealing with it; in seeing that it is distributed by people who are careful, and that the vessels are kept in a perfectly clean condition?—Of course, there are a very large number to inspect. I should not like to say that the conditions of distribution are altogether satisfactory; I could not say that.

30786. You do not claim that they are ideal at the moment?—No; a long way from that.

30787. Are you obliged to have recourse to prosecutions to enforce the provisions laid down for the distribution of milk?—Yes; occasionally.

30788. Do you sometimes treat them in the same way as you treat the milk producers; that is by summoning them to appear before your Sanitary Committee?—Yes.

30789. And you rely as much on moral suasion as on the power of the law?—Absolutely. We never prosecute either class unless it is absolutely necessary.

30790. Unless the man complained of is contumacious?—Yes; unless it is absolutely necessary.

30791. You speak of getting a special supply of milk for the hospitals under the control of the Corporation. Do you pay an enhanced price for that?—Yes.

30792. It is not material what the figure is.—We are willing to disclose it if you want it.

30793. It is not material. My object is only to ascertain whether you find producers, who in return for a fixed amount for a certain quantity are willing to produce their milk under extremely stringent conditions, and sell it at the ordinary commercial price?—The milk contract is for a three years period, and we have no difficulty in getting plenty of tenders.

30794. Including some from people who do not happen to comply with the stringent conditions laid

down?—That is so. I may add that we have twice increased the price fixed by the contract to be paid to the man who supplies the milk when the ordinary rates have gone up in the whole of the area.

30795. You have not taken advantage of the price fixed, so as to hold the man to it throughout the three years period?—No; not under the circumstances I have mentioned. The idea of the Sanitary Committee has always been that you must pay a proper price if you want the thing properly done.

30796. Who controls the taking of samples of milk to test for adulteration?—Mr. Rook, the Sanitary Superintendent.

30797. You have nothing to do with that?—No. I am called in sometimes in connection with special inquiries, where whole batches of farms in a particular district appear to be sending milk not up to the standard. But that does not often happen.

30798. Mr. CAMPBELL.—Shall we have evidence in regard to adulteration? Perhaps we may get it from Professor Delépine?—Professor Delépine, I should explain, is not the Medical Officer of Health or Public Analyst. I daresay Mr. Rook, the Sanitary Superintendent, or the Public Analyst, could give you information.

30799. You have nothing to do with the quality of the milk?—Of course, I know a good deal about it, but as it is not in my department I am not prepared to give evidence upon it.

30800. With regard to the application of the tuberculin test, you have expressed your faith in it as a very useful factor in determining whether there is tuberculosis in the animals yielding milk. In what proportion of cases have you been able to follow up the test by *post mortem* examination, and what has the result been as showing the reliability of the test?—The proportion of cases is not a very large one. But we had a *post mortem* on all the reacting animals in the particular herd I have spoken about. I followed in all forty-seven of these reacting animals to the butcher and made a *post mortem*. In only one case was I unable to find tuberculous lesions. I will say that in some cases the lesions were extremely slight. But in only one case was I unable to find any at all.

30801. Professor METTAM.—And you would not like to swear it was not there in that case?—No; I would not. My experience of the test is that it is the best material I have got at my disposal.

30802. The most reliable?—Yes.

30803. Do you come across manifest cases of tuberculosis with no reaction?—I have had no experience of them. There was a case of a cow which I purchased. She was very tuberculous, and I tested her several times. There were very few square inches without considerable lesion, and I tested her, but I got the reaction every time.

30804. How often did you test her?—Every fortnight. There was another cow most remarkably affected, and she also reacted every time.

30805. Lady EVERARD.—Is Dr. Niven the Medical Officer of Health for the entire area?—Except Withington, where there is a District Medical Officer of Health.

30806. You are the veterinary surgeon for the entire city?—Yes.

30807. I think you said that licensing would be more efficacious than registration?—Yes, I do.

30808. Do you also consider that by-products, such as buttermilk and cheese, should be under the same regulations as apply to milk. At the present moment butter can be made in houses that are not exactly sanitary?—I think that all products intended for human consumption should be put under the same conditions.

30809. You also said that in your opinion the Order should be compulsory, and not permissive, and that it should not be left to different centres to put it into operation or not?—It should not.

30810. Professor METTAM.—Manchester has the power under a special Act to inspect the milk of any area if it comes into Manchester. Have you to notify the medical officer?—No; we go absolutely as a surprise.

30811. Without reference to the local authority?—Yes. We have often been asked to agree to notify the medical officer, but we have never up to now agreed to do so.

30812. Have you had many cases of typhoid carriers?—That would be for the medical officer.

30813. If there was an outbreak would it not be beneficial to the administration of public health that the medical officer should have the power to go into a dairy and make every person handling the milk submit himself to the Widal test?—I don't think our medical officer would have any difficulty in doing that.

30814. But in all cases, if you had reason to think the milk was producing disease, it would be well to get all those handling the milk tested?—Yes.

30815. Salford is under a different administration. Do they follow the same lines?—Yes; absolutely on our lines.

30816. In going down to the country districts and following out these cases, do you find that the farmers offer any objection to your going to their places?—No.

30817. They don't welcome you with open arms?—No. In the early years of our operations we met with a good deal of unpleasantness. Not actual opposition, but in shape of being called names.

30818. That has ceased?—Absolutely ceased.

30819. They recognise that it is to their advantage to fall into your ways?—I think that one of the great factors is that they get to know my name and my face. I have found many times when I go to a farm they say: "Oh, yes, you have come to see the cows." It is conceivable that a new man might have some little preliminary unpleasantness.

30820. How far do you go into the country?—We go right to the limits from which our milk comes. I have been so far as Cumberland, Shropshire, and Staffordshire, all over, and practically all over Cheshire.

30821. Do you look for anything besides tuberculosis?—I look for any condition that is pathological.

30822. Does the quantity of milk coming into Manchester fluctuate?—Yes, with the season. But there is a constant winter supply, the winter supply being affected by people who are cheese-makers in the summer.

30823. Do you get more milk in the winter than in the summer?—Not necessarily, because the average production per cow is not so high.

30824. Where do the dairymen of the city get their cows from?—They come from numerous centres. North Wales is becoming popular. I have found some very excellent shorthorns with a low percentage of tuberculous reaction. They also come from York, Cumberland and Derbyshire.

30825. Mr. CAMPBELL.—And Ireland?—A considerable quantity from Ireland.

30826. You have no byres in the immediate neighbourhood here?—No. They are on the outskirts.

30827. I suppose you go and inspect these cattle when they are out to grass?—Yes. I make them bring the cattle in.

30828. The CHAIRMAN.—You exercise the same power over them as if they were in the byres?—Yes.

30829. Mr. CAMPBELL.—What lay assistance have you?—Assistance from the sanitary inspectors and assistance from the special milk dairy inspector.

30830. They report as to the condition of the house occupied by the cattle and the condition of the cattle?—No. I do not let them have anything to do with that. They deal with cleanliness. I deal with general conditions. Of late years with motor traction we have got along much better, and my committee have given me ample facilities to employ taxis. But there is no doubt that to inspect these places properly a considerable staff is required.

30831. When you prosecute a Cheshire or a Derbyshire farmer what is the legal procedure? Do you prosecute in the district in which he lives?—It depends on the nature of the offence. There is an offence of obstruction, and we have to go to the local petty sessional court to prosecute for that. But for bad offences against the regulations in regard to notification—we only take bad offences—we prosecute in Manchester in the Stipendiary Magistrates' Court.

30832. The CHAIRMAN.—No matter at what distance the offender may reside?—No matter what the distance is.

30833. Mr. CAMPBELL.—You mentioned your efforts to get the milkers to use overalls. Do you manage to get them to do it? Do you insist upon it?—We cannot insist. We try to persuade them. Some of them do it, but others flatly decline to have anything to do with it.

30834. Do you keep milk records of the farms from which you get your supply of milk?—Yes.

30835. I think you have already given a clear answer to this, but I want to emphasise it. You are distinctly of opinion that there is no harm in supplying milk from cows that have reacted, or, at least, that there may not be any harm?—Did I say that?

30836. I understood you to say it?—I think not, Sir. I do not think I went further than to say it was quite conceivable that a cow might give non-tuberculous milk although she had reacted.

30837. Suppose a cowkeeper tests his cows, and forty per cent. react, and yet they appear to be sound, healthy cows; would you say to that man, "You must slaughter these cows"?—No; I should simply tell him to purchase an apparatus or hire an apparatus—it can be hired—to sterilise or pasteurise his milk before selling it. I would not take the responsibility of letting him sell his milk raw.

30838. As a matter of fact, there are not many tested herds in Manchester?—There are none.

30839. But it is certain that if they were tested a fair proportion of the animals would react. Now, suppose you get a man to test his cattle, so that he knows which are tuberculous and which are not, surely there is no difference in allowing him to sell their milk after the test has been applied and in allowing him to sell it before, as you do now? The only difference is that before the test you cannot point to the particular cows, though you know that there are cows in the herd which will react?—We do not say we are right in allowing him to sell the milk now.

30840. But he is allowed?—I know he is.

30841. But why should you punish the farmer for having applied the test to find out which are the reactors and which are not?—I do not admit that we punish him. We cannot compel him to test his cows.

30842. But if he does test them you penalise him?—No.

30843. In effect you do.—It might appear so on the surface. But if a man tests his cattle and finds a percentage of reacting cows, I do not see how he can be allowed to keep those cows permanently.

30844. He does not keep them permanently in any case. But my point is that, knowing that some of the cows would react, he does not apply the test, because he knows that if he did you would come down upon him about the milk from the reacting cows. Do you not think it is rather unfair?—No; I do not.

30845. Well, I think it is. Do you not see that it prevents the man testing his cows?—Not a bit. It is not that which prevents a man from testing his cows.

30846. But if he does test, you tell him, and you compel him, to get the milk from the reacting cows pasteurised before selling it?—Quite so.

30847. So, therefore, he says to himself: "I won't test my cows; I will remain in ignorance."—He is allowed to do that simply because we have not power to compel him to test.

30848. But he has no inducement to do it; on the contrary he is afraid to do.—I think the Corporation would be willing to give him some inducement.

30849. Suppose he voluntarily says he would like to test his cows, and get rid of the bad cows. He does test them and some react. Then you tell him to pasteurise their milk?—Quite so.

30850. Then my point is that he is not going to test his cows.—Of course, my duty to the public does not cease on finding that a cow is tuberculous. As a public official, and on the grounds of public health, I must take care that no risk is incurred from animals which I know are risky animals in the stock. Of course, I admit that I do not know which are the tuberculous animals at present in many cases, though I may suspect.

30851. And the farmer does not know. He may want to know, but it would not pay him to know, for the simple reason that you would then compel him to go to the trouble of pasteurising his milk?—If that would stop him from having his herd tested, I do not think he would have the test under any conditions. It is a small incidental detail.

30852. Although he has to pasteurise his milk?—Small quantities of it.

30853. But if forty per cent. of his herd reacted he would have to pasteurise a good deal?—I do not see much difficulty. If he cannot pasteurise himself he can get others to do it for him. There are always ways and means.

30854. Well, I should hardly like to ask a farmer to pasteurise his milk as a procedure that would not give him any trouble. Suppose the cows are passed by you as apparently all right, but the farmer tests them and finds that some of them react. If you could then say to him: "You may keep those cows and sell the milk as you have been doing hitherto, but we want you to clear out these animals gradually and get in a sound stock." That might be some encouragement to him to face the test?—Possibly. But my side of the case, as the public official responsible, has to be looked at too. I cannot tell at what period the udder may become tuberculous, and the cow begin to give tuberculous milk, and, therefore, I cannot afford to run any risk with animals that are known to be tuberculous.

30855. But suppose when you went to a place you were able to say to the farmer: "You have had your cows tested; where are the reactors?" and the farmer was able to point out to you those which had reacted and those which had not, would that not simplify the task of inspection?—No; I should not believe him if he said it.

30856. Not even if he had a veterinary surgeon's certificate?—I am very sorry for it, but my knowledge of human nature has not given me a large faith.

30857. Not even in certificates of veterinary surgeons?—Of course, I am not doubting the good faith of the veterinary surgeon at all, but it is very easy to swop cows about from one place to another.

30858. The CHAIRMAN.—You mean you would have no conclusive proof that the certificate produced referred to the cows then on the farm?—That is so. I myself am repeatedly asked to give certificates when particular carcasses have been passed for human consumption. But I always refuse, because I do not know where a certificate might go to.

30859. I understand that you have no objection to these reacting animals being fattened off and sent to the butcher?—None at all.

30860. But you do object to the farmers sending in milk from a cow, no matter how healthy she may look, if she is known to have reacted?—Certainly.

30861. Sir STEWART WOODHOUSE.—Is Salford within your jurisdiction?—No, it is a Royal Borough.

30862. Then for your purposes it is outside Manchester?—Yes.

30863. But you have the same power to go in if they are sending milk?—Absolutely.

30864. When you visit a farm outside the Manchester area that supplies milk to Manchester, and you find that it is not satisfactory from your point of view, do you stop the supply of milk till it is made satisfactory?—There is a clause in these milk clauses, a very important clause (Sub-section B, Section 6); it is exactly the same Order which appears in the Dairy and Cowsheds Order.

30865. In the case of a gross offence, where the farmer ought to be prosecuted, does the Manchester Corporation take proceedings on its own account—against a farmer outside the city?—No, not against the farmer. All we can do is to go and inform the medical officer, if tuberculosis is likely to be caused in the city we can summon him to appear before the Sanitary Committee, and ask him to show reason why an order should not be issued forbidding him to send milk into the city. This order is subsequently issued. But they are only gross cases of insanitary conditions and badly infected herds. In these cases we use this order. In all these cases, or practically all these cases, where this order was made, we have some ulterior object in view, and that is to secure a reconstruction of the premises, and with the exception of two cases, that has been done.

30866. The CHAIRMAN.—Suppose that the owner of a herd says that he defies you, and that he still sends milk in?—We have protection in this order.

30867. Accumulated penalties that will make it unprofitable for him to continue?—Absolutely. He may get it in surreptitiously under the name of another person, but we have all sorts of sources of information.

30868. Professor METTAM.—When milk is obtained at the station consigned to a merchant in the city, and it is found to be tuberculous, do you enter into communication with the person to whom it is consigned?—None whatever. We go directly to the man who has sent it. Sometimes if the address is incomplete we go to the dealer and say, "Will you give us this man's address; we want to go to his farm."

30869. No responsibility attaches to the merchant?—No.

Dr. A. K. CHALMERS, M.D., D.P.H. (Camb.), examined.

30870. The CHAIRMAN.—You are the Medical Officer of Health for the City of Glasgow?—Yes.

30871. Would you kindly tell us what steps are taken by the local authority in the City of Glasgow for the control of the milk supply?—In Glasgow we have, of course, the clauses of the Scotch Public Health Act, and we have, in addition, the provisions of the Dairies' Order. But, further than that, we have the special power granted to us in the Glasgow Police Amendment Act of 1890, which empowers inspection to be made of outside byres if milk is being sold from them within the city. That is contained in sections 24, 25, 26, and 27 of the Glasgow Police Act. These clauses were designed to deal with tuberculosis, but sections 17 and 18 of the same Act conferred certain additional powers on the local authority with regard to stopping the supply of milk from outside farms likely to convey infectious diseases, as then understood.

30872. Are the provisions of that Act substantially the same as those which are embodied in the clauses which are known as the Manchester Milk Clauses?—They run on somewhat similar lines, but they do not make specific reference to tuberculin, because, of course, there was no tuberculin at the time they were passed.

30873. They confer the power of outside inspection?—Yes.

30874. Professor METTAM.—They do not limit the nature of the inspection?—No; they have reference to tuberculosis, but could also apply to any other disease that may be dangerous to health.

30875. The CHAIRMAN.—How far have these powers been exercised by the Glasgow Public Health Authority?—They have been exercised to some extent in connection with tuberculosis only.

30876. Have they ever been exercised at your suggestion when an outbreak of infectious disease, such as scarlatina or diphtheria, has arisen in the city?—Oh, yes, in connection with diphtheria, and probably more often in connection with septic sore throat, advantage has been taken of them. They have been useful to that extent.

30877. And have they frequently enabled you to trace the source of infection to the milk which is sent into the city?—I can give you some figures for several periods. I have in a report here of 1907 a statement of the condition as we knew it in the years between 1901 and 1906. But since 1907 onwards the question of visiting the byres, on the lines indicated by an analysis of the milk, has led to the following results. In 1907 there were taken at the railway stations 168 samples, and 43 were found tuberculous, that is on inoculation. In 1908, from country byres, 417 samples were taken, and 18 were found tuberculous, or 4.3 per cent. In the same year, from town byres, 108 samples were taken, and five were found tuberculous, 4.6 per cent. From the byres supplying milk to the hospitals the number of samples taken was 174, of which four were tuberculous, or 2.3 per cent.

30878. Would you tell me whether special provision is made in the case of the milk supply to the hospitals for subjecting the animals to the tuberculin test?—Yes; we do that as part of the contract.

30879. Is that why the percentage drops in the case of the hospitals?—It vanishes altogether from the hospital byres in the following year. I may explain that I call them hospital byres because they send milk to the hospitals; they are not in any sense the property of the hospitals.

30880. Is the milk supplied to the hospitals pasteurised?—No; we object to that.

30881. You think it interferes with the nutritive properties of the milk?—I believe that is a disputed point.

30882. I know; I was only wanting your own personal opinion?—Well, I prefer milk that is wholly fresh. There is something done by heat, especially if raised to near boiling point, that undoubtedly injures the milk. That is my own personal opinion. I think, instead of pasteurisation, the better way would be to have the milk protected by cooling. We have endeavoured to arrange with the farmers supplying the hospitals that it should be of that character.

30883. To have it cooled immediately it is drawn from the cows?—Yes.

30884. You prefer an unpolluted supply to purification after pollution?—Yes. Perhaps I may add to the figures I have already given those for the period 1909.

The country byres had 5.7 per cent. of tuberculous samples out of 423 taken, and the town byres had three per cent. The hospital byres, 47 samples, were free. In 1910 the country byres had 1.9 per cent. of tuberculous samples out of 466 taken, and the town byres 1.2 per cent. In 1911, the last completed year, eleven out of 535 samples, a little over 2 per cent., were tuberculous in the country byres, and only one out of 142 samples in the town byres, and none again in the hospital byres.

30885. Practically for the whole period the milk raised in the city was in reality freer from tuberculous taint than the milk coming from the country area?—Except in the first year, but then the samples were only 108, as against four times that number in the country.

30886. A very much larger proportion of the milk comes from the country than is raised in the city?—A very much larger proportion. The reduction of byres in Glasgow has been quite considerable.

30887. Has the legislation of the Public Health Committee in Glasgow so restricted the privileges enjoyed by keepers of cows as to render it unprofitable to keep them?—The cows have been reduced from 910 to 641, but that figure would not be true of Glasgow to-day. To-day we have taken in a large suburban area, where cows have been kept and will be kept for some time.

30888. Where you have been obliged to go into the country to determine the conditions under which milk is produced have you met with hostility from owners or from local authorities?—No.

30889. You have not been obliged to have recourse to a magistrate's order to secure inspection?—Not in any case. I have been accused of not getting a magistrate's order sometimes by critics, but we have always found it better to get to work in a voluntary way with the county authorities and to co-operate with them.

30890. Do you find them willing to co-operate with you?—Invariably. No friction has arisen between the Public Health Committee of Glasgow and the outer authorities with regard to inspection within the limit of authority of these local authorities.

30891. Have you figures showing the number of prosecutions instituted under the Food and Drugs Act for the adulteration of milk?—I think I have them in the Sanitary Inspectors' Report. This report shows that it consists very largely of added water. Some had added water and there was a deficiency of fat.

30892. Does the report show what fines were inflicted?—No.

30893. I wanted to know from this particular point of view whether the Public Health Authority in Glasgow has any reason to complain of the manner in which the magisterial bench has dealt with offences under the Order. I am talking of the general administration of the Public Health Department, because we have heard that sometimes the magisterial bench fails to realise the gravity of offences against local by-laws framed for the protection of the public health. Has Glasgow the same complaint to prefer against the local magistrates?—I don't think we have any reason to complain. There were questions a long time ago where meat was involved. There has never been any question in regard to milk.

30894. I think that you are a strong believer in the necessity of a pure milk supply for Glasgow?—Yes; if you are going to use milk it ought to be good.

30895. Would you subscribe to the theory that the improper nourishment of infants in earlier years would in all probability weaken their constitution in after life, and render them more liable to the development of infective diseases if exposed to them?—Oh, I think that reduced vitality would increase susceptibility.

30896. There is no public milk supply governed or controlled by the Glasgow Public Health Committee?—We had an infants' dairy for several years, but it has been abandoned.

30897. Why?—One of the reasons was a comparison of the weights of children fed only on sterilised milk with the weights of children fed on breast milk and other foods. We began pasteurising the milk. Then on hot days corresponding with week-ends we had complaints from parents that the milk was turned, because we did not pasteurise on Sunday, but sold double the supply on Saturday. In order to get rid of this difficulty of souring we carried on a series of experiments.

30898. Miss McNEILL.—Was it decomposing or souring?—Souring in the bottle. I subsequently had interviews with the Professor of Physics because some question was raised as to the occurrence of a vacuum under the stopper of our bottles. He did not think that was the case, and we adopted the practice of bringing the temperature up to 220 deg. to ensure complete sterilisation. That was the reason why our children suffered, I believe.

30899. The CHAIRMAN.—Because of the prolonged exposure to a temperature of that range?—I think the material which Dr. Lane Claypon has collected lately throws some light on our problem. I do not think we were aware at that time that you do something injurious to milk by keeping it at a high temperature for a prolonged period. We all suspected it, but it had not been demonstrated. The result was that babies fed on sterilised milk were lighter than the babies fed on any kind of artificial food, and, of course, lighter than babies fed on the breast. That is why we stopped it.

30900. While that scheme was in operation was any portion of the expense borne by the public rates?—It was borne on the "common good," which is not a rate, but a funded investment of the Corporation.

30901. Is the "common good" a philanthropic fund?—Oh, no. It would have been borne on the rates, but as a matter of book-keeping it was debited to the "common good."

30902. Miss McNEILL.—It was a Corporation undertaking?—Entirely, and you can say that it was borne on the rates for practical purposes.

30903. The CHAIRMAN.—That is the point I wanted to get at. I take it, then, that it has been established that the expenditure of public money is legitimate to meet such an emergency as the Health Committee were dealing with? It was sanctioned by the auditor?—We did it without asking the auditor. Our auditor simply pointed it out, but said he would not surcharge it. I think that coincided with the time when the English Local Government Board auditor surcharged the Battersea Council for similar expenditure, but that expenditure was ultimately allowed.

30904. But the fact you mention about the auditor pointing it out had nothing to do with the abandonment of the scheme?—Absolutely nothing.

30905. It was abandoned because it was ineffective in its results?—Because it did not produce better babies than other forms of artificial food.

30906. But even though it may not have done that, do you think it ensured that these babies were fed on more healthy food; that the milk supplied to the babies was less likely to convey infective germs into their systems than milk which had not been so treated?—We, of course, sterilised the milk not only of its nutritive, but also of its carrying, propensities. I do not know whether you happen to be acquainted with another movement in Scotland just about the same time as our experiment. Mr. Budde, a Norwegian, introduced milk, which was sterilised by peroxide of hydrogen. He established a depot in Edinburgh, and the physicians of the children's hospital there pointed out, about a year and a half afterwards, that they were getting cases of infantile scurvy in children fed on this milk.

30907. Miss McNEILL.—Did you ever come across cases of scurvy or scurvy rickets in connection with your Glasgow depot?—Personally, I did not, though I was constantly on the look out for them. I was told by hospital-dispensary men of one or two cases which they had come across, and of which they intended to let me have full details. But they did not come to anything; I never got details. Personally, I do not know of one case in connection with our depot.

30908. I have heard of such cases, but I do not know that they were actually demonstrated.—In connection with the milk sterilised by peroxide of hydrogen, I believe they were.

30909. But in connection with your Corporation depot?—No. As a matter of fact, the particular physician who mentioned the matter to me removed to London about that time, and I never had any details from him.

30910. Have you ever traced infection in the cases of diphtheria, scarlatina, or typhoid fever to the milk supply?—I think Glasgow is one of the places where the relation of milk to the distribution of certain infections by milk was first established. It has been traced to milk both at the point of production and the point of distribution.

30911. Can you tell us shortly what steps were taken in individual cases in order to ensure the safety of the public health, and what measure of co-operation you have received from the milk-vendors and producers?—For more than twenty years there has not been the least difficulty with the vendors; they have shown themselves perfectly willing to give us every facility. They supply us with lists of their customers. Of course, we have legal power to get these lists, if they refuse, but they give them without hesitation, and they also supply us with lists of the dairymen and farmers from whom they draw their supply. They are as eager as we are; it is not so much the legal penalty as the commercial penalty which follows if the milk supply is suspected and public excitement gets up. One outbreak occurs to me. The distributor sold milk in Glasgow, and also in Partick, which was not then, but is now, a part of the city. The milk was received from another area. The infection did not arise in the premises of the milk purveyor. He was a mere collector of milk, and as soon as it was brought to his notice he gave us every information as to the sources of his supply. One of the troubles we have to face in these circumstances is the mixing that takes place by the purveyor. In this case the distributor believed that the people who were sickening were getting milk from a particular farm, which ultimately proved not to be the farm at all. But we had no difficulty with anybody so long as we completely abandoned what legislation has laid down as to what one ought to do and ought not to do. I never believed much in adhering strictly to prescribed courses in such circumstances. When there is any suggestion of infection through the milk supply I go at once to the medical officer of health for the district where the milk is coming from, and ascertain from him whether disease exists at the farm. The usual reply is "when can you come and visit the farm with me." We endeavour to visit the farm at once.

30912. The CHAIRMAN.—Do you prescribe the Widal test for employment?—Not as a condition of employment, but in circumstances like the following. We had milk coming from a farm in Dumfriesshire, where one of the workers took enteric. She was taken to the hospital at once, and the place was disinfected by the county authorities, and afterwards I asked the county medical officer to look after the "contact" and to apply a Widal test. I have also required examination of throat-swabs in connection with diphtheria.

30913. Do you always find the local medical officer of health willing to carry out this test?—Always.

30914. What power would you have?—Probably none in a strictly legal sense. But we put it to him as a reasonable proposition.

30915. Antipathy to the test has not led to much difficulty of administration?—No.

30916. Professor METTAM.—They don't refuse to shed their blood?—No.

30917. In the case of diphtheria, after the patients are removed to the hospitals, you want to swab the throat of everybody on the farm?—The county authorities do it.

30918. The CHAIRMAN.—But they are always willing to co-operate with you?—Oh, yes, but our local Act was passed in 1890, when the present county administration in Scotland was not in existence.

30919. Have you a county medical officer of health in each county?—Yes.

30920. And the county medical officer would have jurisdiction over every portion of the county in which he holds his appointment?—Yes.

30921. If the local medical officer refused to carry out these recommendations, or was lax, he would have the right to go himself?—Our system is like this: Where a county is an administrative unit there is a county medical officer, but where there are divisions each is a local authority, and the County of Lanark, for instance, is divided into three divisions. The medical officer for the county is the medical officer for each division. He has jurisdiction, so to speak, over himself.

30922. That works effectively?—Yes.

30923. Professor METTAM.—Take Fife, for instance?—Fife is a complete county. The Burghs are not included in the county. They are local authorities picked out of the counties, and there the county medical officer has no jurisdiction.

30924. You have a bacteriologist in Glasgow?—Yes.

30925. Where milk is certified to be infected with tuberculous germs do you take action with regard to

the herd from which it has been supplied, and does your authority insist upon the cows supplying the milk being subjected to the tuberculin test?—With regard to the action taken after the discovery of a sample of tuberculous milk, the herd is examined, and if the affected animal can be located, it is expelled from the byre, under a penalty of five pounds (Section 26 Glasgow Police (Amendment Act, 1890). With regard to tuberculin, it has been held that our clause does not cover its use.

30926. As regards the sterilisation of milk, when you sterilise at a high temperature it is not so suitable for food, as a food?—I believe our experience has demonstrated that.

30927. I suppose it would be less digestible, and, consequently, less assimilable—that would be the explanation of why the children suffered?—I believe that is one of the reasons why our milk depot babies were lighter in weight.

30928. Lady EVERARD.—Have you ever tried cooling?—We have tried, with the hospital milk, to get a temperature record. Roughly, it averaged something just under 50 deg. But we can only obtain such cooling as might be done by the water supply. Few farms have artificial appliances for the purpose.

30929. You do not get it at the hospitals in ice?—No.

30930. We have had evidence that they cool it in Australia?—I think it is the practice in Australia, and also in Canada, and the United States, and elsewhere.

Miss MCNEILL.—It is quite general in the States, I believe.

30931. Professor METTAM.—You gave us some interesting statistics as regarded the diminution of the number of tuberculous samples of milk taken in Glasgow. Can you offer any explanation why it gradually went down, from over four per cent., practically to zero?—It is only an inference, but I take it that the farmers had really wakened up, because the presence of tubercle in milk was being demonstrated.

30932. Mr. CAMPBELL.—I understand that these samples were not taken from the farms that were under contract to supply milk from tested cows?—There are two points to be remembered. It went down in the general supply, and it disappeared altogether in the hospital supply.

30933. All the milk supplied from the hospitals comes from tested cows?—Yes, for the fever hospitals belonging to the Corporation.

30934. So that, in a reasonable period of time, the farmers themselves were able, practically, to eliminate tuberculosis from their milk?—That appeared to be the case. Of their own initiative, they were able to recruit their stock in such a way that they got fewer tuberculous animals, and, consequently, less tuberculous milk.

30935. Have you much trouble about the quality of the milk sold in Glasgow?—I suppose one ought to say it is pure. But I think Glasgow, like most other large cities, suffers from the standard set up by the Milk Commission. The milk is not watered down, but sometimes it is diluted down, by the addition of separated milk.

30936. But is that legal?—Not, of course, if you bring it down below the standard.

30937. But is it legal to bring it down to that of separated milk?—When the fat exceeds the standard it is diluted with separated milk.

Miss MCNEILL.—I believe the legal requirement is that milk shall be supplied with three per cent. of fat, without depreciation of other solids.

30938. Mr. CAMPBELL.—Do you happen to know if there is any great range in the quality of the milk as it comes into Glasgow. Have you had any difficulty, for example, over the question of the difference between morning and evening milk? Have there been prosecutions?—There have been prosecutions, but I am not sure that this question of morning and evening milk has arisen. I ought to have given you an explanation before this of what, I fear, is the disappointing character of the Glasgow evidence. The fact is that the meeting of the Commission happens to fall in the worst week, for us, of the year. This is the week of our city extension, and, in consequence, all the time I have been able to give to the preparation of my evidence has practically had to be given in the train.

30939. The CHAIRMAN.—We are very much indebted to you, none the less. We all recognise the strain which is imposed on public officials?—If one had been able to prepare a précis beforehand, many of these points would have suggested themselves.

30940. Mr. CAMPBELL.—It is not a burning question?—I can, however, give you some figures about the prosecutions. The sanitary inspector reports that samples of milk and cream were examined for the purposes of the Food and Drugs Act, in 1911, and the correct number of non-genuine samples, in connection with which proceedings were instituted, was 45, or 18.7 per cent. of the total statutory samples submitted for analysis. In 31 of the cases taken into court, the samples were deficient in fatty solids, 8 were deficient in non-fatty solids, and 6 in both fatty and non-fatty solids. One of the first group also contained boric acid. The total amount of fines and expenses imposed and recovered in respect of these 45 samples was £83 6s. 6d.

30941. Is there a considerable amount of separated milk coming into Glasgow for consumption?—There must be.

30942. How do you regard it as a food for Glasgow people?—It is not a complete food at all; it is absolutely lacking in fat.

30943. You would not condemn it altogether as a food?—It is used for making scones, and it is used very largely for reducing the milk to the legal degree of fat.

The CHAIRMAN.—Instead of water?—

Mr. CAMPBELL.—You mean, for reducing the quality of the milk?

30944. Sir STEWART WOODHOUSE.—To what extent is the Widal test applied in connection with farms? Is it applied on farms where typhoid fever has broken out amongst those who handle the milk?—The incident which I related of the outbreak brought that point prominently before us, because it was the second or third illustration in this country of a carrier being the cause of an outbreak. The carrier was an old woman who had had enteric fever twenty years ago, and who seemed to be perfectly healthy. In that case we had the Widal test applied.

30945. Are preservatives allowed in Glasgow?—They are allowed by law. At least boracic acid is.

30946. You allow it by law?—It is not prohibited.

30947. Does it occur much?—Yes, it does.

30948. Miss MCNEILL.—When you had your milk depot, there was a considerable loss each year?—Yes, it cost about £2,000 per annum.

30949. And dealt with how many babies—1,200?—I think that is the case.

30950. That £2,000 loss was loss in addition to the money paid by people who bought the milk?—The total cost of the dairy was nearly £4,000. We got from milk sales more than £1,000, and the balance was loss.

30951. You sold the milk at a low rate?—Oh yes. We sold it for much less than we can produce it at.

30952. Your loss was up-keep and administration?—Yes.

30953. The CHAIRMAN.—Had you any difficulty in keeping up the standard of butter fat in the milk supplied for your scheme at that time?—No. It used to run about 3.7 per cent.

30954. Mr. CAMPBELL.—Have you a standard for buttermilk in Glasgow?—No; I do not think there is a standard anywhere. Do you mean a standard for fat?

30955. No; for solids. I asked the question because it is an article that is heavily diluted in the churning process, and I happen to know that it is very much used in Glasgow. In Ireland there has been considerable pressure exercised to get a standard fixed for buttermilk?—I am not sure that Dr. Droop Richmond did not discuss all that at the Milk Standard Inquiry. I have the impression that he did. One of the difficulties that lies in the way of the whole movement is the failure to distinguish tuberculosis, and to treat it on a basis of its own. Administrative confusion also arises, because you have the same word to describe the place where the milk is produced and the place where it is purveyed. And now the cart by which it is carried is called by the same name—a "shop," or a "farm." I think some further definition is required. I think also, that a man should not be allowed to sell sterilised milk without labelling it, just in the same way as it was suggested at the Milk Standard Inquiry that skimmed milk should be labelled. There is this difficulty, that the purveyor of milk receives his fresh sweet morning milk from farms within driving distance of the city, but later in the day he receives the milk by train from greater and greater distances. He sterilises, or pasteurises his late supplies of the afternoon, and these are mixed with next morning's early fresh milk.

30956. Would you say that butter and buttermilk should be brought under the same regulations as milk?

—So far as production is concerned, yes. But if you try to include all places, whether for production or distribution, you are compelled to bring in the grocer's shop, where they sell tinned milk. I think it is essential that you should distinguish the place at which you produce milk from the place where you sell it. There are really four stages from the producer to the consumer, and the mixing that takes place on the way makes it almost impossible to unravel the knot, if you have to trace the source of infection. The greatest difficulty arises through the way in which dairymen, however willing they may be to help you, constantly confuse themselves by their own trade methods, by mixing the milk from one district with the milk from another, and by mixing skimmed milk with sweet milk. I think all the different sorts of milk ought to be labelled.

30957. The CHAIRMAN.—Is there registration of milk shops in Glasgow?—Yes; but I think a licence should be required.

30958. In what circumstances is registration carried on? Is any inspection made before registration is granted?—Yes. Under the Dairies Order one of the many powers is that we are able to regulate the structural details. Until the structure corresponds to the bye-laws, the dairyman cannot begin business. There is no cognisance of a change of ownership, however, though that may mean an enormous difference in the method of conducting the business.

30959. And of management?—And of management. I think the premises and the dairyman want not only registration but licensing. For myself, I do not approve, generally, of the principle of going out of one's own area to inspect the sources of supply. Administratively, that is bad, I think. It may be a good thing for the individual city, but it is very bad from the point of view of general administration. Why should you in Dublin, say, be able to go into Wicklow and say—"we won't have your milk in our city, but you may send it to Cork? Or why should I in Glasgow be able to go into Lanarkshire and say—"don't send your milk to Glasgow; send it to Paisley"?

30960. Why should you say that?—I mean inferentially.

30961. That is, you don't say it in so many words, but you say it in effect?—What I mean is, that if you have power to set up a barrier against receiving that milk in your own town, and the milk goes on being produced, it must go somewhere else. I think the better plan would be to have farms licensed. The licensing authority would require to be a local authority for the district in which the farm is situated, and it should be possible for any local authority, within whose boundaries the milk from that district is consumed, to appear before the licensing body, and show cause why the licence should not be renewed.

30962. In what circumstances do you contend that that power should be conferred? Is it a case of the laxity of local bodies in enforcing the existing provisions of the law?—I prepared a paper on that very subject for the Infant Mortality Conference in 1905. Mr. Power, who was, at that time, medical officer to the English Local Government Board, told me that in England there were 1,791 local authorities, and 1,100 only of them had made regulations under the Dairies Order. At that time we had 321 local authorities in Scotland, and 221 had made regulations. Those figures show the sort of apathy which characterises many local authorities. I would have it made compulsory everywhere.

30963. Lady EVERARD.—You would substitute "must" for "may"?—Yes. I advocate a licensing system. A local authority whose population received a supply of milk from another district could appear before the sheriff, or whoever might be the authority for that other district, to show reason why a particular licence should not be granted, and the licensing authority would, of course, inquire into the validity of the objection. As to the objections that would be raised, there is nothing more common, in dealing with farmsteadings, than to find that there is absolutely no structural separation between the domestic life of the family and the domestic life of the cow.

30964. The CHAIRMAN.—I recognise the importance of the point you raise; but the difficulty would be more readily dealt with if a code of regulations was laid down by a central authority, applicable to every individual local authority throughout the country, the enforcement of which would be supervised by the central authority?—One difficulty one sees there is that the

central authority could only erect its standard on the possibilities of things in the poorest and most rural authorities.

30965. I see your point. It would be impossible, in your opinion, to fix one common standard to govern every condition, and every local authority?—Yes. I think it would be a serious injury to the trade if certain conditions were imposed in certain rural areas. And the hardships might possibly be the other way about. You might be compelled to approve of byres in the town which were only suited to the country. One feels that the consumer has some right to indicate the conditions under which he will choose to take milk, but I have often thought that this power of a city to say "we won't have your milk" might be unjust to a neighbouring place, rural in its organisation.

30966. Is there any other point to which you wish to direct the attention of the Commission?—No; we have covered most of them. There is the question of handling the milk, and the supply of milk in sealed vessels. One enormous source of impurity is the frequent decanting of the milk. It is poured from one jug to another, and gets millions of bacilli, which sour the milk. Some excellent systems exist, however, where the milk is filtered and cooled and bottled. It is sold in quart bottles at fourpence, all the year round. When we stopped our depot I asked a dairyman if he could bottle half quantities—pints instead of quarts. He said the difficulty, curiously enough, was the bottle. Ultimately he solved it. I think that legislation should chiefly aim at the production of milk that does not require to be sterilised.

30967. Miss McNEILL.—You can't vend milk very far away from the source of production, if you bottle it, because the carriage of the bottles becomes so big?—But if you have got chilling and sealing, you can carry it 100 miles. They supply it so treated to the hospitals in London.

30968. For some time I was in a hospital in London, and they used to get milk in quart bottles from the Aylesford dairy?—The dairyman is discovering that sterilising has a commercial value; that it will keep milk fresh. We must make its use reasonable.

30969. The CHAIRMAN.—I do not think we have made much progress in that direction?—I do not think we have. There is another thing I might mention. I do not know whether it prevails to the same extent in England, but one source of impurity of the milk supply in Scotland arises in the carrying of the milk by carts. I think those who carry it ought to be licensed also.

30970. They are not careful in their habits?—Some of them are filthy.

30971. The boys in the carts?—Yes.

30972. Have you any reason to complain of the state of the vessels used—the milk cans?—I think the cans are generally all right. It is the sort of thing that goes on in the handling, while the milk is being distributed or retailed, that I had most in mind.

30973. The boys have no scruple in pouring milk into measures which are exposed to dust and dirt?—That is so. Then there is another thing, which is bound to come up. There was a very good expression in Mr. Burns's bill in regard to the power to suspend the supply of suspected milk at once. It seems to me that if the medical officer has reasonable ground for thinking that infection is being spread by milk, he should then be able to suspend the milk supply without waiting for legal evidence. Of course, the doctor and the lawyer look at evidence from an entirely different point of view, and in these cases the time required for the collection of what the lawyer regards as evidence simply means prolonged opportunity for the bacilli.

30974. You mean that a great deal of harm may be done in the meantime?—Yes. If one finds several cases of diphtheria in one milk supply, for instance, that should be quite sufficient evidence to justify one in suspending the supply. Legal evidence may be submitted afterwards. There was something similar to that introduced into the English bill. I do not know that it properly comes in here, but it seems to me that one method of getting quit of tuberculosis in our cattle is to have an efficient Board of Agriculture, and to make them responsible for the condition of the cattle, with an insurance scheme. I made some calculations once in relation to udder affections in Scotland, and it seemed to me that an insurance rate of a halfpenny per head of cattle in Scotland would give an allowance of about £6 per head in such cases.

30975. Mr. CAMPBELL.—But that referred only to tuberculosis of the udder?—Yes.

30976. And that is only a small percentage of the tuberculosis in the cows?—I know, but, in the same way, I calculated that 3d. per cow would allow £12 per head for all clinically affected animals.

30977. Have you any idea of the number of affected cows in the Scottish herds?—I have heard it put at 60 per cent.

30978. So high?—Or is it 83 per cent.? At any rate, we are in a fair position to assume what it means. In Vienna an enormous number of children react to tuberculin, but a relatively small number die from tuberculosis.

30979. Professor METTAM.—Does that not apply to other places as well?—Yes, but Vienna is one of the places where inquiry has been carried out on a large scale. We should first get at the number of affected animals, and then we might make some pro-

gress, and by a system of insurance, aided, if you like, by the Government, it seems reasonable to believe that we might get rid of the disease.

30980. Mr. CAMPBELL.—The difficulty about insurance is that you cannot compel them to insure?—Why not?

30981. It is of no use, a few hundred farmers insuring.

Professor METTAM.—If you get an insurance Act, you can make them insure.

The CHAIRMAN.—We have got one.

The Witness.—Inducements might be offered. The Board of Agriculture might offer facilities to farmers for passing cattle under the tuberculin test, when recruiting their stock. Then in return for an insurance of a halfpenny an animal they might offer to buy up all the animals with clinically affected udders.

Mr. A. M. TROTTER, M.R.C.V.S., examined.

30982. The CHAIRMAN.—I understand, Mr. Trotter, you are veterinary surgeon to the Glasgow Corporation?—Yes.

30983. What inspection do you carry on with regard to cattle under the Glasgow Corporation?—The inspection of cows comes under three heads; (1) the city; (2) the county; (3) hospitals. The hospitals are under special contract. The milkers must be in complete overalls, and must wash their hands before milking each cow. Every cow is tested for tuberculosis.

30984. What percentage of reactions do you have?—Between 70 and 80 per cent. reacted.

30985. Mr. CAMPBELL.—Are you talking of mixed herds?—Yes, all sorts.

30986. Mainly Ayrshire cows?—No. They are bought in the best market for milk production. Many of them are Irish cows.

30987. Do you find that 80 per cent. of the Irish cows react?—I do not say so. Our supply comes from different quarters of Ireland, but we are getting a larger number now-a-days affected with tuberculosis.

30988. Professor METTAM.—Are they old cows?—Yes. The greater number of the Irish cows we get are about twenty years old.

30989. They should know better?—I am speaking for the abattoirs.

30990. How often do you repeat the tuberculin injection for the milk that comes for the hospitals?—Every year.

30991. Not more frequently?—No. In 1911 we tested 98; 58 were passed in the herd; 80 were reactors; and 10 were doubtful.

30992. Mr. CAMPBELL.—What became of those that reacted?—They were disposed of.

30993. Professor METTAM.—Resold, and lost sight of?—Yes.

30994. The CHAIRMAN.—Have you notes of any further period in which you carried out the test, to show the percentage of reactions?—No; we have carried out the test for four or five years.

30995. Is the number of reactions diminishing?—It is variable. With the repeat test you frequently get a number of reactions, because the bacillus may be lying dormant at the first test, and it may spring into existence between the tests.

30996. In no other case do you subject them to the tuberculin test?—No; we have no power.

30997. Have any of the cowkeepers supplying milk to Glasgow had their herds tested, with the object of advertising a guaranteed supply?—Yes.

30998. Does such milk command a larger price than the ordinary commercial rates?—In a few instances, I believe, the consumers will pay a larger price for it, but I think I am safe in saying that the bulk of the people prefer to take the risk, and get cheap milk.

30999. I suppose those who would pay an enhanced price are the more well-to-do people?—Not necessarily. A great many working people would pay a bigger price, in order to protect the health of their children.

31000. When it is proved that a cow is infected with tuberculosis, what action do you take?—I either go to the owner, or notify him by letter, that a certain animal is affected with tuberculosis, and I ask him to remove it from the herd. If he does not remove it, then the town clerk sends him an official intimation that the cow must be removed, and in every case it is done.

31001. Professor METTAM.—But suppose it is not done; suppose he does not remove it?—Then we can take action to make him.

31002. Do you interdict the use of the milk?—No; we cannot. We can insist on the removal of the affected cow from the herd.

31003. The CHAIRMAN.—Have you had to have recourse to drastic methods?—No.

31004. You find that a notice served is sufficient for accomplishing your purpose?—Yes.

31005. Mr. CAMPBELL.—You can go outside the city and do this?—Yes; our powers are contained in the Glasgow Police Amendment Act, and they cover every cow from which we draw our supply.

31006. Suppose the herd is in Kircudbright or Dumfries, how do you do then?—We send an inspector to visit the cows.

31007. Do you know the name of every farmer sending milk to Glasgow in those counties?—No; they are changing from day to day, but I send one of my assistants to the station where I know the milk is coming from, and he makes inquiries, and traces the farm.

31008. Professor METTAM.—How many veterinary assistants have you?—Do you mean for this particular work?

31009. No; in connection with milk work generally?—Five.

31010. The CHAIRMAN.—All qualified veterinary surgeons?—Yes.

31011. You make use of no lay inspection at all?—We have an assistant inspector.

31012. But he has nothing to do with the health of the cattle?—No.

31013. Is abortion at all common among the Scottish dairy herds?—Not very common. Of course that is a matter that very seldom comes under my observation.

31014. Has the price of milk varied in Glasgow in recent years?—It has gone up a little. I think that is on account of the high price of feeding stuffs.

31015. You have no figures which would enable you to determine whether the milk-giving properties of the cows are increasing or decreasing? Are milk records kept to any considerable extent in Scotland?—Oh, yes.

31016. Is it becoming more popular in Scotland?—Yes.

31017. Do you consider the records helpful to the farmer?—Most assuredly. I know one farmer who turned a loss into a profit through keeping records.

31018. The records guide them in the weeding-out of unprofitable animals?—Yes.

31019. And you think the keeping of records ought to be encouraged in every possible way by the State, so as to cheapen the production of milk by having only profitable animals?—Most assuredly. You have a good example of what may be done in Denmark. There they have bred for the production of milk, and for the production of butter. In Scotland we have been breeding to please the eye. Of course, a great many of our town dairymen, and farmers round about Glasgow, are quite unable to improve the breeding, because they do not breed any cows at all.

31020. They buy calving cows from time to time?—It is the dairy farmer in the country who breeds his cows, who would derive the greatest advantage from the keeping of records?—Yes.

31021. What proportion of the Glasgow supply comes from the Ayrshire cows? Would it be a half?—I should say about half.

31022. Is the standard of butter fat higher in the Ayrshires than in the ordinary cross-bred?—I do not think so, but I could not answer that question with any confidence.

31023. Are many prosecutions instituted for the adulteration of milk in Glasgow?—That is not in my department.

31024. The CHAIRMAN.—But one sees, from time to time, reports of cases in which prosecutions have been undertaken?—They are undertaken practically every year.

31025. And substantial fines inflicted?—From half-a-crown to two pounds.

31026. Professor METTAM.—Who is the judge in these cases?—As a rule the stipendiary magistrate.

31027. What control have you over the great bulk of the milk that comes into Glasgow?—We have practically no control, all the control we can exercise is by visitation.

31028. Samples are taken regularly, and submitted for bacteriological examination?—Yes, collected at the farms.

31029. Then the milk, as it comes to the various large stations in Glasgow, is collected by the purveyor, and no further notice is taken of it. Don't you think it would be better if the person who takes this milk as it comes to the city were examined?—Yes, I do, but I prefer visitation at the farms. There are other things besides tuberculosis.

31030. Do you take a certain number of farms periodically?—Yes.

31031. So there is no control of the quality of the milk coming to Glasgow, taken in bulk?—No.

31032. How many cows are stabled in Glasgow?—Less than a thousand.

31033. You have not as many as there are in Edinburgh?—No.

31034. Then the majority of the cattle which produce milk for Glasgow are pastured outside Glasgow?—Yes.

31035. Suppose you have reason to suspect tuberculosis in a herd from which you have taken milk, have you power to apply tuberculin?—No.

31036. You have to be content with a clinical examination?—Yes; but we often do apply the tuberculin test.

31037. But at whose request? Do you persuade the owner to allow you to do it?—Yes.

31038. Suppose you have reason to suspect that a given animal had tuberculosis. Must it necessarily be tuberculosis of the udder before you can stop the milk?—Yes; if it is open tuberculosis.

31039. Lady EVERARD.—Would it assist you if there was a system of licensing instead of registration; if, instead of dairymen being registered, they were licensed?—Registration is no earthly good.

31040. Professor METTAM.—Would you register cows?—Yes, I would. I would take it entirely out of the hands of the local authorities.

31041. Miss McNEILL.—And every cow producing milk should be registered, so that she could be identified wherever she happened to go?—Yes.

31042. Lady EVERARD.—Would it not be advisable that the Dairy and Cowsheds Order should be made compulsory, and not permissive?—It is a national matter, and it should be carried out by a national body. In 1905, in Scotland, out of 400,000 cows only 38,000 were examined.

31043. Professor METTAM.—What percentage of cows suffer from tuberculosis of the udder?—That is a difficult question. If you get into districts where you have old cows, you have a greater number tuberculous. In districts where they keep young cows there are fewer tuberculous. In the slaughter-house, in 1908, we found 2.4 per cent., whilst in a group of live animals one in fifty-three showed defective udders.

31044. Mr. CAMPBELL.—Are there many farmers in Scotland who apply the tuberculin test?—Quite a number.

31045. Do you recommend them to do it?—Most assuredly; if they are going to eradicate the disease.

31046. How would you proceed to eradicate the disease? First of all by having the cows tested, I suppose?—By having them tested.

31047. And what are you going to do with those which react?—All those which are affected with open tuberculosis should be got rid of then.

31048. And how about those which have not open tuberculosis?—They should be kept under observation.

31049. Would you allow the farmer to sell their milk in the meantime?—Most assuredly, so long as it is kept under observation.

31050. But, where the animal develops open tuberculosis, you would send it to the butcher?—That is a different thing.

31051. Then what is the use of your instruction and advice to the farmer if you do not?—I say, let the farmer slaughter the animal himself, instead of selling it to another man.

31052. And sell it afterwards, do you mean?—Yes.

31053. Oh, I do not mind that. You mean that he should take the responsibility himself?—Yes.

31054. I do not mind. But you are of opinion that if the farmer wants to get rid of tuberculosis, he should test his herds. Those which react, and which have open tuberculosis, you would have him destroy, but, in the case of those which, though reacting, are apparently sound, you would allow him to go on selling the milk, as at present while keeping the animals under observation; and if they were fattened off, you would allow him to slaughter them and sell them, so long as the meat was sound?—Yes, I could say that. It does not follow, of course, that the milk of a reacting cow is affected. I have tested 113 cows which reacted under tuberculin and none of which were affected with tuberculosis, so far as one could see.

31055. It would have been foolish to slaughter those cows, just because they reacted?—Yes. But, of course, all these cows were affected, and they required to be kept under careful observation.

31056. I quite agree with you. I am willing to go further, and say that, if public facilities were provided, you might insist on the farmer having his milk bacteriologically examined in such cases?—Yes; the Government ought to give facilities.

31057. Lady EVERARD.—They do in Denmark?—Yes; I believe they do.

31058. Mr. CAMPBELL.—But my point is that if you want to make any progress in eradicating tuberculosis, then, after the tuberculin test has been applied, you must have some reasonable way of disposing of the unsound animals?—Yes. Of course, I am a public official, and it would be very awkward for me to say that I would advise the farmer to sell his diseased cow to another party.

Mr. CAMPBELL.—But somebody has to say it—

The CHAIRMAN.—I fear the probabilities are that the farmer will do it himself without being told.

31059. Professor METTAM.—The way out of the difficulty is, of course, for the farmer to keep these cattle in good condition, and to pick them out for the butcher from time to time, until he has got rid of them. Let the carcasses be subjected to the usual veterinary examination. If they pass muster, the farmer gets the price; if they are condemned, then there may be a question as to the means by which he should be recompensed. But you insist that a man who has got tuberculin reacting animals should send them, sooner or later, to the abattoir? I think you can agree with that, too, Mr. Campbell?

Mr. CAMPBELL.—I agree. But if you send a fat reacting cow into the market, you may be accused of having sold a tuberculous cow. That is the difficulty, and no farmer likes to face the risk. But Mr. Trotter will not even go so far as to allow him to sell it in the open market. He says, "let the farmer slaughter it himself, and take the responsibility." That is something to be thankful for, but not much.

Witness.—The butcher ought to be protected as well as the farmer. The farmer very frequently knows that the cow is diseased when he disposes of it, and the butcher becomes a victim of his greed.

31060. Mr. CAMPBELL.—But it might be said that the farmer is getting rid of the cow for the country's good; he is clearing his stock, and, therefore, improving the milk supply?—In that case let him slaughter it himself, instead of selling it to another party, and putting his loss there.

Mr. CAMPBELL.—Well, I am satisfied, so long as you allow him to sell a cow that has reacted when the veterinary surgeon cannot see anything wrong with the udder.

The CHAIRMAN.—Thank you very much, Mr. Trotter, we are greatly obliged to you.

31061. The CHAIRMAN.—You are the medical officer of health for Leeds, Dr. Cameron?—I am.

31062. Would you kindly tell the Commission what control is exercised by your Public Health Authority over the milk supply?—First of all, we visit all the milk farms in Leeds by one of our regular inspectors. Then we also go further than that. We visit every farm by the veterinary inspector about three or four times a year, and examine every cow, to ascertain whether it is suffering from tuberculosis. We sample the milk in the ordinary way, to see if it contains added water, or there is loss of cream, which, although important, is not so important as the tuberculosis matter.

31063. You also have the powers, which were conferred on Manchester, of outside inspection?—Yes.

31064. You have in operation what are known as the Model Milk Clauses?—We have.

31065. Have you found them helpful to you in ensuring a pure milk supply?—Helpful, but not satisfactory. We do not quite get a pure milk supply. We took last year, 1911, about 141 samples from 122 different outside farms. We found that 5 per cent. of these samples, slightly more than 5 per cent., were tuberculous. These were outside the town. We did not sample specimens exactly in the same way inside the town, but we examined the cows ourselves. Our veterinary inspector went three or four times a year to each cowshed. The percentage of cows suffering from tuberculosis of the udder was rather less than 0.5.

31066. As in the case of other cities, the vast proportion of the milk is raised outside the area?—I think three-fifths is raised outside, and about two-fifths inside, and the one-fifth between the three and the two is raised in the neighbourhood of Leeds. We have recently added a district outside, which contains many milk farms. Two-fifths inside, and three-fifths outside.

31067. Has any friction arisen between your local authority and outside local authorities with regard to inspection which you are enabled to carry out under your inspection powers?—I might point out that we can't inspect unless we have reason to think there is tuberculosis coming from outside. Inside we visit every farm. Outside we can only go where we reasonably suspect; when we have a reasonable suspicion they can't say anything against us. We have had a little friction from one local authority, which thinks we ought to tell them when we are coming to their farms. That is an isolated case, and it is not a reasonable objection, because when we have a suspicion we want to get to the farm as soon as we form it, and before the owner can get rid of his cows. I am not suspecting that their inspector would go behind us, but the natural thing is for us to go straight to the place. It was a real difficulty of that sort which prevented our getting the Model Clauses in 1899. We applied for something much stronger, for the Glasgow Clause. It was a very powerful clause, by which you can go and inspect any farm which sends milk to your area.

31068. Your powers are not so drastic?—No; we could not get that. The whole of us joined together and we concocted a clause. We were the only people who could not get them in full. It was the County Council who bowled us out, on the ground that they wanted to know what we were going to do. We had that knocked out afterwards.

31069. But in the extended powers of 1901. that difficulty has been overcome?—Yes.

31070. Have you had reason to suspect that the milk had been a source of infection in any epidemic of disease, such as scarlet fever and diphtheria?—No; I don't think often. But we have power to inspect under the Public Health Acts, and we have frequently used that power before we got the extended powers.

31071. But you have from time to time had reason to suspect that the milk has been a source of infection within your area?—You mean with regard to ordinary infection? I have, in one or two cases, distinctly found both scarlet fever and diphtheria. We may have had one or two slight cases. On the whole we have gone on this principle. In every case of scarlet fever the name of the milkman is marked down by the inspector, and if several cases occur in houses served by the same milkman, we go and visit the farm.

31072. Have you the power to suspend the supply of milk from these farms the moment you suspect they are the source of infection?—We have never had to do it.

31073. But have you the power?—I don't know. The Infectious Diseases (Prevention) Act of 1890 is very clumsy. You have to visit the farm, and report to the Committee, taking the veterinary surgeon with you. You have to convince the Committee that it is necessary to stop the milk, and by that time, very likely, the mischief is over. In most cases the farmer will do anything we want him to do. Sometimes a farmer has said "what power have you?" I have then said, "I have no power, but I am not convinced that the milk is not the source of infection, and if anybody asks me, I shall say so." If I say that, he is very likely to give way. I find them willing to do what we ask, both inside and outside. My grumble is that we have no right to go beforehand, and see outside what they are doing.

31074. Does your veterinary inspector ever report to the Public Health Authority that he has found suspicious cases in certain herds, from which milk has been sent in? What action is taken on these reports?—Inside the town we deal at once with the cow. We require that the cow should be segregated, and the milk not used.

31075. But, at the same time, if he is a person who is greedy by nature and disposition, and anxious to turn every penny, he may surreptitiously sell the milk from the suspected cow?—There was one particular case in which, I think, that was done. We adopt the plan, in a case of doubt, of stopping the sale of the milk, and we pay compensation for the loss of the milk where we have any doubt. We had difficulty in one case in ascertaining from which cow the tuberculous milk came. One cow we felt sure was yielding the tuberculous milk. We thought the man had separated that cow. The tuberculous milk kept coming in. We got the man to isolate several others; we found that these cows were not tuberculous. We paid compensation, but the tuberculous milk kept coming in, and we suspected that one of the farmer's men was putting the milk of the tuberculous cow into the common stock. When the cow we had originally suspected was killed we found no more tuberculous milk. I think that is the only case in which we had reason to suspect we were being hoodwinked, and in that case it was done by a servant.

31076. How is the doubt ultimately solved? Is it by subjecting repeated samples to bacteriological examination?—Generally we have no doubt, if we find a cow with enlarged udder, and a history of chronic induration, and we do not subject that milk to any special test, unless inside the town. In the outer area we first of all learn that there is tuberculosis in the milk we have examined. We then go and try to find the cow. If we fix on the cow, and we think her udder tuberculous, we get her separated, and take a sample of the rest of the milk. If the rest is free, we conclude that we have hit it.

31077. Have you any difficulty in declaring that it is essential for the child population to have a pure milk supply: that is, if they are to develop into healthy men and women in after life?—No, that is certainly the case.

31078. You regard it as a matter of supreme importance for the Public Health Authority to take every possible precaution to secure that result?—Yes.

31079. You have had no milk depot established in Leeds?—In one sense we have, and in another we have not. We had a rather important experiment of that kind in Leeds. It was not on the line of the Liverpool plan of boiling the milk. We wanted to try how it would be to get a pure supply. We hoped we could get the Corporation to establish a small dairy farm to provide milk specially for one district. It was objected to. It was found to be *ultra vires*. The Lord Mayor wrote to the Chairman of the Sanitary Committee, and offered £200 towards carrying out the experiment. We got a small subscription list, and carried out the experiment for twelve months. One difficulty in dealing with Liverpool was that the medical officer reported that the mortality among children drinking milk is so much, and the mortality among children born, per thousand, so much, the mortality among the children drinking the milk being the lesser number. But the first week of life is very fatal to children, and they do not usually begin taking the milk till a later period. I carried on the experiment for a full twelve months, and I came to the conclusion that there was something like 25 per cent. saved in the mortality of children who were taking the milk provided in that way, as compared with children living in

the same district who were taking either their mother's milk or ordinary milk. We took no selected children; they were picked out only in the way I have described. Eliminating all those under three months, to begin with, we found that something like 25 per cent. were saved.

31080. By the use of a milk supply controlled by the Municipal Authority?—No; not the Municipal Authority, but a private committee.

31081. But under the aegis of the Municipal Authority and by public philanthropy?—By public philanthropy.

31082. Would you say that the cost of such an experiment should be borne out of public funds?—Personally, I should say so, but I am not expressing the opinion of my authority.

31083. But in your personal opinion you would think it a judicious expenditure of public money to provide a pure milk supply for the infant population?—Undoubtedly.

31084. In all probability such expenditure would more than pay for itself later on, by ridding the community of the burden of institutions, such as alms houses, hospitals, and workhouses, or by relieving that burden?—Certainly.

31085. What is your opinion as to the boiling of milk? Do you think it is in any way injurious to the food properties of the milk?—Certainly I do. I regard the living milk as a much more valuable food than the dead milk. I am supposing, of course, in both cases that the milk is pure.

31086. Of course, there would really be no purpose in subjecting milk to this process except for the destruction of the germs of disease which it contains, or may contain. I take it that your ambition is to secure purity by treatment other than pasteurisation, or similar methods?—Yes.

31087. By the careful handling of the milk?—Yes.

31088. By drawing the supply from cows that are proved to be healthy and sound?—Quite so.

31089. And by saving the milk from contamination in transit?—Yes. What I should try to do would be to have selected cows milked under careful management, the milk bottled at once, and reduced to a low temperature, and kept at a low temperature till delivered to the consumer. That is what we were trying to do in Leeds.

31090. The bottling, unfortunately, increases the cost?—That is so, and that affected us. The sterilisation of the bottles increases the expense, and bottling is nothing unless the bottles are sterilised.

31091. Except that the bottles save the milk from exposure to dust. Is there a large trade done in bottled milk in Leeds? Do any of the vendors specialise in it?—They do not exactly specialise in it, but they include it among their sales. I do not know anybody except the dairy at Northallerton, the Wensleydale dairy, who sell absolutely nothing but bottled milk. There they collect the milk from the farms in Wensleydale, and send it down to Northallerton, where it is filtered through sand, reduced to a certain temperature, and bottled. The milk is not sterilised.

31092. Do they sell it at ordinary commercial prices?—Yes; at commercial prices. I fancy it is perhaps a trifle higher than the ordinary supply, but you may say that it is sold practically at commercial prices.

31093. What is the ordinary price; the ordinary retail price, in Leeds?—During the greater part of the summer the milk is sold at 1½d. a pint. It rises to 2d. I think the Wensleydale milk is sold at 2d. a pint at all seasons of the year. Mr. Dixon, the veterinary inspector, could tell you better.

Mr. Dixon.—It is 3d. a quart in the summer, and 3½ a quart in the winter, from the ordinary dairyman. But the Wensleydale dairy secure 4d. all the year round.

31094. Is the Wensleydale milk consumed by the better-to-do people, or is it used to any extent by the industrial population for the food of their children?—I do not think the sale is exploited in the way of the milkman going from door to door. The customers have to go to the shop to fetch it. That means a limited use by a limited class. The Wensleydale dairy milk is supposed to come from farms on which a veterinary inspection has been made of the cows. Of course, I am not able to say whether it is so or not.

31095. It is claimed to be so?—Yes. I do not think the cows are tuberculed; I think they are inspected.

31096. Is your veterinary inspector a whole-time man?—Yes.

31097. His whole time is given to the inspection of the dairy herds, and the administration of the Milk Clauses?—He is also the meat inspector.

31098. The inspection of meat is the only other duty he is called upon to discharge?—Yes; he is entirely under the Health Department.

31099. Has any question ever arisen in regard to the payment of compensation for parting with animals that have been declared likely to be infected with tuberculosis, the payment of compensation to the owner?—It has not actually occurred, though it has been talked about. I have had interviews with the Society of Dairymen, and I put it to them in this way. If you will undertake that you will not admit to your dairies cows from outside, unless they have been tuberculin tested, I will ask the Corporation to pay you the whole, or nearly the whole, cost of every cow you lose. But they said they could not persuade the farmer to sell in such circumstances.

31100. Do you consider it advisable to offer some inducement to the farmer to direct the attention of the veterinary inspector to any cow in his herd he suspected as likely to be suffering from tuberculosis, so that the animal might be dealt with at the earliest possible moment?—You mean in addition to the necessity laid upon him by the law to notify such cases to us at once? He is bound to notify the case where he suspects tuberculosis.

31101. Yes; in order to secure prompt co-operation, so that it might be possible for your inspector to examine the animal at the earliest possible moment after the suspicion arose. Would it not be desirable to offer the farmer some financial advantage?—I should quite support such a provision.

31102. You think it would be helpful in eliminating suspicious animals from the milk herds? What I have in mind is some scheme by which it would be more profitable for the farmer to have the cow examined, and condemned, if necessary, on his own representation, than to keep it, to the danger of the public health?—If such a scheme could be devised, I agree that it would be a good thing; but it would be rather difficult to contrive.

31103. To work it out in practice might be difficult, but unless you take some means to secure the prompt co-operation of the owner with the officials of the Health Authority, then you agree that it is extremely difficult, no matter how vigilant your inspection may be, to catch every animal the moment it becomes dangerous to health?—Yes. We had a man in Court on Tuesday, and twice before he had had tuberculous cows on his farm, cows which Mr. Dixon, the veterinary inspector, had detected in going round, and had pointed out. Two months ago Mr. Dixon came across another pretty advanced case of tuberculosis of the udder on this farm, and I advised the Committee to prosecute.

31104. It was such an obvious case that the farmer ought to have seen it, and notified it?—Yes. He was fined five shillings, which was ridiculous in a case of that kind. We have had larger fines in the same class of case. Fortunately, a good many men report as soon as they have any suspicion, especially those inside the town.

31105. You have, unquestionably, more control in your own area than outside?—Inside the city, of course, we are living at their very doors, and we are in and out; they do not know when we may drop in.

31106. Has your inspector ever been confronted with any difficulty in carrying out his inspection in the country districts—has he ever met with hostility from the dairy owner?—Not seriously, I think. But he is here himself, and will give you his own version.

31107. I am much obliged to you. I will not worry you with matters which do not come within your own purview?—Mr. Dixon sees me, as a matter of course, every week, and reports.

31108. But these are matters that come under his observation?—Yes. He might hesitate to say that there was a difficulty in inspecting the country farms, because, as a general rule, when an inspector tells me he has difficulty in carrying out his inspections, I begin to suspect him of not showing ordinary diplomacy. Of course, I do not suspect Mr. Dixon of that at all.

31109. Lady EVERARD.—Would you recommend licensing instead of registration—I mean that dealers should be licensed and not registered?—By a licence I suppose you imply that it could be taken away?

31110. Yes?—Certainly; I think registration is rather absurd.

31111. Do you think that the Act should be made compulsory instead of permissive, and administered by a central authority? At the present moment you find one district putting the Cowsheds and Dairies Order into force, and another district, perhaps next to it, ignoring it?—That is a great difficulty, I admit, but I am not sure that you cannot centralise too much. Over-centralisation is apt to destroy local interest, and if you destroy local interest in this matter, you destroy the whole thing. I should rather be inclined to suggest that a combination of the county and borough authorities should have the charge of looking after the whole district; in other words, that you should enlarge the district rather than centralise too much.

31112. Professor METTAM.—Would it not be a good thing to have uniformity of application of these various Orders and Acts?—I should like very much to see the West and East Ridings, and such county boroughs as Hull and Sheffield, combined to work them. I should prefer that really to a central Act. In one part of the country the application is lax and in another part rigid. We should like to devise means of getting uniformity in application, and if we could get the local authorities working together under a central authority there would be uniformity of application.

31113. Whence do you derive your outside supplies?—Partly from the West Riding; not very much from the East Riding; a little from Derbyshire; but nearly the whole of our Leeds milk comes from the West Riding.

31114. Are the samples taken at the stations or along the road as the milk comes in?—We take them at the stations in Leeds. We take specimens at the railway stations under the powers given us by the Sale of Food and Drugs Act. We take them there, so that we are sure that the milk comes from the man whose label is on the can. I am speaking of the samples we take for testing purity under the Sale of Food and Drugs Act, and in the second place for tuberculosis.

31115. You make two different kinds of examination?—We do not make a regular bacteriological examination. I have done it in 1905-6. Tuberculosis is not to be cultivated in quite the same way as ordinary bacteria. You can take a small quantity of milk, mix it with jelly, and grow the bacteria. But you can't do that way with tuberculosis. It is the guinea-pig that we use for our cultivation of tuberculosis. We inject the milk into the guinea-pig.

31116. Which bacterioscopic examination do you do as a matter of routine?—The tuberculosis one. The other I have done from time to time.

31117. What percentage of tuberculous milk do you find coming into the town, taking 100 samples?—About five per cent.

31118. Having determined that a certain sample of milk is tuberculous, what is the next step?—The next step is when the veterinary inspector goes to the farm.

31119. It may be miles in the country?—Yes, he examines every cow upon the farm.

31120. You have no power to destroy an animal. You can only advise the owner not to add the milk which is suspected to the supply which he is sending into Leeds?—We advise him under penalties. We tell him that if he does we shall prosecute him, and that he is bound by our Acts to separate that cow; if he does not do so we can prosecute him.

31121. Supposing he gets rid of that cow, have you any means of following her?—Not sufficient means. I communicate with the West Riding County Council if I know such a cow is being circulated, telling them to be on the look-out.

31122. Have they a veterinary inspector belonging to the West Riding County Council?—No. It is rather a pity. I want combination between the West Riding and ourselves. A few years ago the West and East Ridings, and several county boroughs, agreed to have an investigation as to the soiling of milk. A very important report was issued. I should like the same people to carry on further investigations with regard to tuberculous milk.

31123. Suppose there was an outbreak of enteric on a milk-run. Have you power to go on that farm and examine the people handling the milk by the Widal test?—I don't know how far our powers would go but we should do it.

31124. You would try it on?—Yes; we should try it under the Infectious Diseases (Prevention) Act.

31125. If you have not got the power you would like it, especially if you wanted to discover whether there

was a carrier present in a certain area. Supposing you had evidence of a milk supply containing the virus of enteric, and 130 or 140 cases occurred on a contaminated run, and that on examination of the persons handling the milk there was found to be a carrier, would it not be a salutary thing to have the power to subject these people to the Widal test?—I think it is a thing one would do without having the power if one were face to face with it. I have had two distinct outbreaks of typhoid from milk. One was from a district outside. I was at a loss to know where it had come from. Though no one was suffering from it, a man who had it might have gone away. I came to the conclusion that the milk had got polluted from a privy in the neighbourhood; that some tramp had used it, and the milk had thereby become polluted. Another case occurred from a neighbouring borough. We had about four cases. I made inquiries. The inspector reported what he found. I examined the water. Two sources were polluted. We got it stopped, and there was no more cases. But again there was nobody in the neighbourhood who had recently suffered from typhoid.

31126. Supposing that you went to the place, and you did run the culprit to earth, and he refused to part with a drop of blood, would you not prefer that he should acquiesce whether he liked it or not?—I do not think I should have that difficulty. What I should do if I had sufficient power would be to get him knocked off from service.

31127. About licences for cow-keepers—if there were licences, would it not be easy to compel them to make structural alterations in the byres in the same way that a bench of magistrates can make a publican effect such alterations, by refusing his licence unless he does so?—I think licences would be an advantage; but it is not the cow-keeper who has to make the alterations. It is the landlord, and you have no power to compel him.

31128. But then the landlord might be squeezed by the tenant?—It would be extremely hard.

31129. Mr. CAMPBELL.—Have you any difficulty with the quality of your milk?—There is a good deal of adulteration as everywhere. We rank rather high, but we are fortunate in having one or two very able inspectors, who are quick in getting the real culprit.

31130. Is there any difficulty with regard to the difference between the morning and evening milk in Leeds?—There is a considerable difference. The morning's milk shows less fat.

31131. Have you had any difficulty with it?—No.

31132. Have you found that the morning's milk was below three per cent.?—I question whether it is often below three per cent. I don't think it is ever found in a herd below three per cent. If so, there would probably be adulteration. But we never prosecute for three per cent. in the morning milk. If separated milk is put into new milk it is adulteration, adulteration by the removal of cream.

31133. If you examine a sample of milk, and you find that it is deficient in quality, what form of certificate do you give? Do you state that the milk is deficient in fat, or that it contains so much per cent. of added water?—Both. Sometimes the one and sometimes the other.

31134. But clearly distinguishing between cases where he has added water and where he has added separated milk?—The analyst states the proportion in each case.

31135. But sometimes he says that a certain percentage of fat has been abstracted, and in another case that a certain percentage of water has been added?—Yes.

31136. I have seen a report where milk was under three per cent. in the morning. In that case would you certify added water or abstracted fat?—It would be certified abstracted fats if the total solids were right.

31137. By Sir STEWART WOODHOUSE.—Is separated milk sold in Leeds as an article of food?—Yes. Dr. Hall, a great authority on baby culture, uses it for feeding school children, but he adds margarine to the diet. He looks upon it as rather a useful thing.

31138. Do you consider that a wholesome article of diet?—He looks upon it as rather a useful thing.

31139. But you prefer milk?—I prefer milk; that is, of course, for young children, not for school-going children.

31140. Have you heard separated milk hardly spoken of as unwholesome as a beverage?—No; I have had no complaints. But I look on it as a poor thing.

31141. I understood you to say that in cases where you suspect a farm of the existence of some infectious disease other than tuberculosis, say, typhoid fever, you treat that farm as if it were infected with tuberculosis, and send some one out to make an examination?—Yes.

31142. Although you have not legal power?—I think we have legal power. If we suspect that milk is bringing an infectious disease into Leeds, I think we have power to go under the Infectious Diseases (Prevention) Act, 1890, an adoptive Act.

31143. You think you have sufficient power already?—I think we have, but, as a matter of fact, we have never had to carry it out to the full by getting a magistrate's order. We simply go to the place, and they allow us to go round without a magistrate's order. With one or two dairymen there is an arrangement, as part of the contract of selling milk in Leeds, that they shall allow the entrance of the medical officer of health and his assistant at any time. That is part of the contract.

31144. But you are not in the habit of using any such power of inspection unless you suspect there is something amiss with the farm?—I think we should have rather a difficulty in going to a farmer and saying that we wanted to examine his milk simply because it was coming into Leeds. But we should do it on very slight suspicion.

31145. What power have you in addition to stop the sale of milk when you find there is infectious disease on the farm? I suppose you prevent the milk coming into Leeds?—We should not actually stop the milk if we found the cause; we should stop the cause. If we found a person suffering from typhoid, or a person suspected of having recently suffered from typhoid, we should isolate that person, and allow the milk supply to go on. There is not much difficulty, as a rule, in finding out whether a person concerned with the milk supply has suffered, or is suffering, from an infectious disease. With regard to diphtheria we had a little difficulty for some time. A dairyman in Leeds was buying milk from two farms. His wife distributed one supply and he distributed the other, and the diphtheria occurred entirely in his district. On the farm from which the milk came we could not find anybody who was ill, or who confessed to having sore throat. We stopped the milk altogether for a fortnight, and there were no fresh cases of diphtheria in that district, except where there had been cases in the same houses. Then the local authority disinfected the cowshed, and cleaned it all down, and, everything appearing to be all right, we allowed the milk to come back. But before a week had passed we had one or two more cases of diphtheria, and we stopped the milk again. I then asked my assistant to go and take specimens from the throats of all the people concerned, and he found three or four with the bacilli of sore throat, although they were not ill. We got these people cleared out, and allowed the milk to come back, and there was no further complaint. But we ought to have done that at first, rather than stop the man from sending his milk in. I was at fault, and because I was at fault I had to resort to the clumsy method of stopping the milk altogether. I recommended the Corporation to pay something to the man by way of compensation for stopping his milk. He was not acting knowingly; he did not know anyone was suffering from diphtheria on his farm. We also compensated the man who sold the milk. It was not a large amount in either case, but it was, no doubt, pleasing to them to feel that they were regarded as human.

31146. In the case of the separated milk you were speaking of, was it primary separated milk or skimmed milk that was mixed?—I cannot tell which they get,

but both separated milk and skimmed milk are sold. As a general rule, I think it is skimmed milk where it is used as an adulterant.

31147. Is preserved milk sold in Leeds to any extent?—Yes; very largely.

31148. Is that full milk?—There is a great deal of Swiss milk sold.

31149. Pure milk with sugar added?—Yes.

31150. Is that used a good deal by the working classes?—Yes. The tin is used only occasionally, and that makes its use very objectionable, for it means that the tin is kept open for a long time.

31151. Lady EVERARD.—Is milk powder sold?—To some extent; not very much.

31152. Sir STEWART WOODHOUSE.—Are milk preservatives allowed in Leeds?—No; I do not think we have any.

31153. Mr. CAMPBELL.—Is that not because of the recent Order?—I do not think so. I do not think they have been used to any large extent in Leeds for 20 years. I always ask the analyst to report any such cases; there are very few.

31154. There was quite recently a new Order with regard to preservatives, was there not?—Yes; it is illegal to put any preservative in milk at all.

31155. But up to a few weeks ago it was not?—October 1st was the date, I think.

31156. The CHAIRMAN.—How long since is it that compensation was paid to the milk-vendor for the suspension of his sales?—Are you speaking now of the tuberculous cases?

31157. No; of the diphtheria case?—I think that would be eight or ten years ago.

31158. Perhaps I ought not to ask the question, but has it been made the subject of audit by the Local Government Board Auditor, and has it been passed as legitimate expenditure?—We do not know anything about the Local Government Auditor in Leeds.

31159. Does he not audit your accounts?—No; except the accounts of the Education Department.

31160. Happy Leeds. You have really no supervision of the expenditure made by the Corporation then?—Not by the Local Government Board, except, as I have explained, so far as the accounts of the Education Department are concerned.

The CHAIRMAN.—Everything is presumed to be perfect except education.

31161. Miss McNEILL.—What takes the place of the Local Government Board audit?—We have the Lord Mayor's auditor, and our own auditor. I daresay the Local Government Board would worry us if they could, but they cannot.

31162. The CHAIRMAN.—Is there any question raised on audit as to the legality of the expenditure?—There has been no such question raised in regard to milk cases. Our difficulty is not so much with the auditors as, if I may say so without offence, with the Town Clerk, who is the legal adviser to the Corporation. In this particular instance I have quoted of the experiment we wanted to run, the Town Clerk was asked, as a matter of law, to rule whether we had a right to do it or not, and he said, "No." If he had not been asked for a ruling we should have gone through with it, and there would have been no trouble with the audit. Of course, I believe the Town Clerk was quite right in his ruling; unfortunately we asked him.

31163. The moral of which is, that when you have a doubt about the legality of expenditure again do not ask the Town Clerk.—As to the question of raising the legality of expenditure, this is, of course, a legal matter, but I think I am right in saying that there might be an appeal to the King's Bench on the part of a ratepayer to test the legality of any particular expenditure made by the Corporation. But the Local Government Board Auditor has no jurisdiction.

31164. At all events, in the case you have mentioned of the payment of compensation, no question was raised?—No question was raised.

Mr. JAMES A. DIXON, M.R.C.V.S., examined.

31165. The CHAIRMAN.—You are Veterinary Inspector to the Leeds Corporation, Mr. Dixon?—Yes.

31166. How long have you held that appointment?—A little more than seven years.

31167. And you have been carrying out under the terms of your appointment the examination of the various herds supplying milk to the city?—Yes.

31168. Have you much difficulty in ensuring that those who are engaged in the milking of the cows and the handling of the milk are cleanly and careful in their habits, so as to save the milk from dirt and contamination?—That really falls within the duties of my colleague, the dairies' inspector.

31169. It is no part of your administration?—I assist

Mr. JAMES A. DIXON.—7th November, 1912.

him, and, if he is not with me, I tell him when I see things are not all right. But, strictly, my duties are confined to the cowshed, and all other matters are left to the dairies inspector.

31170. Is it, as a matter of fact, a cause of complaint to him that he is not able to secure as much cleanliness as he would desire to see? Are the people careless in their habits?—Some are.

31171. Do they use overalls when milking?—Some do.

31172. But the use of overalls has not been made imperative?—No.

31173. Nor is it universal?—No.

31174. Do you often apply the tuberculin test in the case of suspicious animals?—Fairly frequently.

31175. Are you a firm believer in the test as an indication of the conditions to be found on *post mortem*?—Yes; but I do not apply the tuberculin test for my own information in dealing with animals suffering from tuberculosis of the udder. I use it then really as a means of pleasing the farmer, and, very frequently, getting him with me.

31176. Do you find any of the farmers refusing the test?—Some do. Some do not believe in it.

31177. Professor METTAM.—Why?—Pure ignorance.

31178. They think it a harmless fad, the result of which makes no difference to your conclusions?—Exactly.

31179. The CHAIRMAN.—Do you often have an opportunity of following up the test by a *post mortem* examination?—Fairly frequently.

31180. Have you had many instances in which the *post mortem* did not show the conditions you expected to find from the result of the test?—No; it has never failed.

31181. And for that reason you are, of course, rather a firm believer in the efficiency of the tuberculin test in determining the condition of the animals to which it is applied?—Yes.

31182. What other methods do you apply previously to the application of the tuberculin test to ascertain the conditions? Do you go in for the osculation of the lungs?—Oh, yes, that is part of the clinical examination.

31183. Do you find dairy-keepers, as a rule, willing to co-operate with you? Do they, for example, direct your attention to a cow which is not looking well?—Very few do that.

31184. Professor METTAM.—Rather the opposite, I presume?—Yes.

31185. The CHAIRMAN.—If they had a cow that they thought would hardly bear examination, they would probably like to erect a screen between you and the cow?—Most of them would.

31186. Do you examine the cows when on the pasture in the summer just as you do when they are in the byre in the winter?—No; in the summer-time we time our visits for milking time.

31187. You carry out the examination, but always when the cows are in the byre?—Yes.

31188. We know that elsewhere no examination takes place at all during the period the cows are at grass.—It does with us. We do not get as many cases in the summer months, because the available hours for the examination of the cows are so limited. We have only about an hour in the early morning, and, perhaps, an hour and a half in the afternoon when we can get at the cows, and we arrange our visits accordingly.

31189. Have you ever been confronted with vigorous hostility on account of your inspection when suspected milk has been traced to a farm?—Do you mean outside the city?

31190. Yes.—No; not active hostility.

31191. Indifference?—Yes; passive objection.

31192. They won't assist you. They say, "there they are; do what you like"?—Exactly.

31193. Has any friction ever arisen with the local authorities outside when you have gone into their areas to carry out inspections?—There was one case. One local authority raised some point about being notified.

31194. Do you examine cases in a district in which the local authority has a veterinary officer?—We went once inside the boundary of Bradford.

31195. Where they have a veterinary inspector?—Yes.

31196. Were they sending milk into Leeds?—Yes; it is a farm just over the boundary, but more accessible for Leeds than Bradford.

31197. By Mr. CAMPBELL.—You have cows in the West Riding under the supervision of another veterinary

officer?—Yes; but in these populous parts they consume their own supply of milk.

31198. Then let us say the North Riding?—No; there is absolutely no inspection beyond the dales. Until I go, there is never a veterinary surgeon near the place.

31199. Is any inspection at all carried on in these places to ascertain whether the dairies are kept clean. I mean lay inspection?—In some districts, yes.

31200. In some, not even lay inspection?—There is the sanitary inspector, but he is not definitely charged that he must keep a strict look out on dairies.

31201. I suppose the administration is little more than nominal in such places?—In many cases.

31202. Have you much difficulty in inducing cow-keepers to carry out structural alterations you consider necessary?—Inside the town?

31203. Outside?—Well, I report the matter to the dairy inspector, and it is then left to the medical officer of health.

31204. If it is referred to you that a certain cow-keeper, about whose premises you presented a report, has not conformed with the regulations, do you visit him again?—If I am instructed to do so by the Medical Officer of Health.

31205. Do you go of your own volition to see whether improvements are carried out?—Not as to sheds.

31206. Professor METTAM.—That has nothing to do with you?—No; I do not bother about the structure of sheds.

31207. The CHAIRMAN.—Do you make recommendations to the owner as to what they should do if the floor is bad and air space insufficient?—Yes, we always make an effort to advise them and instruct them.

31208. But you have no power to compel them to carry out structural repairs?—Not that I know of.

31209. You have never set out to do so?—No.

31210. Professor METTAM.—It is not part of your duties?—No.

31211. The CHAIRMAN.—Has a vendor of milk ever been sent for to answer for the condition of his byre on your report?—Not yet.

31212. And no pressure is imposed on a suggestion made by you or your colleague as to the condition of his byre?—The pressure comes from the local authority.

31213. Does his own local authority, at the suggestion of the local authority of Leeds, send an officer to visit that man's place, and tell him there are certain things he must do if he is to continue to send in milk?—That is what we ask them to do.

31214. And what is the practice?—In most cases they do so.

31215. And where they have no inspector who takes charge of it?—I do not know, but they always have a sanitary inspector.

31216. Some officer to whom a report can be handed?—Yes.

31217. And who has to see that certain things are done?—Yes.

31218. In what percentage of cases is it efficacious?—I have no idea. I have not had to go round again to see if things have been improved.

31219. Speaking generally, is the condition of cow byres in the area supplying Leeds with milk satisfactory from a health point of view?—No; but in certain selected districts on the boundaries of certain estates the housing of cattle is excellent.

31220. But where the occupier is left to carry out this work unaided there are things inefficiently done or not done at all?—Yes.

31221. Is it lack of capital or of desire?—Both.

31222. But you have not heard of any vendor being obliged to abandon his trade because he failed to conform with regulations laid down by the Leeds Public Health Authority or the local authority in which business is carried on?—I have not heard of an outside man.

31223. In the Leeds area is your administration sufficiently drastic to compel a man to abandon his trade if he did not carry out required alterations?—Yes.

31224. Do you think it desirable that a uniform application of orders should be made possible by all local authorities?—Yes. That is what is required.

31225. And that would be helpful to those districts which are trying to secure a purer supply?—Yes.

31226. And till that is done is it reasonable to hope that the municipal authorities can accomplish what they desire?—I don't think it is possible.

31227. Professor METTAM.—How many cows are stabled in Leeds?—2,038 last year.

31228. You have a large bovine population?—Yes.

31229. What is the general condition of their housing?—Good.

31230. You find no difficulty in getting people to carry out your requirements?—No, not inside the area.

31231. What air-space do you demand for these cows?—In town cowsheds we require about one thousand cubic feet. We get that, by regulation.

31232. That is what you require when you are erecting new sheds?—Yes.

31233. What are you satisfied with in old sheds?—800 feet.

31234. Or even less than that?—No; we generally get about 800 feet.

31235. What is the age of the cows kept in Leeds?—They come in after the third calf as a rule, and the most common system and the best paying is "milk and feed." The life in Leeds is about six to nine months.

31236. Then they send them to the abattoir?—Yes.

31237. You are the chief inspector there?—Yes.

31238. Do you find many cases of tuberculosis coming in?—Not many from Leeds cows.

31239. You find them comparatively free?—Yes.

31240. What is the percentage?—I have never been able to make a satisfactory estimate of the number. We do not handle many of the cows in the Leeds abattoirs. They go to other places.

31241. Where do these cows come from?—The whole country about—Skepton and Wharfedale. A lot come from the York area.

31242. About how much milk would they give?—They must give three gallons a day to pay.

31243. They keep them up to that as long as they can?—Yes.

31244. And what is their breed?—They are nearly all cross-bred shorthorns. We have now tapped a new source of supply in Hereford. We get a sprinkling of cross-bred Herefords.

31245. Are they producing as much milk?—No.

31246. Do these cows go out to grass?—Most of them.

31247. In the summer-time?—Yes; most of them.

31248. How far have they to go to the pastures?—There are only about half a dozen sheds in our 181 which have not got grass nice and handy. They are really in semi-rural parts with fields just behind.

31249. The CHAIRMAN.—Do they liberate them in the winter season?—In most cases they turn them out for half an hour or a little longer while they clean out the sheds. Up to this time of the year, however, all our cows are out two or three hours a day.

31250. Professor METTAM.—Has there been any shortage of milk in recent years?—Oh, yes. In the dry weather.

31251. Have poor people any difficulty in getting milk? Do they use as much as they would like?—They are getting more and more into the use of tinned milk.

31252. Swiss milk?—Yes.

31253. They prefer that to cows' milk? Or is it cheaper?—I do not think it is cheaper. The reason it is used is that it is so handy.

The Commission adjourned at 5.45 p.m. till the following day.

FIFTY-FIFTH DAY.—FRIDAY, 8TH NOVEMBER, 1912.

The Commissioners resumed their Sitting at the Town Hall, Manchester, at 10 a.m.

Present :—P. J. O'NEILL, Esq. (Chairman); LADY EVERARD; MISS MARGARET McNEILL; Sir STEWART WOODHOUSE, M.D.; ALEC. WILSON, Esq.; J. R. CAMPBELL, Esq., B.Sc.; and Professor A. E. METTAM, B.Sc., P.R.C.V.S.

S. W. STRANGE, Esq., *Secretary.*

Dr. JAMES NIVEN, Medical Officer of Health for the City of Manchester, examined.

31254. The CHAIRMAN.—You are Medical Officer of Health for the City of Manchester?—Yes.

31255. The Commission had a most interesting account yesterday from your veterinary officer, Mr. Brittlebank, of the circumstances leading up to the period when the Manchester Corporation applied for additional powers to control the milk supply of the city. Mr. Brittlebank gave us a very interesting and extremely lucid account of all the circumstances bearing on the situation from the point of view of the milk producer, and if you would be good enough to take up the same question from the public health point of view it would be most interesting and informing to the Commission. The death-rate at the time, particularly amongst the infants, and the changes that have taken place since the application of these powers, would, I may suggest, be particularly interesting from our point of view.—Well, I have not the figures with me, but I can give you a brief outline of what has taken place. There has been a continuous fall in the infantile death-rate from tuberculosis, and a very remarkable fall. If we take the last fifteen years or so, I think the death-rate at the present time of children under one year of age from tuberculosis is about half of the average; not half of what it was at the beginning, but of the average which, of course, is a very great reduction. That continues up to the age of five. Very curiously it does not extend beyond that period. When you come to the age period, five to fourteen years, you get very little, if any, reduction in the death-rate from other forms of tuberculosis than phthisis. As you are aware, of course, the forms of tuberculosis other than phthisis very much preponderate in the early periods of life, and a good many of these forms are undoubtedly connected with food, that is to say, they

are due to matters which have been ingested, I do not say necessarily milk, but matters which have been taken into the digestive system, and it is at that period of life that this enormous reduction has taken place in the mortality.

31256. Professor METTAM.—Can you tell us whether the infection is bovine or human?—Of course, that is a difficult question to determine. The magnitude of the reduction is so great that it is scarcely possible that it could be due entirely to the diminution of human infection. It is a little difficult this matter, and, perhaps, I had better go on to explain. There is no such reduction at early ages in pulmonary tuberculosis, but there is a great deal of reduction of pulmonary tuberculosis, which is greatest at the ages of 25 to 44, in later years. There is no doubt that that reduction has taken place chiefly, not amongst the tramp class, not amongst people living in common lodging-houses, the very poorest classes, but amongst people living at home. While, of course, you would expect a certain amount of reduction of infection in children as a consequence, this reduction of the death-rate among young children is so very great that it is out of all proportion to the reduction in phthisis which has taken place in later years. It seems to me probable that both influences have been at work, and that the improvement in the milk has played a very large share. That is the impression I have received.

31257. The CHAIRMAN.—If milk forms such a staple article of food for infants and children of tender years, is it not reasonable to suppose that the enormous decrease in the death-rate is consequent upon the improved condition of the milk with which they are nourished?—I have tried to make it clear to you that there are two factors at work.

Dr. JAMES NIVEN.—8th November, 1912.

31258. Is it not reasonable to assume that that is a leading factor?—I think the facts point to that being a leading factor. But you have to explain why there is no such reduction between the ages of five and fourteen. Mr. Brittlebank has already told you what has taken place in regard to milk; that we have not only had a reduction in the number of cows found to be tuberculous, but that the disease has been detected at a much earlier stage than it used to be. The result is that the children who are getting the infection are getting it in much smaller doses. In general, you may assume that tuberculosis is the result of repeated infections. It therefore stands to reason with that condition of the milk supply, that if you are going to get the infection of the child, it will take longer to produce that infection, so that you get the period of infection retarded. That would, to some extent, explain why you do not get reduction at a later age, although you have such an enormous reduction at the earlier ages. I am not able to part with the paper I hold in my hand, but these tables show what an enormous reduction has taken place. It shows the infantile mortality from forms of tuberculosis other than phthisis, and the course of the reduction in successive years at the age periods.

31259. If you would be good enough to read the tables, so that we may have them on the notes, it would add to the information of the Commission. You might give us the figures for a certain number of years?—In 1891 the death-rate under one year, per thousand births, from tuberculosis was 11.04; in 1892, 10.08; in 1893, 11.75; in 1894, 10.84; and in 1895, 11.58. That was the period at which we began our operations against tuberculosis within the city. Afterwards we get these rates: 1896, 8.54; 1897, 10.26; 1898, 9.04; 1899, 9.68 (that was the year in which we got our milk clauses); 1900, 8.81; 1901, 8.67; 1902, 7.22; 1903, 8.14; 1904, 6.63; 1905, 6.37; 1906, 5.81; 1907, 5.49; 1908, 5.24; 1909, 5.09; 1910, 4.12. The average is 8.20, which is about double the rate for 1910. In the year 1910-11 there was a slight increase. I do not see the figure here, but, of course, it fluctuates from year to year.

31260. But the general figures indicate a very steady and rapid decline?—That is so.

31261. Mr. WILSON.—Would you correlate with that the percentage of samples of milk proved to be tuberculous. I think I remember it being stated that about 9 per cent. of the samples used to be tuberculous?—Well, you will have those figures, and you will be able to judge for yourselves. I think it is sufficient to say that we have taken sufficient samples to exercise a real supervision over the milk supply, and in his visits to the farms Mr. Brittlebank has been able to carry out a great deal of instruction. You mean can one correlate it from year to year with the number of samples of tuberculous milk?

31262. Is there any relationship at all that you can trace?—I have not attempted to trace it.

31263. Miss McNEILL.—Have the samples been taken generally or with special relation to suspicious cases?—They had no relation whatever to suspicious cases; they were taken purely as a matter of routine administration.

31264. A matter of routine?—Yes. When I say that we have never done so it is not quite right. But where we have done it, it is so insignificant that it would not affect these numbers at all.

31265. The CHAIRMAN.—Have you traced any outbreak of infectious disease, scarlet fever or diphtheria, to the milk supply?—No, Sir, I have no distinct recollection of any distinct outbreak from milk, with one exception. A slight one did occur about ten years ago, chiefly in Salford. The milk-seller in this case lived in Manchester, but his ground was chiefly in Salford, so that most of the cases of enteric fever were in the adjoining district, though a few were in Manchester. That was very clearly traced in my mind, though we were not able to get scientific evidence to the milk-seller having an attack of enteric and his wife nursing him and handling the milk.

31266. You have never been obliged to have recourse to the Widal test to detect carriers?—We have had one or two carriers where the thing has been very thoroughly investigated. There was one case investigated by my assistant, where a woman turned up in one place and another, and wherever she went a case of typhoid cropped up. She disappeared for a number of years, and now she has made her appearance again with another case.

31207. Was she connected with the milk trade?—She was not.

31268. Do you find any hostility manifested by people to whom you desire to apply the Widal test?—Do you mean with respect to carriers? Any ordinary test would suffice for that.

31269. No. It was with regard to the Widal test. Do you find any hostility manifested by them?—Occasionally they object. They make as much fuss about it as about the taking off of a limb. In general we get that a good deal. But not infrequently we have a whole family tested, and practically there is no difficulty. But that is done through the medical practitioner who influences the people.

31270. Has any public authority in Manchester ever made the attempt to provide a milk supply or cheapen the existing milk supply for the industrial population? Have they ever made any contribution from the rates or other sources to cheapen the supply of milk to the industrial population?—Not that I am aware of. The Poor Law Guardians in certain cases, recommended by their medical officers, have supplied milk to poor people.

31271. What I had in my mind was the establishment of a depot for distributing milk at reduced rates to people in necessitous circumstances?—We have not established a depot. This matter had recently a good deal of consideration in this city, and an attempt was made to bring about a better milk supply, as I felt in a proper direction, as pursued by Busck in Copenhagen. A beautiful dairy was erected with the necessary appliances. It was a voluntary company, and it started on much the same lines as Busck. Unfortunately it did not receive the pecuniary support which would have carried it through a difficult period, and purely for pecuniary reasons it was given up. There was no other reason. It was recognised that it was on the way to success. Faults committed at the beginning were counteracted, but the expense was great.

31272. Mr. WILSON.—Do you happen to remember the retail price of the milk?—I think it was the same as standard prices.

31273. Was the cost of distribution supplemented by philanthropic effort?—No. The procedure was to run it as a business from the commercial point of view. It was started by gentlemen who had no other object than to improve the public health. They did not want to lose too much money, but money was not the object, and they bound themselves not to make a greater profit than five per cent. The whole object was to improve the public health. I know all about it, and had a good deal to do with it. There was no pecuniary interest concerned.

31274. Miss McNEILL.—Was it carried on for any length of time?—Two or three years.

31275. The CHAIRMAN.—Was it in a district where the industrial population preponderated?—It was begun all over the city. Busck had a special system of milk floats. It was a replica of the Busck system, and if it had succeeded it would have produced a profound influence upon the milk supply of Manchester. It failed pecuniarily.

31276. Lady EVERARD.—Was the administration right? Why should it fail if there was a large demand?—That is a matter I can scarcely discuss. I think there were some faults at the beginning, but such faults as there were were fully counteracted, and the milk supply in the end was ideal. Of course, a good deal of opposition would be stirred up.

31277. Professor METTAM.—Can you tell us anything in regard to the condition of the milk other than as regards tuberculous infection? Is it clean?—Oh, yes. That is just as striking a feature of these operations, or even more striking than the improvement in regard to tuberculosis. You will hear of that from Professor Delépine, who has written an account of the cleanliness of the milk supply. Professor Delépine has carried out a systematic examination of the milk he has received for investigation in regard to tuberculous infection, and in respect also to the amount of dirt contained. Those investigations are embodied in a statement, in fact, in several statements. The result of the operations unquestionably has been to reduce enormously the amount of dirt coming into the city with the milk. That, of course, is very largely due to the instruction given by Mr. Brittlebank, the veterinary surgeon, when going round the farms. The figures seem to show that

whereas in 1897 about 17 per cent. of the milks coming into the city were found by Professor Delépine to be very dirty, in 1906, when the paper which I am quoting was written, the proportion was only 6 per cent. I do not think it is necessary to go any further into the figures. But not only is that so; even more striking is the reduction in the disease-producing property of the milk apart from tuberculosis. That is in quite as great a proportion as the reduction of the dirt. Perhaps, as you are going to hear Professor Delépine this pamphlet may be of service. (Handed in.)

31278. Professor METTAM.—I take it that during recent years, and since your inspection has been so careful and so rigorous, the amount of tuberculous milk coming into the city has fallen?—Oh, very much. Of course, it varies.

31279. It fluctuates from time to time?—Yes; last year it rose. But the number of tuberculous samples is no measure at all of the amount of infection coming into the city. Mr. Brittlebank now finds that he is able to detect the disease in the cow at a much earlier stage than formerly. The samples which are taken at stations when followed up lead him to the disease in the cow at a very much earlier stage than used formerly to be the case, so that, of course, all that great mass of infection which formerly came in as the cow grew worse and worse, as the udder became more and more diseased, is now avoided. It is getting to be the exception now to find advanced tuberculosis of the udder, whereas formerly, I believe, it was the rule; at least, it was very common. Now it is quite exceptional. You see the reduction is out of all proportion to that shown by the number of samples.

31280. That is the explanation, then, of the gradual diminution of infantile tuberculosis in the first five years?—Of course, there has been a great reduction of the amount of infected milk consumed, and there has been a very much greater reduction in the number of tubercle bacilli consumed in that milk.

31281. Then you do not think there is a relationship between the consumption of milk and the incidence of tuberculosis?—I do think, as I have already stated, that there are two factors at work. In my opinion, milk has exercised an important influence, but I think it would be very unwise to overlook entirely the reduction in human infection as a factor. Probably the improvement in the milk has been the predominant factor.

31282. Take the age period, five to fourteen. What is the nature of the infection in that period, human or bovine?—Well, it would be partly the one and partly the other.

31283. You think it is probably due in that period to latent tuberculosis acquired during the first five years?—Yes; I do.

31284. That is the growing period, and the period when probably insufficient food is taken?—Well, but that applies throughout.

31285. Do the facts you have given us apply to any particular section of the population, poor or rich?—No; they apply to all ages.

31286. And to all sections of society?—Yes; there is no distinction made in the figures.

31287. Then as regards the incidence in adult life from 22 to 44 years of age—that is the period of what one might call human infection?—Yes; but then it would not be confined to human.

31288. Not entirely?—No; because a great many people take milk after the age of childhood, and, although the infection of milk would be very much reduced in that period, it might still be in evidence.

31289. But milk is a food of youth rather than of adult age?—That is so.

31290. The only time when milk is given as a food in adult life is when a person is ill?—A great many people take milk all their life.

31291. As a beverage?—Yes. You have only to go into the refreshment rooms and see the long rows of glasses of milk to see to what extent the population consume milk beyond childhood. I think it is very small compared with the consumption during child-life, but still there is a certain amount of continued consumption of milk.

31292. Yes; but if you were to look into the question, is it not more than likely that tuberculosis found in the human being of middle age would be of human

infection rather than bovine?—That is so. I think that the bacteriological examination of discharges shows that conclusively: that is to say, if you grant there is any distinction between bovine and human tuberculosis, and bovine tuberculosis does not change in the human. If you accept that view, the bacteriological examination of the discharges is absolutely conclusive that tuberculosis in adult life is largely due to human infection.

31293. Mr. CAMPBELL.—What about the quality of the milk that comes to Manchester; have there been many complaints about it?—The quality of the Manchester milk is supposed to be very good.

31294. How is that dealt with under your Corporation?—That is transacted by the Sanitary Superintendent who has charge of the Sale of Food and Drugs Act. He has inspectors taking samples, which are submitted to the Public Analyst, who determines whether they have been in any way adulterated, and whether fat has been removed.

31295. You are not able to speak with direct knowledge with regard to that?—No; except with regard to the figures published every year.

31296. Which come before you?—Which come before me.

31297. Are there any figures showing the composition and the quality of the milk?—There are no figures showing the composition of the milk; unfortunately the composition is not published. The only information we get is information as to whether adulteration has been practised or not—we do not get the percentage of fat and the percentage of solids not fatty. That kind of information is not, of course, commonly given by analysts.

31298. Has there been any trouble with adulteration; I mean people sending in adulterated milk?—Oh, dear, yes! There are prosecutions going on constantly. But still the proportion of samples found to be adulterated in Manchester and Salford by the Public Analyst is about the lowest in England; it is much lower than the proportion in London.

31299. Do you happen to know what sort of fines are inflicted for adulteration?—Well, they are small. I can give you an idea. In the year 1911 the number fined was 27, and the total fines imposed amounted to £68 5s., plus costs, £68, so that the fines were small.

31300. Do you find that there is any great want of milk in the poor parts of the town; that is to say, are the people able to get it? Have they got money to purchase it?—I cannot give you any exact information, but there is no doubt that there are a great many people who cannot afford to get milk.

31301. Are you of opinion that the public health would be greatly improved if you could get a larger supply of milk for the working population?—Milk is very cheap in Manchester.

31302. Lady EVERARD.—But do you think the mothers realise the value of milk as a food for their children?—Oh, yes.

31303. Do you think they realise its value absolutely as an article of food?—Yes; I should say so. They are well educated. It is not for want of education that they do not use more; there are many factors which operate.

31304. Mr. CAMPBELL.—But there is no want of milk, and the price is not prohibitive; 3d. a quart in the centre of the city, I think we were told yesterday?—2½d. to 3½d., I understand, and 4d. in the better residential districts. That is very cheap.

31305. You do not know whether young children are being badly fed owing to the fact that their mothers supply them with condensed milk and such things? Has that ever come before you?—Yes; unfortunately, I have not prepared any figures, but I believe I could get you a comparative statement, showing the different means by which children were found to be fed on the visiting of the poorest children by the health visitors. I may point out, however, that the health visitors will probably have very little access to that class of the population who are not giving the children any milk at all. You see it is not always mere poverty that prevents children getting milk. There are other factors. Do you desire to have such figures?

31306. I do not think we need ask you to go to that trouble, Dr. Niven. A general expression of opinion will do. I really wanted to get to know whether that problem does face you here?—It exists everywhere, and I am afraid it will continue to exist, even supposing you distributed the milk free to-morrow.

Dr. JAMES NIVEN.—8th November, 1912.

31307. Sir STEWART WOODHOUSE.—You have a mortality from summer diarrhoea amongst the children in Manchester, I presume?—Yes; we have had it very badly.

31308. Has that mortality been lessening in recent years, say, compared with five or ten years ago?—Last year, I think we had one of the highest mortalities from diarrhoea that Manchester has ever experienced.

31309. Miss McNEILL.—But that was not confined to Manchester; there was a general increase, I think?—That is so.

31310. Sir STEWART WOODHOUSE.—Do you attribute the increase last year to exceptional heat or any other special cause?—Well, of course, heat exercises its usual influence. I see the mortality is exceptionally low this year, and I think it is diminishing on the average.

31311. Do you attribute infantile diarrhoea to milk, or is it a considerable factor in this disease?—Milk is a medium by which germs are conveyed.

31312. Are there any special precautions in Manchester in summer to combat the liability to summer diarrhoea amongst children, any special precautions with regard to milk?—The people are very well instructed how to deal with the preparation of foods. A certain amount of distribution of dried milk has taken place amongst the health visitors.

31313. Miss McNEILL.—From what source is that distribution made?—Through the health visitors of the Sanitary Committee.

31314. Probably much as in Sheffield. Do they buy it?—A certain amount has been given through the Sanitary Committee. But I believe there is a society in Manchester.

31315. A philanthropic society?—Yes; a ladies' guild—a mothers' guild—which also distributes dried milk. I think it is also sold by them.

31316. Why dried milk in place of your carefully controlled raw milk? Is it for convenience?—It is simply from the result of observation that dried milk seems to show very good results in the feeding of children.

31317. Do you know anything of results produced in Manchester by its use?—It is difficult to draw conclusions from a limited experience, but our experience, and that of the Mother's Guild, is favourable to the use of dried milk as a food.

31318. Sir STEWART WOODHOUSE.—With the exception of last year, you believe that summer diarrhoea is diminishing?—Yes.

31319. Do you attribute that to extra care with the milk supply in respect of cleanliness and freshness; has it something to do with the lessened amount of summer diarrhoea?—Yes, I think it has, but it is rather a difficult question. We make great efforts to get the milk boiled, and I believe that in the vast majority of instances milk is scalded before being used by the children as food. It is rather difficult to see how milk treated in that manner can produce diarrhoea by virtue of its original impurity. Of course, there are other factors concerned in the production of diarrhoea. One of them is giving children unsuitable food. Another is the filthy condition in which they are allowed to be. They crawl upon the floors. They get their hands black and stick them into their mouths, and then in various ways food is liable to be contaminated in the cooking. You may have a house buzzing with flies, and I think there is no question that whatever you may do with your milk supply, you will have much diarrhoea where you have a low class and dirty population.

31320. Is the scalding of milk done at home?—Yes.

31321. After instruction by the health visitors?—These instructions are distributed by registrars to mothers when they go to register the births of their children, whether they choose to follow the instructions or not.

31322. In leaflet form?—Yes.

31323. Lady EVERARD.—Has the scalding or boiling of milk any injurious effect upon its nutritive qualities?—I am disposed to think that mere scalding is not hurtful.

31324. You speak about this crawling upon the floor. I take it you do not approve of babies' comforters?—No.

31325. Or of long tube bottles?—No.

31326. Are they subject to infection?—Yes. But I think all bottles are. It would be a pity to pin one's

faith to a detail like that. You are liable to get an ordinary bottle neglected. The great thing is to have the utmost scientific care in feeding, but, of course, the long tube bottle is more dangerous.

31327. When the child is registered the mother is given a leaflet on baby feeding and foods?—Yes, and a great deal of instruction besides. The Mothers' Guild is exercising a powerful influence, and our health visitors occupy their time entirely in the same work.

31328. The CHAIRMAN.—Thank you, Dr. Niven. The Commission is much indebted to you.

Dr. Niven.—There are one or two questions which you have not asked me on which I should like to express an opinion. I should like to express a very distinct opinion that it will not be possible by any other means to deal effectively with tuberculosis in cows without distinct steps being taken for the entire eradication of tuberculosis from herds. I can conceive of no other means or methods which will effectively deal with that problem. Suppose you were to remove from a herd affected with tuberculosis all cattle detected on ordinary examination you would, I believe, leave a very considerable number affected, it might not be extensively, with tuberculosis, and that remnant would suffice in a short period to contaminate the whole herd again. As regards our own operations, I think that we have nearly done as much as we can do on these lines. Of course, by keeping it up we keep down the amount of tuberculous infection, but I doubt if we can get much further. The next step must be the entire eradication from the herds of tuberculosis by means of the tuberculin test in the hands of experienced men, and with all the precautions which our experience and that of modern observers has told us are necessary in order to effect that object. I think that since the first experiments in Denmark we have had experience which tells us that much more radical measures must be taken to effect the object. Until that object is effected, in my opinion we shall not be able to deal effectively with the progress of tuberculosis. We may reduce it, as we have done, but it is still there, and is still a serious danger.

31329. The CHAIRMAN.—Do you think that this matter is of such national importance as to demand that the State should come to the assistance of the local bodies in carrying out the most radical remedy for the elimination of tuberculous animals from the milk supply?—I think that the State is the proper body to deal with the eradication of tuberculosis.

31330. Is it, in your opinion, of sufficient importance?—It is a matter of enormous importance to the agricultural community and to the entire population. It is obviously important to the population, but it is also important economically to the agricultural population. I believe it would cause an immense expansion to our dairy industry if an effectual step could be taken in that direction. I admit that it is a difficult object, and that it requires to be pursued with every precaution and care, but I do not see, so far as any discovery made up to the present time would enable one to judge, any other way of advancing the prevention of tuberculosis in children from milk, or any improvement of the dairying industry, except by the eradication of tuberculosis entirely from the herds.

31331. And, great as the difficulty is, it should not be regarded as insurmountable?—It is not insurmountable. I think our own experience shows that. Mr. Brittlebank for twelve years, as he has told you, has had the supervision of a herd which has been maintained free from tuberculosis, and which has been profitable to the farmer. There can be no question of its being surmountable. But it is necessary in the establishment of such a system that the character of the farmer who is called upon, in the first instance, to undertake these operations should be regarded as the prime consideration. That is of more importance, in my opinion, than all the other factors—buildings, stock, and everything else—concerned. I mean, you must have men of integrity who can be trusted, not only to carry out the operations properly, but also to persist when they have once started. But that is not an insuperable difficulty.

31332. Mr. CAMPBELL.—What are you going to do with the man who has not got these qualities?—I am speaking of the establishment of a clean herd. When you have once got it established, and proved its success, it will work by itself. What you have got to do is to establish the success of it, and my position is, that

in establishing success you will have to take primarily into account the character of the man who is carrying the operations on.

31333. I have no doubt it would be quite possible to establish a certain percentage of the herds free from tuberculosis. But what are you going to do with the farmer who has not got the qualities you describe, and, still more important, what are you going to do with the rejected cattle?—You could fatten the cattle, and send them off for slaughter.

31334. You see, the fact that my farm is particularly clean, and my neighbours' farms are particularly bad, may only mean that I have thrown my diseased cattle on my neighbours?—As I have said, you can fatten the cattle for slaughter.

31335. You would have no objection, then, to the farmer fattening them and slaughtering them?—Not in the least, provided that they are removed to such a distance as not to be a danger to the other cattle.

31336. And you would have no objection to allowing them, at the same time, to be milked until they had been fattened? I think you must go the whole way when you begin?—No; I do not know that I should have very much objection to that, provided a daily examination was made of the mixed milk.

31337. Or if the milk from the reacting cows could be periodically subjected to bacteriological examination?—I think the mere fact that animals are found to react must impose on you duties that were not existent previously. If you once separate a man's herd into two halves, one known to be tuberculous, and the other not tuberculous, then you must take greater precautions than you took before, in regard to the tuberculous half. I think that follows, for, after all, you are concentrating your tuberculosis in one part of the herd.

31338. But, when you have divided your herd into two, the reacting animals may look as sound as the others?—As I have said, I should have no objection to allowing them to be milked, provided a daily examination was made of the milk. It is not expensive.

31339. You say a daily examination?—Daily, certainly.

31340. But a daily examination would be a costly thing, would it not? I mean a bacteriological examination?—For what period do you suggest this should go on?

31341. Until the cows are ready to go to the slaughter house?—That is to say, about three months.

31342. I think it would be more than that?—Well, it would be expensive, no doubt. But, of course, this is an important operation you are carrying through.

31343. Professor METTAM.—Would it not suffice, if you were to pasteurise this milk daily?—Yes, or scald it.

31344. I mean, if you were to treat it in such a way that the pathogenic organisms were killed. Suppose you have tuberculosis in a herd. Sixty per cent. may be tuberculous, and forty per cent. free. The greater part of your herd is tuberculous in some degree. You see a great economic question is involved at once, and immediate slaughter might create a sort of milk famine?—Excuse me, but I am not advocating that. In the scheme which I published once I was going to proceed gradually. Commencing with a little, and gradually increasing the number of farms every year. Of course, I quite see that if you rushed these things you might produce a famine. But my idea would be to proceed gradually and carefully. To obtain the complete eradication of tuberculosis, you would have to extend your operations over a great number of years. Having established the thing on a definite footing, I would be content that we should feel our way further.

31345. Mr. CAMPBELL.—I see this great difficulty the moment you begin; what are you going to do with the reacting cows?—I see a great difficulty, until some man of very great ability, energy, and enthusiasm, comes along and takes it up, and carries it through. Until we get such a man I do not suppose it will be done. But when he comes it will get done. Meanwhile, I take it, that all we are considering now is whether it ought to be done.

31346. Mr. WILSON.—The man you refer to, I take it, would be the minister of agriculture, or some servant of the State?—No; I do not say that. He may be a private individual, say a man with £50,000 a year, who wishes to do a good work. A gentleman of that description, with knowledge and energy, would be much more likely to do it than a minister.

31347. Mr. CAMPBELL.—There are a very large number of farmers who are quite ready to begin, provided that men in your position will show them what they are going to do with the reacting cows. I know for a fact that people are ready and anxious to begin with this work?—That, of course, is a very interesting question. Perhaps Mr. Brittlebank could tell you something about it.

31348. We have had evidence from Mr. Brittlebank, but he comes up against a stone wall on this question of the reacting cows?—But he would be able to tell you what has happened in the herd of which he has supervision. What did Mr. Whalley do with his reacting cows, Mr. Brittlebank?

Mr. Brittlebank.—In the early days they were undoubtedly thrown back on the market, but at a later period, as I pointed out yesterday, they were killed.

31349. Mr. CAMPBELL.—At once?

Mr. Brittlebank.—No; within a comparatively short time.

31350. They were allowed to be milked until they were fed up, and then they were butchered?—

Mr. Brittlebank.—Yes.

31351. Are you satisfied to allow that to go on in other herds?—

Mr. Brittlebank.—Under the conditions I put yesterday.

31352. That the milk be scalded?—

Mr. Brittlebank.—That it be pasteurised, or rendered innocuous.

Examination of Dr. Niven resumed.

31353. Mr. CAMPBELL.—If a man gets up at four in the morning, or even at three, to milk, as he has to do in Dublin, so as to get the milk in the city by six o'clock, it is not much use talking about him scalding his milk. It takes him all his time to milk the cows?—In my opinion, the condition of the animals should be controlled in the manner I have suggested. One might, perhaps, give way a little in the interval, but I think it should be controlled in the examination of the milk.

31354. I agree with you there. If the reacting cows are segregated, I think it is necessary and right that they should be kept under special observation, and, if you like, that there should be a periodical examination of the milk, bacteriologically?—Of the entirely mixed milk?

31355. Yes; I would go as far as that. But I do not think you could ask the farmer to go to the expense of a daily bacteriological examination of the milk, assuming that the veterinary surgeon has examined his cows, and they appear to be all right, apart from the test?—No; perhaps that is rather a stringent condition.

31356. I think it is?—But suppose it was done once a week for three months. It would only mean a matter of £9 15s. to keep that control up.

31357. What does it cost to get a bacteriological examination made?—Fifteen shillings.

31358. That is fifteen shillings a week. Well, even that would be a concession. But the trouble I see is this, the moment it is known that certain cows have reacted, the farmer is regarded as a criminal if he sells a drop of milk from those cows; notwithstanding the fact that before he tested them he was at liberty to send their milk in as freely as he liked. That is the hardship?—I should say here that some more expense would be necessary besides that of the bacteriological examination. I think you must have a veterinary examination as well, say once a month.

31359. Oh, yes. I would say that these reacting cows ought to pass the veterinary surgeon in every respect, except the tuberculin test. But the cows may have reacted through some slight lesion in the mesenteric glands, and they may be no more dangerous than cows which have not reacted?—Such a cow may do no harm in regard to the milk supply. But within a year it may have contaminated the herd. It is a very serious danger to leave it among the others.

31360. But the cow is going to go to the butcher as soon as the milking period is over, do you see?—Quite so. I think my suggestion might meet the point; that is, that the milk should be reasonably controlled, and the cows should be examined periodically by a veterinary surgeon.

31361. And so long as the animal is not clinically tuberculous, so long as the veterinary surgeon cannot find anything wrong with her, that she should be allowed to yield milk for a period, and then go

of to the butcher?—I see no objection to that, beyond this, that you are concentrating your tuberculous cows in one corner of your herd, and, consequently, you must exercise greater supervision.

81362. Suppose you mix the milk from the two sides of the byre, are you worse off than you were before?—Surely. You have all your animals concentrated in forty per cent. Then you have concentrated the whole virulence of the one hundred parts of milk into the milk of those forty cows.

81363. But it was there before in the cows?—Suppose one of those cows develops tuberculosis of the udder, which may happen at any moment, then you have increased the intensity of the infection of the milk, from that part of the herd, in the proportion of ten to four. You will have made the infectivity of the milk from that section of the herd two-and-a-half times as great.

81364. But if it is to be mixed with the other milk?—It is not.

81365. But why should it not be?—Oh, no.

81366. But at the present time it is. Suppose I have a hundred cows, and sixty would react if tested. That is not known, or only privately known. The veterinary surgeon, apart from the test, can find nothing wrong with them. I can mix my milk, if I like, and send it in the city freely?—I think that is likely to lead to serious evils. There is no man whose herd has been separated in that manner who would not take advantage of the fact to sell the milk he gets from the non-tuberculous cows as guaranteed free from tuberculosis. Such a man would have no right, under any consideration, to mix the milk with that from the other part of the herd.

81367. Professor METTAM.—If you mixed the milk, would you not dilute the infection?—My point is that if a man had such a division made, he would certainly take advantage of it to sell his milk from that part of the herd which was not tuberculous more advantageously, as milk guaranteed to come from non-tuberculous cows. Unless you took care, he might mix it with the milk from the other part of the herd, which is not free from tuberculosis. I do not think they should be allowed to be mixed in any circumstances.

81368. Mr. WILSON.—If you come to the ordinary dairy farmer who is making a living on a small scale, like the great majority of the people we are concerned with, he has no facilities for making any such separation of his herd as you suggest. He has only one byre, a very indifferent one often, and it is impossible for him to carry out a scheme of that kind on a large scale. Of course, I am not saying that it could not be done by the gentleman who lives on the edge of a big town. He might experiment, but it would form no precedent for the trade as a whole?—Do I understand there are no buildings on the Irish farms suitable for keeping cows at all?

81369. There is usually one building suitable for keeping one herd. A segregation policy would mean the building of a special cowshed?—Well, you must have decent conditions, if you are to carry out that or any other policy. Certainly, I think the cheaper the cowsheds are constructed the better, but they must be properly lighted, ventilated, and floored. If they are not, then I think their improvement must be the first step in any policy.

81370. Mr. CAMPBELL.—That is quite right, but I am sorry you do not get me out of my difficulty?—What is it?

81371. My difficulty is that if I test my cows and try to segregate those which react, you immediately impose new restrictions on me, restrictions which you do not impose on the man who does not test his cows. If a man does not test his cows, you are perfectly satisfied with the veterinary surgeon's inspection of them. But if a man does test his cows, you are not satisfied with the veterinary inspection, but you insist that he should take special precautions with regard to the animals which react; it is not an imaginary difficulty?—It is not imaginary, but it is temporary, and is one that can be got rid of by simple precautions.

81372-8. Sir STEWART WOODHOUSE.—You suggest

that if a man has a herd of sixty cows, he should divide it into two herds; that the milk of the non-tuberculous herd should be sold at a higher price, and the milk from the tuberculous cows pasteurised?—What will happen will be that this man will sell all the milk which comes from the cows free from tuberculosis as "guaranteed milk." I would not allow other milk to be mixed with that. I would allow him to sell this other milk as ordinary milk, on the understanding that it was kept under constant control, partly by the visits of veterinary inspectors, and partly by taking samples at intervals of a few days.

81374. Mr. CAMPBELL.—You are almost at my point. Would you allow them to mix the two?—No.

81375. But suppose he does mix the two, and does not guarantee it, and sends it in as if he had never tested his cows?—I don't know that I should object to that. He could not do so, as a matter of fact.

81376. I think I understood from Mr. Brittlebank that you get increased prices for the milk of this herd you have got?—This particular farmer gets increased prices.

81377. The evidence we have had elsewhere is that it is difficult to get increased prices after a man has taken all this trouble to select non-reacting cows?—I daresay it is, but it is the fault of the physicians, and not the fault of the people. If those interested in this matter took pains to assure the physicians personally what they were doing; that they had secured a herd; that it was bona fide able to produce non-tuberculous milk, the physicians interested in children's hospitals would be led to recommend the milk. I see no other way to get the prices. Ordinary people know nothing of this. It is an artificial thing, but it is a demand which can easily be created.

81378. Professor METTAM.—Can physicians in the hospitals at the present time insist on pure milk?—I do not know. They did at one time.

81379. Is it not their duty, seeing that milk is a vehicle for tuberculosis?—The late Dr. Ashly carried out an extensive campaign for years on this subject, and he was one of the movers in getting this pure milk supply. I do not know what more physicians can do.

81380. Lady EVERARD.—The supply to the hospitals should be above reproach?—In my opinion it should.

81381. Mr. CAMPBELL.—Who gets the milk from this farm?—The Corporation hospitals.

81382. You don't know whether any other hospitals are getting milk of the same quality?—I do not know as a fact. They do not get it from this farm. I do not know precisely what their sources of supply are at this moment. But the supply of hospitals is managed by economical Boards of management, and there is, no doubt, a constant tendency to whittle down the price.

81383. The CHAIRMAN.—Is the entire milk supply from this farm utilised for the hospitals?—Yes, I believe so.

81384. Do any private consumers pay an increased price by reason of its being certified as free from tuberculosis?—

Mr. Brittlebank (intervening).—No, we do not admit private purchasers.

Dr. Niven.—If some were left over, the farmer would be at liberty to dispose of it. I have heard of one or two other herds guaranteed free from tuberculosis, but this thing is not spreading as it should do. It will have to be spread by a man of character and energy.

81385. Lady EVERARD.—Is it ignorance on the part of the consumer; do they not realise the danger?—They would be glad to get such milk, but they would have to be sure of it. If you do this, you will raise a great deal of opposition from a great many quarters. But you have got to convince the consumers that there is this extremely superior article.

81386. You have first got to convince the consumer of his danger?—I think a good many are already convinced of the danger. But it wants a good deal of education, and I should think that the doctors are the people who could help.

The CHAIRMAN.—Thank you, Dr. Niven, we are much obliged.

Dr. A. A. MUSSEN examined.

81387. The CHAIRMAN.—You are the assistant medical officer of health for Liverpool?—Yes. I am sorry Dr. Hope is not able to come. He is engaged in London.

81388. We are grateful to you for your attendance.

Will you tell the Commission what steps have been taken by the public health authority in Liverpool to control the milk supply in that city?—Would it simplify matters if I showed you our regulations? (Regulations handed in).

31389. I don't propose taking you through the details, but would you give us the number of officers employed, and the various duties they are called on to discharge?—We have two inspectors, who do nothing else but inspect cowsheds and milkshops. We have also three inspectors under the Food and Drugs Act.

31390. Are they under the control of the Corporation?—Under the control of the medical officer of health.

31391. Professor METTAM.—They simply collect samples?—Yes, but they also report on the sanitary condition of the cowsheds.

31392. Have they any special training?—Yes, sanitary inspector's training, in general sanitary matters.

31393. Where do they get it?—In Liverpool.

31394. Under you?—Under me, and the veterinary and medical officers of health. We have special classes, and regular courses, and we have a museum on the same lines as the Parkes museum in London, showing the most recent sanitary appliances. It is practically the same examination that is held by the Sanitary Institute for their inspectors.

31395. The CHAIRMAN.—You have told us about two classes of officers. You were going on to speak of the veterinary inspectors?—We have two. They are members of the Royal College of Veterinary Surgeons, and they are whole-time officers.

31396. Has your public health authority obtained the same power which has been conferred on Manchester, with regard to the inspection in outside districts, and have you also the Model Milk Clauses which were granted to Manchester in the Bill they promoted a few years ago?—We have the Model Milk Clauses relating to tuberculosis. I think you will find them on page 18.

31397. Have you been confronted with any difficulty, consequent upon your officers going into areas controlled by other authorities for the purpose of making an inspection of the stock?—There has been no difficulty.

31398. You have not come into conflict with the local authorities in any place?—Well, they did not like it at first; but now, I think, they are quite reconciled to it.

31399. It has become a recognised custom now, and they have accommodated themselves to it?—Yes, and not only that, but some of them have been very pleased with it. It has enabled them to secure improvements in their own cowsheds.

31400. Professor METTAM.—Do you communicate with the local authority before or after your visit to the district?—We communicate with the medical officer of health for the county.

31401. Before you go?—Before we go.

31402. The CHAIRMAN.—Do you also communicate with the local authority?—Not always.

31403. Have you to get an order signed by a magistrate in order to carry out the inspection?—Yes.

31404. Have you sometimes found magistrates who were not quite willing to sign?—No; we have never had any difficulty in that way.

31405. There has never been a refusal, so far as you know. Where your officer reports that he finds the condition of the byre distinctly unsatisfactory with regard to drainage, light, and ventilation, have you authority to call on the owner of the byre to carry out improvements?—We have power to prohibit the milk coming into the city until we are satisfied that the danger from tuberculosis has gone.

31406. Has that power been sufficient to enable you to effect the improvements which you desire?—In a very great number of cases it has.

31407. In some cases, however, you have not been able to accomplish all you desired?—That is so.

31408. Professor METTAM.—Do your powers apply to any other disease than tuberculosis, supposing you have due reason to suspect infection?—No; but that is included in the Public Health Acts.

31409. The CHAIRMAN.—You have that power, apart altogether from other powers, under your own legislation?—Yes.

31410. Do the local authorities assist you in carrying out the orders you make, for the purpose of securing improvements in the byres?—Oh, yes; they are frequently very pleased to get reports from us that such and such a byre is insanitary.

31411. And do they assist you by sending their own officers for the purpose of having your suggested improvements carried out?—Yes.

31412. You have loyal co-operation from the local authorities in assisting you to secure that the cows are kept under proper conditions?—Yes; the local authorities have been very good recently.

31413. Professor METTAM.—What about the time prior to recently?—Well, as I have told you, they did not like it much at the start.

31414. The CHAIRMAN.—It was an innovation, and one can quite understand that it would be somewhat resented at the beginning?—Certainly.

31415. Professor METTAM.—How long have your powers been in force?—Since 1900.

31416. The CHAIRMAN.—It took a few years to enable them to realise that they were liable to inspection, and that it was better to recognise the fact?—Certainly.

31417. Mr. WILSON.—What type are the councils in the outside areas? Are they composed to any large extent of farmers, of the class of people about whose business you inquire?—Yes; in some cases.

31418. And do you find that, notwithstanding that, they are willing to make certain orders which will impose financial obligations on those who are their neighbours and co-traders?—Yes, they do. Of course, I am speaking generally; I do not say in every case.

31419. One recognises that there will be contumacious individuals who will not show themselves quite so amenable to discipline and authority. But, speaking generally, you would say that co-operation exists?—Yes.

31420. Have you traced any outbreak of infectious disease to the milk supply raised outside the city area?—I cannot recall any definite one at present. We have had small outbreaks within the city. I recall one case in which a scarlet fever outbreak took place. There were about seventy cases. The outbreak was traced definitely to the milk supply having been contaminated by a child who was convalescent from scarlet fever, and who was living in the dairy.

31421. In such a case have you authority to prohibit the milk being sold from that dairy, immediately after the discovery is made?—Oh, yes; under the general powers.

31422. Under the Public Health Act. What proportion of the milk consumed in Liverpool is raised within the city area?—I think a reasonable estimate would be about half the supply. The total supply is about 14,000,000 gallons a year.

31423. There is one branch of your administration on which we should like to have the fullest possible details, and that is the scheme whereby you have been distributing milk to the children of the working class population. At what period was it first called into existence? The report you have handed in shows that the year given in the first instance is 1902. Was that the inception of the movement?—No; 1901.

31424. I take it that it was commenced in a small way. Would you be good enough to tell the Commission on what representation the Public Health Committee undertook this experiment? Was it on reports from medical men practising in the districts in which the industrial population resides?—No; it was on the report of the medical officer of health.

31425. Himself?—Himself. It had been the subject of investigation by him in St. Helen's, a town near to Liverpool, and he had got an idea from one or two French towns. The medical officer of health made a report on the general question. The committee were very favourable to it, and we started in a small way. There was a special difficulty in starting it, because we could not get any machinery. We had to devise our machinery ourselves; the machinery we were shown from France was not suitable.

31426. It was not applicable to your special situation?—No. The scheme was taken up pretty well, and at the present time we have about seven hundred children on the books.

31427. Lady EVERARD.—What ages?—From birth to twelve months.

31428. The CHAIRMAN.—How are they selected?—Chiefly by doctors recommending them.

31429. Is any investigation made as to the circumstances of the family before a child is put upon the list?—No; except that there is a baby which the mother is unable to suckle.

31430. What I was curious to know is this, how do you differentiate between those who should get the benefit and those who should not?—Well, we would like them all to benefit.

31431. I know, but then one of the difficulties that confronts one in any philanthropic scheme is the danger

of people who are not in necessitous circumstances taking advantage of it?—Some people in very good circumstances get this milk in Liverpool.

31432. Lady EVERARD.—Do they pay for it?—Yes; they pay.

31433. Miss McNEILL.—Do I gather from your report that the people who can afford to pay bigger prices are expected to do so?—Yes; that is so.

31434. The CHAIRMAN.—Is there a graduated price, then, according to circumstances?—Not officially, but we temper the wind to the shorn lamb.

31435. Who exercises control?—Our superintendent.

31436. Pardon me if I go into rather minute details, because this is the first instance in which we have had official cognisance of anything of this kind being done by a public health authority, and the expenditure being recognised by the State. We are interested for that reason, and also because it bears on the problem that is rather a burning one in Ireland in certain localities?—I understand. I was going to say that out of 724 infants on our books at present 26 are supplied free.

31437. Absolutely free?—Yes, and 68 partially free.

31438. What determines that this certain number shall receive a free supply?—The general character of the home and the applicant, as investigated by the superintendent of our depôts.

31439. Does the decision lie absolutely with the superintendent, or does he recommend and the committee decide?—The decision would certainly rest with the committee, but, as a matter of fact, it is left with the superintendent.

31440. He has opportunities of investigating the circumstances which the committee have not?—Yes.

31441. Professor METTAM.—I suppose the doctor in attendance can recommend a free supply?—Yes; if it is a suitable case.

31441a. The CHAIRMAN.—You told us that in certain other cases a small charge is made?—Yes; 68 are supplied partially free at the present time. Those are cases where the superintendent thinks that the family should pay something.

31442. That they are in a position to make some contribution?—Yes.

31443. Lady EVERARD.—At what price?—1s. 6d. a week.

31444. Is that the partially free?—No; that is the gross.

31445. The CHAIRMAN.—What is the quantity covered by the week's supply?—That depends on the size of the infant. There are the bottles which we supply—

(Photograph of bottles produced.)

31446. Miss McNEILL.—Do you reckon that the 1s. 6d. a week will cover the whole expenses?—No.

31447. The CHAIRMAN.—Is 1s. 6d. the largest contribution exacted?—That is the usual price. Better class people may pay more for some slight addition.

31448. Mr. CAMPBELL.—Is it regarded as an experiment?—It has been going on for twelve years. You will see here (picture exhibited) the basket in which the bottles are sent out. The child gets a basket every twenty-four hours. That contains, for the smallest child, nine bottles, and each bottle contains one feed. There is no necessity for the mother to measure the milk or decant it. All she does is to place a teat on one of these bottles and feed the child. The object is to minimise the risk of contagion in the home.

31449. Miss McNEILL.—A great part of your loss is due to wastage in bottles, and difficulty of cleaning?—Administration generally.

31450. Mr. WILSON.—Can you give the price of the milk handled in that way?—We reckon that 1s. 6d. just pays for the milk. It does not pay for handling.

31451. Sir STEWART WOODHOUSE.—Is it pure or diluted?—That depends on each child. It is diluted according to a formula modified from time to time.

31452. Is it pasteurised?—It is heated up to 210 degrees.

31453. Sterilised?—No, not sterilised.

31454. Miss McNEILL.—For how long will it keep in good condition?—In some cases we heat it longer to make it keep. We do not guarantee it to keep longer than twenty-four hours.

31455. You work your depot on Sunday?—Yes.

31456. The CHAIRMAN.—To what area does this scheme extend?—It is supposed to extend all over the city, but it is restricted by the necessity of getting the

milk so often from the depot. To minimise that difficulty we have induced several dairies to take the milk from us and distribute it from their shops. We do not deliver it from the depôts.

31457. It must be called for?—Yes; we have five depôts under our own control, and an arrangement with eighteen or twenty dairies.

31458. Mr. WILSON.—Are these depôts used only as depôts, or are they clinics?—No, merely depôts. We have no medical attendance there. We encourage the mothers to consult their own medical men.

31459. Miss McNEILL.—You have the co-operation of the medical men, and don't require a clinic, as if you were doing this independently of the medical men?—That is so.

31460. Has each depot got its plant?—No, only two.

31461. The CHAIRMAN.—From what source is the capital expenditure drawn?—From the ordinary sanitary account.

31462. It does not appear in the table of expenditure what the initial cost was. Was it borne out of the rates in one individual year?—Yes.

31463. With regard to the demand, are you ever obliged to refuse any applicant because of scarcity of the supply, or desire not to get beyond a certain standard of expenditure on this scheme?—We have not been restricted.

31464. And in the expenditure here set out you are dealing with all the applications made to you for this milk?—Yes.

31465. It is gratifying to see that the cost of the milk itself is increasing year by year. The quantity you have dealt with must be increasing. In 1911 £2,018 17s. 6d. worth of milk was taken, the entire cost of the enterprise for that year being £4,651?—The cost of the milk is practically only 50 per cent. of the entire expenditure.

31466. Lady EVERARD.—What do you pay?—We paid ninepence-halfpenny, and now we pay tenpence a gallon.

31467. The CHAIRMAN.—Is this milk derived from a special herd under the control of the veterinary inspector? Are they subject to the tuberculin test?—We have special regulations. The milk comes from one farm.

31468. Sir STEWART WOODHOUSE.—The cost to the Corporation is diminished by the partially paid sums?—Yes. I am sorry you are not able to come and see the depot. It is rather a difficult matter to explain.

31469. The CHAIRMAN.—You are helping us in every possible way.

The Witness.—The milk we have been getting for these depôts has come from one farm for a number of years, and has been exceptionally good.

31470. Miss McNEILL.—In the country?—Yes. Our veterinary inspector goes down from time to time to inspect it, and we insist upon the farmer himself having a veterinary inspector.

31471. Mr. WILSON.—Can you tell us what amount of milk was handled in 1911?—About 90 gallons a day.

31472. The CHAIRMAN.—What impost has this expenditure of £3,000 a year imposed upon the rates?—A penny rate means £18,000.

31473. In round figures it would be about a sixth of a penny?—Yes.

31474. Has public opinion endorsed your action in making this expenditure?—Oh, I think so.

31475. Mr. CAMPBELL.—It is well known that this is being done?—Oh, yes; but not as well known as we would like. If it were better known more infants might have the benefit of it.

31476. But does the larger ratepayer know you are imposing this charge?—I should think he knows more about this than about some other items.

31477. Professor METTAM.—It has never been a question at the municipal elections?—No, except in the favour of some candidates.

31478. Mr. CAMPBELL.—Is there often a surplus of milk from day to day?—There is sometimes. We sometimes heat it, but if it is at all suspicious it is thrown away.

31479. Have you any difficulty about getting it in the winter?—We have the same supply all the year round.

31480. You have not got a fixed contract?—Yes, we have a fixed contract.

31481. Mr. WILSON.—It would work out that the milk is worth to the public about three shillings a gallon. Part of it is paid by the money you get back,

and the rest is paid by the rates. In order to run a depot of this type one would have to contemplate a cost of three shillings a gallon?—But one must remember that about 50 per cent. of the children who come to our depot are ill, and that they require specially controlled milk.

31482. It is in the nature of medicine for them?—Yes. Sometimes we have as many as fifty or sixty formulæ to make up.

31483. Professor METTAM.—And that all means labour and expense?—It all means labour and expense.

31484. Do you pay the medical man any fee for prescribing the formula?—No.

31485. That is required of him as part of his medical duty?—Yes. We on our part have great pleasure in making up any formula he may prescribe.

31486. Who dispenses?—The Superintendents. They are pretty well trained, because we have all our milk analysed by Gruber's test.

31487. The CHAIRMAN.—Has there been a sensible diminution in infant mortality in Liverpool since this scheme has been in operation?—It varies very much. You must remember, of course, that during the whole of the time this has been in vogue we have treated only about 13,000 children.

31488. That is only a very small percentage of the population?—Only a very small percentage. But I think there is no doubt that the death-rate among those children who have been treated is smaller.

31489. You yourself are impressed by the value of it as a food for sucklings?—There is no doubt about it.

31490. Miss McNEILL.—I see these figures are given as the cost of the purchase of milk: 1902, £1,427; 1903, £1,604; 1904, £1,527; 1905, £1,449: there is a drop for 1906 to £1,148.—That was the cost of the milk purchased for the depot?

31491. Yes. In 1907 it was £1,198, and in 1908, £1,230. Then the figures rise again considerably; in 1909, £1,714; in 1910, £1,949, and in 1911, £2,018. The rise is very striking.—I think I can explain that in one way. The demand for the milk did drop in those years of decrease, and it has gone up again. But in addition to going up in the ordinary way, we have introduced a very important adjunct to the supply of milk to infants, and that is the supply of milk to nursing mothers.

31492. Whole milk?—Whole milk. At the present time we have 198 mothers who are getting milk for themselves.

31493. The CHAIRMAN.—Is that, too, supplied at a reduced rate?—It does not pay, of course.

31494. It does not pay the entire cost of distribution and management, but it is not distributed quite on the same liberal terms as the milk that you supply directly for the infants?—There is this about it, it does not require so much administration.

31495. Professor METTAM.—Is the milk supplied for the use of the nursing mother herself, or for the nursing mother to prepare for the use of her child?—For herself; for her own consumption.

31496. The CHAIRMAN.—Is that milk sterilised also?—No, except in the hot weather.

31497. And then for preservative purposes only?—Yes.

31498. And this part of the scheme is growing?—Yes. We have been supplying milk to nursing mothers since 1908, so that may account for something in the increase of the purchases.

31499. That is just the period when the rise began?—Yes; but at the same time the number of children supplied has also increased.

31500. Lady EVERARD.—How much milk do the mothers get?—About 8½ gills—nearly a quart—and at the present time 118 are paying 2d. a day.

31501. That is really 2d. a quart.—Of the rest, sixty pay 1d. and twenty pay nothing.

The CHAIRMAN.—There again you regulate your distribution by the financial circumstances of the family.

31502. Mr. WILSON.—Is this part of a complete scheme of milk control for the city?—No; it is entirely on its own.

31503. Lady EVERARD.—The scheme you have described is carried out entirely through the Corporation?—Entirely. I should say that one or two members of the Corporation are so impressed with the benefits that they have themselves subscribed from time to time to provide women with a free supply.

31504. To extend the field of operations?—Well, more especially to supply free customers.

31505. But you have had no difficulty with the central authority in giving this money?—It has been given.

31506. Mr. CAMPBELL.—Is it contemplated that this scheme is going to grow to large dimensions?—It is difficult to say what will happen.

31507. But do any of the members of the Corporation dread that it is going to become a burden?—Of course, there are some who are frightened.

31508. The CHAIRMAN.—The economist is to be found in Liverpool, as elsewhere?—Yes.

31509. But, at all events, the scheme has met with moral support from the general bulk of the population, and there has been no outcry within the Corporation of Liverpool against expending money in this way for the purpose of feeding children?—No.

31510. Miss McNEILL.—Did you say that there are about 700 babies on the list at the depot?—That is so.

31511. That must be a considerable percentage of the poorer families?—I am afraid we have a very large poor population in Liverpool.

31512. Mr. CAMPBELL.—Has this scheme ever been regarded as an insurance against the filling of the asylums and workhouses in later life?—Well, we do not attribute too much to it.

31513. But do any people who advocate it take that view?

The CHAIRMAN.—Do they regard it as reproductive expenditure which is likely to lessen a future burden?—It is looked upon in the light of any other action that is taken for the purpose of increasing the health of the community.

31514. Mr. WILSON.—With regard to previous sections in your report, you have evidently got a scheme analogous to that we have heard of from Dr. Niven, by which you follow up the samples you have taken right up to the cows in the cowshed. In 1905 I see the number of cows examined was 298, and approximately a similar number has been examined since. In the first of the years named there were 57 cases of tuberculosis of the udder. It has now dropped to 14.3, 8.1, and 2, so that you have apparently very nearly eliminated tuberculosis of the udder?—Is that within the city?

31515. Yes, within the city boundaries?—Yes; we have got it down very low.

31516. Have you observed any relation between these figures and mortality from tuberculosis either among children or older people?—Undoubtedly the death-rate from tuberculosis other than phthisis has gone down in recent years.

31517. Are the figures in this volume?—Yes, I think so.

31518. We got such very interesting figures from Dr. Niven a few moments ago that one would like to see whether the experience of Liverpool could help us also.—I think you will find all the details in the report.

31519. The CHAIRMAN.—At your depot you are dealing at the present time with practically 1,000 children who are the offspring of families in necessitous circumstances. That must be a substantial proportion at least of those families who would need assistance to enable them to nourish their babies properly?—Yes.

31520. Is the milk supplied for a full year?—It depends on whether the mother will take the trouble to come for it.

31521. You don't limit it, do you?—No; we supply them up to a year.

31522. I do not suggest that one should draw too rigid conclusions, but, at the same time, in view of expenditure of this kind, which is not inconsiderable, one would like to think that a substantial benefit was being conferred on the poorer sections of the population, and that undoubtedly is being done by your scheme.—One does not like to push the figures too strongly, but there is a paragraph at the end of the Report showing the death-rate among the children who have been at the depot.

31523. Where do you draw your principal outside supply of milk from in Liverpool?—From Cheshire; 60 per cent. of the outside milk comes from Cheshire.

31524. The CHAIRMAN (reading from the "Report on the Health of the City of Liverpool during 1911").—Out of the 13,789 infants coming promiscuously to the depots, at varied ages and in conditions of health below the average, the mortality was 93 per thousand as against 144 per thousand for the whole city, and 81 to

95 for the best districts, and 219 to 243 for the worst, for the five years. But it must be remembered that in the rate for the whole city, and for the best and worst districts, are included also breast-fed infants. Clearly if breast-fed infants were excluded, and artificially-fed infants only taken into account, the rate of mortality amongst them would be enormously larger, and would show even more forcibly the advantage of the sterilised food, which is, of course, an artificial food, over other methods of artificial feeding.

Miss McNEILL.—A great many of these children are unhealthy children?—They are when they come.

31525. They come to the depots because they have not been doing well on other foods?—Two or three years after we started this I drew up a chart showing the condition of the children before and after they came to the depot. There are in this chart 360 cases, and you will see how much below the average weight they were when they first came. (Chart produced.)

31526. Yesterday we had evidence of the discontinuance of the Glasgow depot on account of unsatisfactory results with regard to weight. They said that that was the reason why they stopped their depot, because other methods of artificial feeding had produced greater increases of weight. In yours the increase of weight has been very marked?—Very. From 7 lbs. 10 ounces to 20 lbs. in ten months.

31527. Lady EVERARD.—Have you any trouble in enforcing the Cowsheds Order?—No; we have them very well in hand. We have about 486 cowsheds in the city.

31528. Professor METTAM.—What is the bovine population?—6,428.

Professor METTAM.—There are more cows, then, in Liverpool than in any other city in the United Kingdom.

31529. Lady EVERARD.—Is it your opinion that the Order for cowsheds should be compulsory and permissive? Have you found that some local authorities put it into operation badly and some not at all?—I have not much experience of other local authorities.

31530. Mr. WILSON.—What is your routine with regard to samples of milk examined for tubercle bacilli?—They are taken by one of our food and drug inspectors and then taken to our Corporation Bacteriologist to be examined. He sends us a report, and the cowshed is then examined.

31531. If you get the presence of the bacillus the veterinary inspector goes to the farm from which the milk was sent into Liverpool?—Yes.

31532. Has he got power to destroy the cow with compensation to the owner?—No. The power we have is that he reports to the Corporation Health Committee as to the cowshed, and the Health Committee have the power to make an order to prevent that farmer sending milk into the city till they are satisfied that he has disposed of this cow or prevented tuberculous milk coming through.

31533. You have very small security against that cow being used for the milk supply in a neighbouring cowshed or for a neighbouring town?—No, we have no power in that direction.

31534. And yet once you have discovered a beast to be clinically tuberculous its throat should be cut with the least possible delay?—That seems to be quite reasonable.

31535. But your regulations only protect one line of milk route?—We have only the power to protect ourselves, but in protecting ourselves we have influenced the local authorities in the country to improve their sanitary conditions.

31536. Professor METTAM.—Have you any seaborne milk?—Yes. Some from Denmark.

31537. Frozen?—No. Sterilised.

31538. As to this question of notification of tuberculosis by owners of cows, is there any penalty?—40s.

31539. Have you ever prosecuted?—Yes.

31540. And got convictions?—Yes.

31541. Mr. CAMPBELL.—What defence did the farmer set up; that he didn't know?—We have had convictions in 46 cases in 10 years. Three cases were withdrawn and one dismissed. That is 50 cases.

31542. What were the defences? Do they not sometimes say that they didn't know; that the animal was perfectly all right as far as they knew, and if they said that, would it not be a perfectly reasonable position on their part. It takes a veterinary surgeon all his time to be quite sure about it?—But the section only

says every dairyman who supplies milk into the city and has any cow "suspected of or exhibiting signs of" tuberculosis.

31543. If you said any cow having an abnormal udder or lesions the farmer would know, but not where a cow is merely tuberculous?—What we want to do is to get to know about this abnormal udder.

31544. Mr. WILSON.—You don't want to penalise a man who sends in information that a cow has got something the matter with it?—Certainly not. In the city under this same section we have received 1,103 notifications.

31545. In how long a time?—Since the Act came into force.

31546. Professor METTAM.—And these have all been cases of suspected udder disease?—Abnormal udders.

31547. Do you know whether the Liverpool hospitals dispensaries insist on having tubercle-free milk?—I do not know that they insist upon it, but they take every precaution they can to ensure a pure supply. I do not know whether it would interest you to have a copy of a report drawn up by the members of the Liverpool Medical Institution on the subject of the milk supply to the hospitals, giving suggestions as to what should be required in the contracts.

31548. Do they include a condition for tubercle-free milk in the hospital contracts at the present time?—I do not know.

31549. You do not know whether they insist on the conditions which they themselves recommend?—They insist that the sanitary conditions of the cowsheds shall be up to a reasonable standard, so far as they can.

31550. Do you know whether the milk going into the various hospitals in Liverpool is bacteriologically examined?—Certainly; we do it for them.

31551. You do it at the University—Professor Beattie does it, I suppose?—Yes.

31552. The inspector of foods and drugs examines the milk supplied to the hospitals in the same way as he would examine the milk of any vendor?—Exactly.

31553. Do the hospitals themselves take samples for bacteriological examination?—Occasionally. But generally they send for us, and our inspector takes the sample. It is better taken.

31554. I presume the milk is brought into the city by train?—Yes.

31555. And across the river in boats?—Not very frequently; we have a tunnel.

31556. And it also comes by road?—Yes.

31557. Have you any receiving stations for this milk?—Yes.

31558. There are wharves where the milk is deposited from the train?—There is one at Lime Street Station.

31559. A proper milk receiving quay or platform?—It is used practically for milk alone.

31560. And it is there where the samples of milk are taken?—Yes.

31561. Are any special precautions taken by the inspectors so that there shall be no contamination at the time of taking the sample; have they any special vehicle for carrying the milk, the same as they have in Manchester?—They have special vehicles, special bottles, which are supplied by the bacteriologist from the laboratory.

31562. The CHAIRMAN.—Is there any special sale of milk certified to be drawn from cows that have been subjected to the tuberculin test in Liverpool?—No.

31563. None of the cow-keepers have subjected their herds to the tuberculin test, and then advertised their milk as being drawn from tested cows?—Not that I know of.

31564. Professor METTAM.—In some towns you will see in the window of a dairy: "The cows producing our milk have been certified to be free from tuberculosis by so-and-so," or similar notices. You have never seen anything like that in Liverpool?—No.

31565. Of course, it is of no use, because the certificate only refers to the state of the herd at the time the examination was made?—It is quite useless.

31566. Mr. CAMPBELL.—Is there much talk in Liverpool about having all cows tested for tuberculosis?—There is always talk about it.

31567. But no definite scheme or plan has been proposed?—No.

31568. Is there a plentiful supply of milk in Liverpool?—I think it is quite good. Of course, the price has gone up, as it has elsewhere. A very large quantity of condensed milk is used in the poorer parts of the city.

31569. They use milk substitutes, condensed milks, and so forth?—A very large quantity of condensed milk is used.

31570. Is it used to supplement the milk?—I do not know that. It is very largely used in the poorer class houses.

31571. In the same way that it is used in Ireland?—Yes.

31572. Sir STEWART WOODHOUSE.—Is there less beer and porter consumed than there used to be?—Do you mean for infants' food?

31573. No; as a beverage. If there was less of alcoholic liquor, there would be an increase, I should say, in the consumption of tea, and possibly of milk. You would not say there has been much change in that respect?—I do not think there is really much change.

31574. I take it that the infants who are receiving milk at your depot are infants not being nursed by their mothers?—We insist on the mother nursing her child if possible, and every means is taken by our female inspectors to get this accomplished.

31575. Is the supply limited to infants under twelve months? When they pass twelve months are they cut off the list?—Occasionally we have kept them on after twelve months, but that is exceptional.

31576. Where the children were delicate, or for some other special reason, I take it?—Yes. After twelve months' old they should be getting something more than milk.

31577. A small number of the 700 children who are being supplied at the depot are receiving a gratuitous supply, but I understand that the great majority pay something?—Yes.

31578. Therefore the extremely poor do not avail themselves of the depot to any large extent?—Well, we find that among the extremely poor a larger percentage of the mothers feed their infants on the breast than among the class just above. It is less trouble than preparing artificial food.

31579. So apparently a considerable proportion of these 700 infants belong rather to the well-to-do working class?—Yes. You see the getting of the milk entails a certain amount of trouble. They have either to come to the depot for it themselves or send for it, and it means that the mother must be very keen on rearing her infant well when she takes that trouble.

31580. Some of them would appear to pay the value of the milk. I am not speaking of the cost of administration. We have heard that some pay 1s. 6d. a week. That might possibly represent the value of the milk charged at the ordinary rate?—That is so.

31581. And in such cases they cannot be said to get it as a matter of charity?—No.

31582. Why do you fix on 210 degrees, almost boiling point, for heating the milk?—It is not really fixed. In the cold weather we do not heat it up as high as that, and then it is only for a short time, perhaps a quarter of an hour. But in the summer time we find that unless it is heated nearly up to boiling point, or perhaps a little more, for half an hour, it will turn sour before twenty-four hours have passed. Whatever the reason is, it requires a higher temperature in the summer. One must remember also that after the milk is heated, and has got to a summer temperature, the bacteria not killed develop quickly; more quickly in summer than in winter.

31583. Do you consider that milk that is practically boiled is as nutritious as raw milk?—There is a difference of opinion on that. Reports say that there is very little difference in the nutritive value.

31584. Professor METTAM.—What is your own opinion?—I am not a children's doctor, but I should not think there is much difference.

31585. Mr. CAMPBELL.—These children that you are feeding are being reared upon heated milk for a large period of their lives. Are you finding any bad effects?—No.

31586. On the contrary, good effects?—Yes.

31587. And that would indicate that there is no harm in heating milk up to 210 degrees?—That is so.

31588. Sir STEWART WOODHOUSE.—Have you a high mortality from diarrhoea amongst infants in the summer?—Yes, very; but it has lessened of late years.

31589. Do you attribute that to the milk?—We think it has something to do with it.

31590. Would you say it was the result of defective hygienic surroundings?—I think so. The neighbourhoods where deaths are most frequent are unsanitary areas.

31591. Are special precautions taken in the summer time as regards the milk?—We take a number of samples, and we also have our female inspectors, who devote their whole time to these cases during the diarrhoea period, instructing the mothers. We find that the contamination of milk occurs chiefly in the homes.

31592. Professor METTAM.—Do you issue pamphlets during the hot weather?—Yes.

31593. Have you applied the Widal test in many cases amongst milk purveyors?—We have not had an outbreak of enteric which we can trace to them.

31594. Have you the power to insist upon the application of the test if you have reason to suspect typhoid infection in the handling of the milk?—I do not think we have got any local power, but if the milk-dealer was to be told that his milk would be under suspicion if he did not agree, I do not think we should have any difficulty.

31595. Have you the power to stop the supply of milk from a dairy if you suspect that it is contaminated in the dairy?—Yes.

31596. If you have suspicion and no proof?—Yes.

31597. Miss McNEILL.—You believe that the progress made by children fed on your milk has been as satisfactory as the general average rate of progress?—Yes, among those artificially fed.

31598. You have no reason to suspect a depreciation of child vigour as the result of being fed with heated milk?—No.

31599. It is said there is a greater likelihood of the occurrence of rickets. Have you had that experience?—I do not think that is so.

31600. You have not had any trouble with rickets?—Of course, there are rickety cases.

31601. Is much condensed milk used?—Yes. A large quantity.

31602. To what do you attribute its use?—It is cheaper, and it is capable of being kept.

31603. Do you know whether they used a good brand of it with a fair proportion of fat?—I am afraid they do not. I am afraid a very large proportion of it is skimmed condensed milk.

31604. And the ordinary purchaser, you think, does not try to find out whether there is enough fat in it or not?—No. Of course, machine skimmed milk must be labelled; that is compulsory under the Act of Parliament; but whether the ordinary man who buys it is aware of the great difference there is between the two is a very doubtful question.

31605. Professor METTAM.—It is a question of price, then; the cheaper article being the one favoured?—Certainly.

31606. The CHAIRMAN.—You have been good enough to say that if any members of the Commission could visit Liverpool you would kindly show them over your depots. After the very interesting description you have given of your scheme, some of the members would like to see all they can of it. If they could visit Liverpool on their way back to Ireland perhaps you would be able to show them over your depots?—With pleasure.

The CHAIRMAN.—Thank you so much, Dr. Mussen. We are very much indebted to you.

Mr. JOHN T. QUINTON examined.

31607. The CHAIRMAN.—You are one of the food and drugs inspectors under the Corporation of the City of Liverpool?—I am.

31608. How long have you occupied that position?—Nearly seventeen years now. I have had twelve years in food and drugs work as Chief Inspector

31609. And a part of your duty is to take samples of the milk distributed in the city for the purpose of having them analysed?—That is so.

31610. What system is followed in the taking of samples? Are they taken promiscuously at the various railway termini at which the milk is delivered, or do

you restrict your energies to suspected vendors?—Oh, no; we take samples at all places where the milk comes into the city, and from the vendors within the city as well.

31611. Speaking generally, is the milk produced in the city itself purer than the milk sent in from the outer area?—I should say it is.

31612. And it contains a higher standard of butter fat than the milk which is sent in from the outer area?—Yes.

31613. To what cause would you attribute that result? Do you think the feeding of the cows is in any way responsible?—I do.

31614. Are the cows that are kept in the city fed more highly than those that are kept in the country?—So far as my experience goes they are.

31615. Are the cows kept by the city dairymen kept for one lactation period only?—Not always; they may be kept for a longer period.

31616. Have some of the cowkeepers in the city grass runs for their cattle?—Very few; not more than twenty or thirty.

31617. That is, they never let the cows out in summer; they are kept in the whole year round?—Oh, sometimes they go out.

31618. On pastures within easy reach of the city?—That is so.

31619. Do you continue your inspection of the cows when they have passed out of the city area just as you would if they were in the city cow byres?—No.

31620. Does your veterinary inspector make any examination of them when they are in the pastures?—Not when they are outside the city.

31621. Does he make any inspection of the cows in the herds that are supplying milk to the city?—Yes.

31622. During the period when the city cows are on the country pastures they are not examined by your veterinary inspector?—Of course, they are examined when they come in.

31623. During all the period they are on the pastures, say, May to November, they are not under veterinary inspection?—They are not out so long. They often come into the city for milking each day.

31624. Professor METTAM.—They are driven into the city from the pastures?—Yes.

31625. Then you have no cows that are practically turned out for a period of five or six months?—Oh, no.

31626. Are these farms in the city area?—A very large number of milk-dealers who have dairies in the city rent land to which they can send their cows when they wish.

31627. Have you any cow-keepers in Liverpool with no land in their immediate neighbourhood, and are such cows kept in constantly?—Yes.

31628. The CHAIRMAN.—I take it that the cow-byres in the city are kept in a highly sanitary condition?—There is no doubt about that.

31629. Have you any difficulty in getting the orders of your inspectors conformed with?—None.

31630. Professor METTAM.—The cow-keeper dare not object?—No.

31631. You have supreme power over him?—Yes.

31632. Regarding those who send in milk from the country, do you know whether landlords would be disposed to carry out improvements required by your inspectors in order to equip these farms for the trade carried on by a cow-keeper?—A great many do, but a great many do not wish to do so, and do not put into operation the suggestions we make.

31633. Have you known any supplier of milk who abandoned his trade because of financial expenditure that would be imposed by the conditions laid down by your inspector?—None.

31634. And has the increased cost necessarily arising from carrying on these operations been a factor in reducing the quantity of milk available for the consumption of Liverpool?—No.

31635. From what area around the city is the milk supply drawn?—Chiefly within fifty miles.

31636. The CHAIRMAN.—Have you found that samples of milk from a certain depot when submitted for examination as to purity were rather below normal, and though not sufficiently so to warrant prosecution, still made you take more heed to that depot for a time to ascertain whether the milk coming from that particular source was abnormally poor?—Yes.

31637. If your suspicions are aroused you take samples more frequently?—Yes.

31638. Would the number of prosecutions for adulteration be greater in the country than in the city?—It is greater in the city. But a large number of samples taken from the city may really be drawn from outside sources.

31639. Do you hold the milk-dealer responsible?—If we get a dealer selling below standard we try to get at the man who sold it to him.

31640. Professor METTAM.—You are able to stop a man who is purveying milk in the street and take samples out of his can. If that milk should prove to be below standard whom do you prosecute?—We prosecute the seller, unless we know the man from whom he gets it, and then we try to follow that up before the dealer has time to let him know.

31641. The CHAIRMAN.—Would not a difficulty arise in this way. These purveyors, I take it, have a bulk sample of milk, which may have been obtained from a number of producers. If a sample of that bulk were found to be adulterated, would you then prosecute the person who was offering the milk for sale?—Certainly.

31642. You would not be able, in such circumstances, to get at the producer, because it would be extremely difficult to determine who he was?—I quite agree. But it would be the business of the purveyor to get a warranty.

31643. And the fact that he might be prosecuted himself would mean that he would assist you in discovering the person who supplied the milk?—Exactly.

31644. I do not know whether you can give us the standard of fines inflicted by the authorities in Liverpool for the adulteration of milk?—Taking a period of ten years the average fine was about £3.

31645. For each conviction?—Yes. Of course, in some cases the fine has been considerably more than £3.

31646. It would be graduated in accordance with the measure of adulteration?—Yes.

31647. What is the highest standard of adulteration that has been proved in Liverpool?—We have had cases where almost two-thirds of the cream had been taken, and we have had as much as twenty per cent. of added water.

31648. What form of certificate does your analyst give? Does he give you the constituents of the milk, or does he simply say—"this milk has been adulterated by the addition of ten, fifteen, or twenty per cent. of water," as the case may be?—No; we get all the constituents of the milk.

31649. The solids as well as the fatty substances?—Yes.

31650. Mr. CAMPBELL.—Then he gives a certificate that it is deficient in one or other of these?—Yes.

31651. Would the cause of adulteration be water where the non-fatty solids were below 8.5?—That is so.

31652. If the milk showed eight per cent. of non-fatty solids, would you be able to declare that water had been added?—I do not say that.

31653. Would the chemist say that?—Yes; he would have authority to say it. Of course, it is an assumption that water has been added.

31654. But his certificate says it has been added?—No; he says that according to the standard of the Board of Agriculture he assumes it has been added.

Professor METTAM.—And he finds it out by a sum in arithmetic.

31655. Mr. CAMPBELL.—And if the percentage of non-fatty solids up to 8.5, and the fat is under 3, then you say a certain percentage of the fat has been removed, even although it is pure milk?—Well, of course, the standard is based on the poorest milk.

31656. Have you had any difficulty about the standard?—No.

31657. No difficulty about morning and evening milk?—Oh, yes; there is a difference.

31658. Does it worry you, or the producers, in any way?—I believe it does, but not in Liverpool so much as it used to, for the simple reason that they are milking more uniformly. There used to be too great a lapse of time between the two milkings, and that largely accounted for the difference in fat.

31659. The CHAIRMAN.—Have you ever known the defence set up that the milk had been sold as it came from the cow, and that it was the pure product of the cow, although the analysis showed it to be below the normal in regard to butter fat?—Oh, yes.

31660. What view has the magistrate taken in such a case?—The man has been fined, and by reason of this, that you have to take into consideration what the cow has been fed on. It may be a case of improper feeding.

31661. You think the quality is controlled to some extent by the food of the cow?—Yes; I do. I think the feeding is responsible to a certain extent.

31662. Mr. CAMPBELL.—To what extent?—Well, if you have a man feeding his cows on brewer's grains, potatoes, or the more watery foods, you will get a poorer milk.

31663. There is a point we did not quite finish. Formerly, you said, they used to milk early in the afternoon in Liverpool?—I said they used to milk at irregular periods.

31664. In other words, there was too great an interval between the two periods of milking. How has that been got over?—Largely by the cowkeepers' organisation educating their members on this point.

31665. But in Dublin it is not the producers of the milk we have to educate, but the people who ask for it. They ask for it early in the morning and early in the afternoon. We find it difficult to get people in Dublin to say that they will take it late in the afternoon?—I admit it is difficult, but the difficulty is minimised in Liverpool by the cowkeepers milking at regular times.

31666. The CHAIRMAN.—I take it, too, that there are better facilities for transit now than there were twenty years ago?—Yes.

31667. The milk is taken more rapidly from the farm to the consumer, and that is helpful?—Yes.

31668. Are the city cowkeepers more likely to report cases of suspicious udders than those who are resident in the more remote parts of the country?—Yes; for the simple reason that if they did not they would probably be summoned and fined before the magistrates. We always take proceedings where they do not notify, and a prosecution would affect a cowkeeper in the city much more than one outside.

31669. Has it ever been pleaded in these cases that the owner himself was not conversant with the abnormal condition of the animal?—Yes; it has come up almost every time, that he had no knowledge of it.

31670. But the magistrate has held that it was his duty to have knowledge?—Yes.

31671. Ignorance has not helped him in any way?—Not in any way, so far as we are concerned.

31672. What sort of fines are imposed for breaches of the regulations in not reporting suspicious cases?—Forty shillings is the maximum. We never have less than twenty shillings, and more often forty shillings. In addition to that, if the farm is outside the city, the costs entailed in visiting the farm are sometimes obtained from the farmer.

31673. Have you much trouble in enforcing cleanliness in the handling of the milk, in the habits of those who are engaged in it?—No; very little trouble, speaking for the city.

31674. That has been an educational movement, I take it; they have come to recognise that the habits and customs of years ago cannot now be tolerated?—They recognise that fully.

31675. Do they make provision for the washing of the hands of the milkers?—Yes.

31676. Do the milkers wear smocks?—Some do; not all.

31677. I suppose it is not unreasonable to assume that the same degree of efficiency has been reached in the country as in the city area, where he is not so much under your control?—No, I would not like to go so far as that.

31678. But in regard to air space, the necessity for a regular number of feet of cubic space would not be so necessary in the country?—Less might meet the case.

31679. Have you any difficulty with regard to the removal of manure?—The manure heaps are very small and are removed frequently.

31680. Mr. CAMPBELL.—Once in seven days?—It might go quicker. It depends upon the number of cows kept.

31681. Professor METTAM.—Have you not got any general rule?—We have a rule that it shall be removed before eight.

31682. At what intervals?—About fourteen days.

31683. Your duties do not take you out to the country area?—Yes; so far as visiting the cowsheds goes. I have done that for thirteen years. The veterinary inspector accompanies me.

31684. It would be your duty to see that whatever alterations are prescribed by him are carried out?—We acquaint the county authorities.

31685. The CHAIRMAN.—They co-operate with you?—They co-operate with us all through.

31686. What form do you follow with regard to particular cases?—We report to the medical officer for the county as to the defects existing upon the premises. Our duty is then ended.

31687. Where would the medical officer for the county reside?—If it was Salop he would reside at Shrewsbury. To him we should send a written report of the defects on the premises. He would then report to the rural authority, so that the rural authority might see that the alterations were carried out, and if they did not carry them out, the County Council would bring pressure to bear.

31688. Professor METTAM.—Do you communicate with the medical officer before you go, or after you have been?—After we have been.

31689. Have you the power to walk into a man's byre in Salop or Cheshire, and satisfy yourselves about the way he keeps his animals?—Oh, no.

31690. The CHAIRMAN.—You get an order from the magistrates authorising you to do so?—Yes.

31691. But you must have a suspicion that something is wrong?—Yes.

31692. You don't go promiscuously, just because the owner is sending milk into Liverpool?—We must have a suspicion.

31693. What questions are asked by the magistrate when you apply for the order?—He asks the ground on which our suspicions are based.

31694. Professor METTAM.—You may ask him in Court or, if you meet him, in the street?—Yes; but we must go to a County Magistrate.

31695. The CHAIRMAN.—One whose jurisdiction is in that area?—Yes.

31696. Have you the same power with unclean milk as with that suspected of tuberculosis?—I don't think we have.

31697. Suppose you got a sample of milk which excited no suspicion with regard to the presence of tuberculosis, but was manifestly unclean and carelessly handled; what would you do?—I should apply for an order to visit the place.

31698. Because you had found the milk to be a danger to the public health?—Yes.

31699. Has a magistrate ever refused an order because he thought the grounds of your suspicions were not sufficiently grave?—We have never had an order refused, and we have visited 110 farms between the end of 1902 and the end of last year.

31700. That would be about eleven farms a year?—Yes, on the average.

31701. Has the veterinary officer any more drastic power than is conferred upon you?—No; the medical officer has the power. The veterinary officer goes to examine the cattle at the request of the medical officer.

31702. And no power is conferred by these Manchester Model Clauses to enable an authority from a district consuming milk raised in an outside area to make promiscuous inspections of cattle producing that milk?—If they are the same as the Liverpool Clauses, certainly not.

31703. Mr. WILSON.—Are you satisfied with the powers you have got under your order?—No. I think that the powers should be extended, so that an animal when suspected should be isolated.

31704. You are referring to tuberculous animals?—Yes.

31705. The CHAIRMAN.—It is quite true, and one must recognise the fact, that in various districts different standards of efficiency will be set up. If you are drawing your milk supply from half-a-dozen different local authorities, two of which are administering the regulations efficiently, two very carelessly, and two administering them only nominally; would it not be fair that your Liverpool health authority should have the right to determine whether the milk was being produced under clean and hygienic conditions?—Undoubtedly; I quite agree, and we do make visits. Sometimes we visit a farm in the outside area without a magistrate's order, and it has not been resented. In the early period of our visitation there was much opposition, but during the last five or six years the farmer has rather welcomed our visits, because he knows that they mean improvement to his general cow byre.

31706. Mr. WILSON.—Are you a veterinary surgeon?—No, I am not. I am a sanitary inspector.

31707. It has been suggested to us in different parts of Ireland that some of the resentment shown between the town and country authorities in this matter was due to the fact that some of the work of inspection was done by non-qualified men?—I quite agree. I myself

Mr. JOHN T. QUINTON.—8th November, 1912.

do not deal with the veterinary surgeon's work at all, and I would not answer any questions relating to his duties.

31708. The CHAIRMAN.—There is no overlapping; the veterinary surgeon does not interfere in your sphere, and you do not interfere in his?—No; not at all.

31709. Professor METTAM.—I presume that the farms sending milk into Liverpool have not all been inspected by your inspectors?—No.

31710. But all the farms of all the dairies inside the administrative area of Liverpool have been, and are, frequently inspected?—They are very frequently under inspection.

31711. But it is only occasionally that you go outside the city area to inspect?—That is so.

31712. Consequently, there must be a large amount of milk coming in that is under no inspection whatever?—So far as the farms themselves are concerned, certainly.

31713. Do you agree that there should be a central administrative body, whose duty it should be to see that all animals supplying milk are inspected?—I quite agree.

31714. What special provision is made by the railway companies for the carriage of milk from the country districts to Liverpool? Are there any refrigerating vans?—I do not think there are.

31715. How long does it take a quantity of milk to come, say, from the county of Salop to Liverpool?—It might take one hour or two hours, it depends on what part it comes from.

31716. Have you a good service from Shrewsbury to Liverpool?—A very good service.

31717. Only a minimum of time elapses in transit?—Very little time.

31718. But there is no special provision made for carrying the milk in vans; where it could be kept cool?—Not so far as I can see.

31719. And there is no special provision on the station platform for keeping the milk churns while they are waiting for the train?—No; I wish there was. There is only one town in England that I know of

where that is so, and that is Newcastle. They have a special platform there for nothing but milk cans.

31720. The CHAIRMAN.—Do you think some provision of this sort would be a desirable improvement in railway regulations?—Undoubtedly. Of course, in Liverpool one platform is used principally for milk.

31721. Professor METTAM.—That is only at Lime-street?—Yes; only there.

31722. You suggest the ideal system would be to have a special platform, or a portion of a platform, given over to the reception of milk, and to have the milk brought in refrigerating vans?—Yes.

31723. Mr. CAMPBELL.—Do I understand you to say that you prosecute also for filthy milk, that is milk having obvious dirt in it?—We would prosecute if we found it, but we do not find it in the city.

31724. Do you mean that all the milk cans coming into Liverpool have no dirt floating?—I would not say that.

31725. Well, I have lived in Lancashire myself, and I think you must be prepared to have a little of it. Have you ever prosecuted for dirt?—We have never prosecuted for dirt, because we have never found it to an extent that would warrant prosecution.

31726. There is a clause in the Food and Drugs Act which says that the prosecution lies because the article is not of the "nature, substance, and quality" demanded by the purchaser. Would you feel justified in prosecuting under that clause, if there was obvious dirt in the milk?—I would.

31727. Have you known prosecutions for dirty milk under that clause?—I do not know.

31728. Have there ever been prosecutions because of the presence of foreign matter of that nature in the article vended?—Not in Liverpool; but I have known of it being done.

31729. Do you think it would be a fair ground for prosecution? Might I not say if I ordered milk, and found solid matter in it, that it was not of the substance I demanded?—

Professor METTAM.—You would be getting more than you demanded.

Professor A. SHERIDAN DELEPINE, M.B., C.M., M.Sc., examined.

31730. The CHAIRMAN.—Would you kindly state, for the information of the Commission, the duties which you undertake for the Manchester Corporation?—I am Director of the Public Health Laboratory connected with the Manchester University, where four bacteriologists, one chemist and myself, are examining products sent either by the Corporation or the medical officers of health of some eighty sanitary districts, for the purpose of discovering, by bacteriological and other methods, what is the nature of the illnesses from which patients are suffering. In addition to that, I examine milk samples, samples of water, and of food of various kinds, to report whether or not they are sound.

31731. Is it your opinion that the boiling of milk interferes in any way with its food value?—The boiling of milk does, to a certain extent, interfere with the food value of milk; that is to say, if you compare boiled milk with absolutely fresh sound milk. But in practice one should not compare boiled milk with pure milk, but with milk such as it is found on the market, such as can be bought by consumers in big towns, and also with milk coming from cows which in many cases have never been examined or inspected, and the health of which is not known. Taking everything into consideration, I say that boiled milk is, notwithstanding the slight reduction in its nutritive value, much safer and better to use for the food of infants than the milk which one can get on the market, and even than milk obtained from cows which have not been under perfect control by efficient veterinary inspection.

31732. If pure sound milk could be obtained, which would be above suspicion, would you prefer it as a food for infants and human beings to milk which was boiled?—I would prefer absolutely pure fresh milk to milk treated in any kind of way. But I was speaking of the present state of things.

31733. Do you believe that it is quite competent too for the consumer of milk to carry out the necessary heating in his own home, and to do so as efficiently as it can be done where a pasteurisation plant has been established?—I do, if you include boiling in heating. In my opinion boiling can be conducted perfectly safely; and with good results, at home. But, of course, a certain amount of care is necessary, in order that the boiling

should be conducted efficiently. There are many people who allow the milk to go on boiling after it has been raised to the boiling point.

31734. To continue boiling?—Yes. When that is done the milk instead of being palatable, becomes rather unpleasant to the taste, and less nourishing. When I speak of boiling, I mean simply placing the milk on the fire, allowing it to rise rapidly to the boiling point, and then taking it off. That is the way in which milk is usually treated in France, where boiled milk is used by a very large part of the population.

31735. You have carried out a series of interesting experiments with regard to tubercle bacilli, and you have placed them before us in a rather condensed form. Would you be good enough to go through this series of experiments, and explain whatever you think needs further illustration. I think it would probably save your time to go systematically through your own paper?—I may say that this paper was prepared at the request of Mr. Strange, who told me what points you would like to have discussed.

31736. Will you now come to the pasteurisation of milk, as removing entirely the danger of tuberculous infection?—In my experience, and that of several other observers, the pasteurisation of milk, as usually conducted, does not remove the danger of infection entirely, but diminishes it. In selecting for the purpose of my experiments a range between 150 and 185 degrees Fah., I have included all temperatures which can be used for the purpose of pasteurising milk without altering its taste, and also some of the higher temperatures used by some observers, and at which the quality of the milk is altered. Between 150 and 158 degrees Fah., temperatures at which very little change takes place in the milk, I found that by long exposures, up to six hours, it was possible to reduce the infectivity of the milk, and, occasionally, to remove it entirely. An exposure of fifteen minutes to a temperature of 185 degrees Fah. was found insufficient to render the milk absolutely non-infective. At none of the temperatures at which I have experimented have I been able to obtain constant results—sometimes the milk was disinfected, sometimes it was not. What I noticed, however, was that after long exposures at the lower tem-

peratures, the milk, though still infectious, produced tuberculous lesions less extensive than the untreated milk. But these experiments had the defect of being made with milk artificially infected.

31737. Professor METTAM.—Do you find cream more resistant?—Yes, it is; but all dairy produce is capable of resisting to the temperature I have mentioned. These first experiments were made with cream, because the object I had in view was to ascertain whether cream used for making butter could be sterilised. But to my great disappointment, the results showed that one could not rely upon that method for the purpose of utilising tuberculous milk.

31738. As the cream was inoculated with the culture the amount of virus present in a given quantity of cream would be larger than in the natural condition?—That might be true. But in later experiments I made a point of preparing cream with the milk of tuberculous cows, and the number of bacilli present was much smaller than in the milk of some of the cows which I had examined. Following that I made experiments with the actual milk of cows suffering from tuberculosis of the udder. I made two sets of experiments. One set at a temperature of 77 degrees Cent. (171 degrees Fah.), the other at 92 degrees Cent. (198 degrees Fah.). In these experiments I brought the temperature of the milk to a point higher than that used in ordinary pasteurisation, and I found that in both sets of experiments, guinea-pigs inoculated with the treated milk became infected.

31739. The CHAIRMAN.—And the results were definite?—Yes; definite. The only effect that was obtained was a delay of the infection.

31740. Mr. WILSON.—Comparing your methods in the laboratory with commercial pasteurisation, Dr. Delépine, obviously, I take it, commercial pasteurisation would be much less efficient and accurate, and milk might pass through which was nominally at such and such a temperature, say 80 degrees, but which had not really reached that figure?—That is so. In the processes, which are extensively used on a large scale, for the pasteurising of thousands of gallons, the temperature oscillates.

31741. If the bacilli resist treatment in your laboratory experiments, they are still more likely to resist it where it is pasteurisation on a commercial scale?—Quite so.

31742. The CHAIRMAN.—What do you think would be the effect of ordinary commercial pasteurisation, if one may use the phrase, on the separated milk at a creamery. Would it be likely to produce the development of putrefactive bacteria?—I would not put it exactly in that way, but I would say that separated milk which has been treated in that way sometimes undergoes putrefaction more easily than milk which has not been so treated. I do not mean to say that the milk which has not been treated does not change rapidly, but the change is of another kind. I have tested that by some experiments I made about fourteen or fifteen years ago, for the purpose of finding whether one could utilise cream after that cream has been sterilised according to Bang's method. Mr. John Benson, who was then manager of the Midland Dairy Institute, undertook to prepare for me samples of butter made from cream which had been exposed for definite lengths of time to temperatures of 150 degrees F., 170 degrees F., and 180 degrees F., respectively, that is to say at the usual temperatures, low and high, of pasteurisation. After preparing these products according to the usual dairy practice, he sent me samples of the butter, and of the buttermilk. I found that the butter which had been made with cream kept for five minutes at a temperature of 180 degrees F. had not a nice taste. Everyone who tasted it would say at once that it was not ordinary butter: It was very hard and very dry, it had a taste of boiled milk, which could be recognised at once. The butter which had been made with cream kept for ten minutes at 170 degrees F., had practically the same properties, and only the butter which had been made from cream kept for 30 minutes at 150 degrees F. appeared to be normal butter to people who did not know anything about the experiments. Further, the changes which took place in these butters were very interesting. The butter made from cream heated to 150 degrees F. was palatable, and kept very well, much the same as ordinary well-prepared butter, but a temperature of 150 degrees F. was not sufficient to kill all the pathogenic and putrefactive bacteria. The butter

made from cream heated at 170 and 180 degrees F., instead of becoming rancid, became putrid. A rancid taste in butter is not pleasant, but it is not actually repulsive; putrid butter, on the other hand, is very unpleasant. The samples of buttermilk showed very similar changes. In the case of the cream which had been heated to 180 degrees F. the buttermilk altered rapidly. It was containing a large number of putrefactive bacteria on the second day, and had a putrid smell on the fourth day. By some omission I have brought with me no record of what took place with regard to the buttermilk obtained from cream heated to 170 degrees F. But the buttermilk which had been obtained from cream which had been heated to 150 degrees F. remained sweet for seven days, and then became rancid like ordinary whey or buttermilk, owing to the development of lactic acid bacteria. The buttermilk which had come from cream not heated at all behaved very much like the buttermilk made from the cream heated to 150 degrees F., but it became sour a little quicker; three days quicker than the other. I have also made experiments with milk obtained from cows kept on a farm near my house. The milk was carefully collected direct from the cow into sterilised bottles which I had supplied to the farmer, and I found that this milk kept as long as milk heated to 150 degrees F., without becoming sour.

31743. Professor METTAM.—In other words, the lactic acid bacteria prevent putridity occurring in milk or milk products?—Obviously they retard putrefaction.

31744. And when you heat milk to a sufficiently high temperature to destroy the lactic acid bacteria, it is not sufficiently high to destroy the spores of the putrefactive germs, and thus they develop without limit?—That is so. I think there are also non-sporing organisms, which would resist a temperature of 85 degrees without being killed. Mr. Strange mentioned to me in asking me to give evidence that there had been complaints sometimes in Ireland about pasteurised milk, or rather pasteurised separated milk. I can quite believe that those who complained of the taste of the treated product were not exaggerating.

31745. The CHAIRMAN.—You think it quite likely that the flavour which, it was alleged, this separated milk had acquired was actual rather than imaginary?—I think so.

31746. Mr. WILSON.—The form which the complaints made to us took was that, though the milk was quite nice and sweet when it came away from the creamery, in two or three hours afterwards it turned very nasty. Of course it comes away at a fairly high temperature, 80 to 100 degrees?—I have made some experiments which bear on that point. I found that the milk which has been heated in that way did not keep so well as fresh milk, and after it had left the factory it rapidly acquired an unpleasant taste. It is true that when milk is pasteurised with certain precautions at a sufficiently high temperature, and is then cooled very rapidly, its taste is not much altered. But then pasteurisation is not always conducted in that way.

31747. Would the conditions be improved by putting in a small sample of the pure culture of lactic acid bacteria—the "starter" they call it in the creameries—immediately after the separation?—I am afraid that would be difficult to manage. The culture would have to be left in the hands of people who do not always understand how to keep the bacteria pure. Of course, the difficulty about the taste complained of applies to milk which is either pasteurised at 85 degrees or at a boiling temperature. In France, where they use this sterilised milk extensively, they generally heat the milk to a temperature which exceeds that of boiling water, but they never allow it to be exposed to the air.

31748. The CHAIRMAN.—The view has been placed before this Commission by some experts that the use of sterilised milk for children produces some infantile diseases, such as rickets and scurvy. Could you offer any observations on that question?—Yes; I have made some observations upon this point.

31749. Mr. WILSON.—One more point before we leave this question. I do not think I made myself quite clear about reintroducing lactic acid bacteria into the separated milk when it comes from the creamery. The present position is that the separated milk not only goes sour, but it goes putrid very quickly. It has been suggested in the course of our travels that that might be improved to some extent by putting in some of the same culture that they use in the creameries for starting the ripening process in the cream. They have

these pure cultures in existence already, and some of us thought that they might be used for this purpose?—Yes; the suggestion is, obviously, quite a scientific one, and, theoretically, I think it can be defended. But it appears to me that the simpler way to deal with the matter, under the circumstances which exist, would be not to trouble about inoculating the milk, but to sterilise it at once, and treat it in such a way that no objectionable living bacteria are left.

31750. This separated milk, you will understand, is only in use on the country farms. It goes back to the farmer, and he uses it, for the most part, for feeding his pigs?—That is all the more reason why I should say sterilise it entirely instead of pasteurising it.

31751. We have been informed that separated milk, if in a wholesome condition when it comes away from the cream, would be a useful food for human beings, but it is spoiled by the rapid growth of objectionable organisms?—Under present conditions it should be used only after sterilisation.

31752. It is sterile when it goes into the farmer's wooden tub, but in five seconds it is as full of germ life as ever?—The only way to meet that difficulty is to teach the farmer to use clean vessels.

31753. The CHAIRMAN.—It has been represented to this Commission by other experts, that the use of sterilised milk by babies is likely to produce rickets and scurvy?—I am well aware of that view. I have tried to find facts in support of, or against the theory. I have not come across any case myself. I was in practice for eight years before I devoted myself to my present work, but I have never come across a case of rickets or scurvy, which I could attribute to the use of boiled milk. It has been my practice to advise that children, after being weaned, should be fed on boiled milk, and I know a family where the practice has held since the middle of last century of boiling all the milk used by the children. I know that the children in that family have had boiled milk in large quantities. There are eleven in the family, and they have always been in good health, with the exception of one who died lately from an illness (not tuberculosis) accidentally contracted. Among my patients I have never seen any child suffering from the use of boiled milk. My own children have been brought up on it after weaning, and with no evil results. They have, in fact, had fewer infantile ailments than most children. But I have only two children.

31754. Professor METTAM.—There has been exactly the same experience in my own house?—When they know the taste of fresh milk they prefer it to boiled milk, but until then they don't realise the difference, and like boiled milk. I should say, in addition, that in my laboratory it is the practice to feed all young animals on boiled milk, and they thrive on it. In several extensive experiments, made for the purpose of eradicating tuberculosis on farms, all the calves have been fed on boiled milk. They have thrived so well that when they have been sold on the market, in competition with others fed in other ways, they have fetched as high or better prices, showing that they were in good health.

31755. The CHAIRMAN.—That experience would permit you to suggest that one of the methods of exterminating tuberculosis would be to boil the milk on which the calves are fed?—It is a useful temporary measure, till better measures are adopted.

31756. Only a make-shift measure?—Yes, for the period during which our milk supply is exposed to infection from various sources. When it is pure, boiling will be a measure of secondary importance.

31757. If calves were fed on milk in which the bacteria of tuberculosis were active, they would be more likely to contract the malady at some subsequent period of their lives?—They would contract the disease in a large proportion of cases in a few weeks. I have produced tuberculosis in that way in a number of animals.

31758. Professor METTAM.—Is the cause of rickets, and of scurvy, known?—There is strong doubt as to the theory that boiled milk or pasteurised milk has anything to do with it. The view generally held now is that milk has nothing to do with it, and that probably children who suffer from these diseases suffer as much from privation of milk as from anything else.

31759. You carried out some experiments with regard to butter made from cream in which the tubercle bacillus was present?—Yes, sir. I wished to find out whether one could use the dairy products from tuberculous cows. It has been known since 1888 that butter made with milk containing tubercle bacilli, which had been added to the milk, remained infectious

for over seventy days. These experiments, made in Lyons, were repeated in Germany, and it was found that butter which had been made with milk infected with pure cultures of tubercle bacilli remained infectious for 100 and 120 days. But those experiments had certain defects. They were made with milk artificially infected, and the medical officer for the County of Cheshire having asked me some years ago whether butter made from the milk of a tuberculous cow, and containing tubercle bacilli, would be infectious, I made a number of experiments with butter obtained from the milk of two cows which suffered from tuberculosis of the udder, which milk contained numerous tubercle bacilli. I found that butter made from this milk contained tubercle bacilli seven days after the butter had been made, and that these bacilli were capable of producing tuberculosis. Buttermilk made from the same milk was also infectious after being kept four days and nine days respectively. With the cheese made from the same milk I did not obtain any infection, but I have no doubt that the tubercle bacilli were there, because other observers have proved that tubercle bacilli may remain in cheese for a considerable time. Observations have more recently been made in Germany; 498 samples of market butter were examined by sixteen persons, 15.2 per cent. of these samples contained tubercle bacilli. There can be no doubt that the tubercle bacilli can persist in butter. In order to see how long dairy products may remain infectious, I have kept the milk of a tuberculous cow in a bottle for nineteen months, and at the end I have inoculated several guinea-pigs with it; all these animals became tuberculous.

31760. Mr. WILSON.—The practical implication of that experiment would go to emphasise the necessity for bringing all these dairy products under one regulation, as regards inspection. In Ireland we have got confusion of orders. Butter made in one way is under certain regulations, and butter made in another under other regulations.

The CHAIRMAN.—Or none.

31761. Mr. WILSON.—In the interests of the public health, your experiments show that any measure applied to reduce tuberculosis should apply over all the dairy trade?—Absolutely so. A uniform mode of controlling everything.

31762. Lady EVERARD.—All by-products should be under the same regulations as new milk?—Yes, and imported products also should come under the same regulations.

31763. Professor METTAM.—There is no reason why foreign products should not be brought into the same category as our own supply?—Certainly not.

31764. The CHAIRMAN.—You have also considered the value of microscopical examination of milk?—A suggestion is frequently being made that a simple method of controlling the milk supply would be to take samples and have them examined microscopically. I have given in many places my reasons for believing that these methods are not satisfactory, but I am afraid it would take a considerable time to go into the matter. Briefly, my experience has been this. First of all, if you depended simply on a microscopical examination based upon the counting of certain cells, there are a good many samples of milk which are dangerous which would not be condemned under this method, more especially where the milk has been treated, as is frequently done, by filtration through sand.

31765. Professor METTAM.—What cells do you look for?—Every cell. The types and number of cells found in milk are very puzzling.

31766. And it is very puzzling to tell the nature of the cell when you find it?—Yes. There are no cells which you could define in such a way that you could be certain they were morbid products.

31767. Sir STEWART WOODHOUSE.—Are they polynuclear cells?—No; there may occasionally be some polynuclear cells, but there are others which are more commonly found, and which have been frequently mistaken for polynuclear leucocytes. The idea that these cells are derived from suppuration is perfectly incorrect. The number of cells in sound milk is liable to vary, and that makes control by simple microscopical examination very unreliable.

31768. The CHAIRMAN.—You spoke of a considerable quantity of milk coming into the city of Manchester which had been filtered through sand. Is that a recent process?—It became more general not very long ago, four or five years ago, and in this way. I was making an investigation for the town of Salford in order to find

whether it would be possible to test the soundness of samples of milk by a rapid method. In my report on the investigation I pointed out that the quality of the milk as it left the farm could not be determined by the state of the milk as it arrived at the railway stations; the number of bacteria depended so much upon the time the milk had been kept, and the temperature at which it had been kept. I examined the milk for the amount of slime. I found that it contained debris of food, manure, a quantity of hair, cotton and wool fibres, insects, moulds, bacteria, algæ, etc. A full history of the milk could be traced in the slime, and it was possible to say from the presence of this foreign matter that the milk had not been properly handled. The other products I found were cells derived chiefly from the udder, and when the number of cells was very considerable, and there was a large amount of mucus, I came to the conclusion that one could say that the milk was diseased. There were three conditions: a small amount of sediment, showing that the milk was clean; a large amount of sediment due to extraneous dirt; and a large amount of sediment due to the presence of a large number of cells. When my report got known the farmers were immediately advised that the way to satisfy the authorities was to filter the milk through sand. Some one sent circulars all over Cheshire advising them to do that. Of course, his idea was to clean the milk. When I heard of that, it seemed to me that we should not be very successful in this method of control, and shortly afterwards we found that the amount of sediment in the milk had considerably diminished.

31769. Mainly through filtration?—Yes. That method of treatment could not be satisfactory, because it would not remove dangerous bacteria. The results of my observations were unexpected. The samples were taken on the arrival of the milk-cans from the country, and were examined by me within from eight to ten hours of the time of milking. The amount of slime yielded by the samples varied between 10 parts and 210 parts per 100,000. The proportions were: Under 15 parts, 64.8 p.c.; over 15 and under 50 parts, 19.3 p.c.; over 100 parts, 15.2 p.c. Another aspect was still more striking, viz., the relation between the number of bacteria and the amount of slime present in the milk. If the bacteria were derived chiefly from dirt, the more dirt there was the more bacteria there should be. But that was not found to be the case. Taking, for instance, the comparatively clean milk, the milk which contained less than 25 parts of sediment per 100,000, the number of samples which contained less than 50,000 bacteria per c.c. represented 45 per cent. In the doubtful milk—containing between 25 and 50 parts of sediment per 100,000—33 per cent. had less than 50,000 bacteria. More extraordinary was the fact that a half of the total number of samples of the very dirty milk, with from 50 to 210 parts of sediment per 100,000, also had less than 50,000 bacteria. There was no correlation whatever between the number of bacteria and the amount of slime. This was due to the fact that the samples had been collected after various intervals of time after milking.

31770. It is rather in the inverse ratio, judging from the figures you have given?—Yes. One explanation is, that when the udder is extremely diseased the sediment is very abundant, but the number of bacteria growing upon cultivating media is not proportionally increased in all cases.

31771. Professor METTAM.—Or the sediment may be due to dirty filters?—Yes, and to other things. You cannot explain it, unless allowance is made for the multiplication of bacteria which takes place in milk after milking. When the milk is kept several hours, more especially at summers' temperature, bacteria multiply rapidly, and their number depends greatly on the time the milk has been kept and the temperature.

31772. The CHAIRMAN.—Has any special filter been constructed for the purpose of enabling cow-keepers to filter their milk through sand?—Yes. A danger arises from the fact that the farmers do not know how to sterilise these filters. Briefly, I do not think any method of microscopical examination would by itself be a practical basis for efficient control. It would be much less efficient than direct inspection of farms and cattle, combined with the bacteriological testing of the milk of suspected cows, and a very considerable number of people would also be required to work it.

31773. What conclusion have you drawn from the use of the tuberculin test?—My conclusion is that when the cow is under seven or eight years of age,

the test is applied by a competent person and proper tuberculin is used, the animal being kept in a place where it can be kept under observation for two or three days, the test is quite reliable.

31774. Absolutely reliable?—Absolutely reliable for practical purposes. There are very few errors, but these are almost always in the negative results. If you obtain a good reaction in a cow less than eight years old, then you can be practically certain of finding some tuberculous lesion, after death. In the case of error in a negative reaction, the cow may not have been in a proper state to be tested. When you do not get definite results you must re-test. Above eight years of age the proportion of error becomes fairly considerable, but it is an error that is easily corrected, because a competent veterinary surgeon would have no difficulty in recognising, in most cases, by ordinary clinical methods, the tuberculous cows that had failed to give a reaction through being in an advanced stage of disease.

31775. Professor METTAM.—They are clinically tuberculous?—Yes.

31776. Mr. WILSON.—At the seventh year the test becomes unreliable, because the cows are advanced in the disease?—Yes. I would like to add that the inspection of cattle should not be left in the hands of the farmers, but should be kept in the hands of experts.

31777. Professor METTAM.—Do you ever use the double test of tuberculosis?—Yes.

31778. What was the result of giving the double test?—I cannot say that we have had enough experience of the use of double doses. We have seen that we can give double or treble doses without killing the animal.

31779. The CHAIRMAN.—Would you favour the administration of the tuberculin test to all milk-yielding animals?—I would favour its application to all cattle at an early age, and I would suggest its application at an early period of life, because if you find a calf of six months or one year reacting it can be put on one side fattened, and sent to the butcher, and, generally speaking, the tuberculous lesions are found on inspection to be so slight that they can be removed and the flesh sold without great loss. If you wait longer the lesions usually become more important. The animal, instead of thriving, will lose value, and the food given to it will be wasted. If you wait till a cow is a dairy cow you run the risk of great loss. The carcass may be entirely condemned, and during its life the animal may be infectious to other animals. The only time when the tuberculin test can be applied with a chance of success in every direction is when the animal is young.

31780. Obviously these are national questions which ought to be dealt with by the State?—Only the State can deal adequately with them. But if the State was to attempt to deal at the same time with the whole country, instead of gradually extending its sphere of action, it might get into serious difficulty.

31781. It might disturb the milk supply?—The State would have to make up its mind what fraction of the country should be dealt with at a time.

31782. Professor METTAM.—Is it not possible that an animal may recover from the infection?—Yes.

31783. And even possess immunity in the future?—I know that some have recovered, but as to their immunity I can't answer.

31784. Don't you think that if a young animal has reacted to tuberculosis, and you segregate it, you might examine it after to see whether the disease was still active or had become latent?—It would be a good thing to do, and any plan should include the provision of experimental farms, where systematic observations could be made till we know more.

31785. It would be a serious question, supposing pedigree stock were killed off when there was a possibility of their recovery?—I have always made it plain that I was not referring to pedigree stock. I am speaking only of the meat supply and the milk supply. Pedigree stock when diseased should be kept on separate farms. They may recover. We know that for certain, but we don't know what proportion do recover. But I hope that when that knowledge is acquired tuberculosis will have been eradicated by some other method.

31786. The CHAIRMAN.—I think you have made some experiments as to the effects of the repeated application of the tuberculin test?—Yes; they were made over twelve years ago. They were carried out for the Cheshire County Council. It was suggested in those days that by repeated injections of tuberculin by the farmer cows could be made immune to the test, so that they would be passed as free from tuberculosis. Mr. Laithwood, the chief veterinary inspector of the

Cheshire County Council, inoculated nine cows. On the first test seven gave a positive reaction, and two gave a doubtful reaction. Forty-five days after the first test the cows were tested again, and the seven which had reacted in the first instance reacted again. One of the two which were doubtful in the first test gave a negative reaction, and the other remained doubtful. Thirteen days after the second test a third test was applied to six of the cows, and four of them which had reacted before reacted again. One, which had reacted on the first and second test, now gave a doubtful reaction, and another, one of the two which had given doubtful reactions before, did not react at all; the other three were not tested. So that in the third test there was evidence of tolerance in one case only. Fourteen days after the third test, still another test was applied to all the cows, and the results were the same as on the first test. It was only at the fifth inoculation—twelve days after the fourth—that all the tuberculous cows ceased to give a reaction. (Table handed in.)

TABLE showing the effects of Testing with Tuberculin Repeated at Short Intervals.

Reference No. of Cow.	First Testing.	Second Testing 45 days after first	Third Testing 13 days after second	Fourth Testing 14 days after third	Fifth Testing 12 days after fourth.	Result of post-mortem examination and remarks.
5	?	?	—	?	—	Case of distomatosis; temperature irregular.
24	×	×	×	×	—	Advanced tuberculosis.
32	×	×	×	×	×	Slight tuberculosis.
37	×	×	×	×	—	Slight tuberculosis.
41	×	×	×	×	—	Advanced tuberculosis.
42	×	×	?	×	—	Advanced tuberculosis.
27	×	×	Not tested.	×	Not tested.	Advanced tuberculosis.
35	?	—	Not tested.	—	Not tested.	Healthy.
51	×	×	In calf; not tested.	×	..	Tuberculosis slight.

× Means positive reaction.

— Negative.

31790. That, of course, is a practical point. But looking at it as a possibility, suppose I am going to sell an animal which I know to be tuberculous, and I give it the tuberculin test to-night, knowing that the purchaser himself will test it to-morrow or the following day, will the test I give to-night master the reaction of the second test?—I cannot say from personal knowledge.

31791. This is very important, of course. As regards the French experiences, you are probably aware that a large number of animals—10,000 or more—which were brought into France from Germany for sale, did not react under the test, and the explanation was found to be that they had had the test shortly before on the other side of the border—I can quite see your point, of course. I can imagine the thing being done by rather expert persons, but I think it would be very difficult for farmers to make a practice of injecting tuberculin themselves without running serious risk. The French experience, of course, was the result of a gigantic fraud.

31792. You see there is no control over the test at the present moment. Anyone can inject the tuberculin.—My contention is that this should not be allowed, except under proper supervision.

31793. I quite agree.—I have always had it at the back of my mind that I would make it a penal offence, almost criminal, for an unauthorised person to inject tuberculin, and for the very reason you suggest. But, of course, the fear of fraud cannot be considered as a very sound argument against the use of a good method, the application of the test should be in the hands of the authorities. You have to take the risk of fraud in other walks of life, but you can reduce it enormously by proper legislation. But in what I have said about the test I have taken it for granted that the use of tuberculin would always be entrusted to competent veterinary surgeons.

31794. The CHAIRMAN.—One recognises, of course, that evilly-disposed persons can always do something to circumvent the interests of the community at large. That is the difficulty which dogs the steps of the reformer in every walk of life. I suppose you are conversant, Dr. Delépine, with the fact that very

31787. Professor METTAM.—Suppose the experiment had been reversed, and that the interval between the first and second tests had been less than seven days, would you have got a reaction on the second occasion then?—I cannot say.

31788. You know the opinion is universally held that a prior injection of tuberculin will master the reaction that might arise from a second injection if the second injection is given at a short interval?—Yes, I know; but the question was whether the farmer could do that without creating suspicion in the mind of a skilled inspector. It is possible, but it is not easy to do it in practice.

31789. From the list you have given us, it appears that the shortest interval was between the fourth and fifth test. It is the fifth test when you get negative results, as compared with the fourth, and the fifth test came twelve days after.—Of course, you can give it that interpretation. In the investigation that was made it was a matter of finding out whether the cows might be treated in this way by the farmer.

beneficial results have been obtained in a certain dairy herd supplying milk to Manchester through the regular and systematic disinfection of the byres, and other sanitary measures. We have had some evidence on this question from Mr. Brittlebank.—Yes; the experiment to which you refer was started on my advice about twelve years ago. The farm was treated exactly in the same way as an experimental farm which I had started for Mr. Ashton (now Lord Ashton of Hyde), at Ford Bank, fifteen years since. First of all, the tuberculous animals were separated from the non-tuberculous, and only the non-tuberculous were kept. They were kept in disinfected stalls, and every six months they were tested with tuberculin. The diseased cattle were replaced by new stock which previous to admission to the herd had given two negative tuberculin reactions in the space of three months. Ultimately, at the end of two years, no reactors were found. The Ford Bank experiment was made in 1897, and the experiment in South Cheshire followed immediately after. There were only 27 head of cattle at Ford Bank, but on the South Cheshire farm which has been alluded to by Mr. Brittlebank, there are nearly 100. The work was started experimentally by me, and was extended afterwards.

31795. Mr. WILSON.—Has it extended among any of the big practical farmers in the neighbourhood?—Well, I should not say so. Mr. Brittlebank would have been better able to tell you; but I must say that I have been surprised to find how very few of the big farmers have taken a practical interest in this work. In America, tuberculin has been used on a very extensive scale, and there it has been found to work very well, and with no trouble whatever. Mr. Walter Law, of New York, has a very large herd managed on these lines.

31796. The Ford Bank Farm experiment has been given up apparently?—Yes; the owner, Mr. Ashton, went to London and he sold everything.

31797. And his methods were not maintained by the man who came in afterwards?—No. All the cattle were sold when Mr. Ashton left his Manchester residence.

31798. Professor METTAM.—What do you mean when

you say that the farm was disinfected?—The shippens were entirely cleared of fodder, litter, manure, etc., and the wood-work, the floors, and everything about the place was thoroughly swilled or washed with chlorinated lime.

31799. The CHAIRMAN.—Is there any other branch of the subject of the tuberculin test to which you would like to draw attention?—No. I think I have said that I consider it absolutely reliable for cattle under eight years of age, but that it cannot be relied upon by itself after that age.

31800. That is the definite conclusion you have arrived at?—Yes, as based on my own personal observation. In speaking of the age at which the test ceases to be reliable, I should, however, have said seven or eight years. I do not mean to say that there is anything absolutely definite about eight years.

31801. But that seems to be about the period, judging from your own experience?—Yes.

31802. With regard to the reactors, what course do you suggest should be followed to ascertain the moment at which the milk of these cows becomes actively dangerous?—With regard to a milking cow, the only way to find out with absolute certainty whether the milk is dangerous or not is, by inoculation of suitable animals. When you take the milk from a cow which has reacted and examine it by itself it is usually possible, by microscopical examination, to find whether tubercle bacilli are present or not. This can be done in about 90 per cent. of the cases. When you have to deal with the milk of a single cow, and there is tuberculosis of the udder, when the milk has become seriously dangerous, you can find the tubercle bacilli in an hour or two by the microscopical method. There are, however, some cases in which the danger can be revealed by inoculation only.

31803. Professor METTAM.—That is in a case where the milk is sent to you with the history that the udder is suspicious?—Yes, but often the suspicion is not based on anything very definite.

31804. Suppose the milk is sent in without a history, and you are asked to examine for tubercle bacilli. Suppose you find a few acid fast bacilli there, would you feel justified in saying that the milk is tuberculous?—I should not, without satisfying myself that the acid fast bacilli were tubercle bacilli.

31805. Because there are acid fast bacilli found in milk which are not tubercle bacilli?—Oh, yes; but we always ignore those, and mistakes should not occur on that account.

31806. The CHAIRMAN.—Is it not possible that a tuberculous cow may be yielding milk in which the bacilli of tubercle are present, although there is no clinical symptom in the udder of the animal?—It is certainly possible that a cow may pass tubercle bacilli with the milk even where there is no obvious disease in the udder. A few stray bacilli may pass now and again into the milk ducts without there being any obvious tuberculosis of the udder.

31807. Professor METTAM.—How do they get there?—That is a very difficult question. My own experience is that these cases are not of frequent occurrence. When tubercle bacilli are fairly numerous it is impossible to detect tuberculosis of the udder by ordinary palpitation. Tuberculosis of the organ can generally be found on careful examination made post mortem.

31808. What would you do with milk produced by cows which have reacted?—If there is tuberculosis of the udder I would destroy the animals. If there is not, and so long as there is no sign of the udder being involved, I would use the milk after sterilising it.

31809. Do you believe that it is possible for an animal suffering from tuberculosis, without any obvious lesions in the udder, to secrete a tuberculous milk?—It is rather a hard question, in view of what the Royal Commission has said. One knows that a few bacilli may pass into the milk without clinical tuberculosis of the udder. But my own experience is that whenever I have found tubercle bacilli in milk in any numbers there were lesions in the udder.

31810. Suppose there were no lesions in the udder, and you got tubercle bacilli in the milk, would it not point to generalised tuberculosis, to tuberculosis being in the blood stream?—Yes. In such a case the udder would probably be affected to some extent like the other organs.

31811. Sir STEWART WOODHOUSE.—In evidence before the Royal Commission statistics were produced to show

that out of a number of children who died under the age of 15, and on whom *post mortems* were made, in a large proportion of cases there were tubercle bacilli in the system, in some cases latent, in others active?—This statement as to the presence of tuberculous lesions in young children is in accord with the findings of many pathologists. It has long been known that the glands of many children are infected early in life, and it has been assumed on good grounds that in many cases this infection could only come from tuberculous milk.

31812. In many cases the amount was small, but it existed. Do you think that the size of the dose or the virulence had much to do with the amount of tubercle found in the child, that is if the child got the milk with an excessive amount of tubercle bacillus, it would be more likely to create an evil result than if it got a mere trace?—Certainly. There are two factors of great importance, the number of bacilli, the state of health of the child. There is also the virulence of the bacilli, but this may be put aside for the moment. The two main points are the quantity of the bacilli and the health of the child.

31813. Taking the health of children as alike, the child who gets the greatest dose of tubercle bacilli would be most likely to show ill effects?—Certainly, and any improvement in the milk supply would result in a reduction in the number of cases infected.

31814. Mr. WILSON.—What would be the effect upon the health of a normal child who got a small dose of the bacilli out of a glass of milk, and the bacilli established themselves; would the child be more or less liable to take tuberculosis from a subsequent infection?—I have no evidence which would allow me to say one way or another. That point has been discussed since 1865; it has been said that there seemed to be some indication that people who belonged to tuberculous families might not be so liable as others, and that suggested a kind of immunity. That idea has always been before physicians and pathologists, but one has great difficulty in obtaining anything like accurate facts to prove the accuracy of this theory.

31815. Is it not true that every adult human being has had some of this infection?—I think we could hardly escape it.

31816. It is not apparently the reason we recover that we are to a certain extent accustomed to the presence of the bacillus in small quantities. When it gets among monkeys, or to a country where it is not known, it is extremely fatal?—I think the protection we have is not altogether good protection, because tuberculosis had been increasing ever since the beginning of the last century, and was increasing till the middle of the century, when better hygienic methods were adopted. It is only since we have begun to reduce the amount of tuberculous milk, more especially in towns like Manchester, that a considerable reduction has taken place in the forms of tuberculosis attributable to food in this town. If there had been this immunity of which you speak we should have had a tendency to reduction in previous years. All veterinary authorities are agreed that tuberculosis has been spreading and increasing among cattle since the beginning of last century. Now, a very large number of cases must have been infected by bacilli. Why should there have been an increase if protection had been one of the effects of tuberculous infection? Things have been quite different with regard to small-pox; it is well known that after an epidemic the persons that recover are, in the great majority of cases, protected against the disease for a considerable number of years, so that after an important part of a population has been affected, the disease remains in abeyance for a number of years.

31817. Might not that be due to the growth of great cities, the housing of cattle in unsuitable places, and so on?—That is just possible, but the continued prevalence of the disease in cattle shows that there is no obvious development of immunity. It is quite a common belief that cowsheds are worse in towns than in the country. But that is not the case. Cowsheds and cattle in the country are very often far worse than in towns.

31818. Does not the fact of recovery from a bacterial disease involve immunisation from that disease?—This is true of a number of diseases, but there are some diseases in which immunisation does not occur. In regard to tuberculosis, at the present time we are unable to say whether an attack confers any immunity or not. I have been working at that subject for nearly 25 years, and I have made many experiments. I have

inoculated animals in one leg after inoculating the other leg on some previous occasion, and I have never yet seen that one inoculation had the slightest effect upon the development of tuberculous lesions caused by subsequent inoculations. If the first inoculation had put the animal into a state of greater resistance the second should not have produced the same effects as the first.

31819. Sir STEWART WOODHOUSE.—Do you see any objection to the farmer boiling all the milk he gives to his cows?—No. When milk is condemned the farmer is advised not to use it for any other purpose than that of feeding pigs and other animals, and he is instructed before using the milk to boil it.

31820. Mr. WILSON.—Our object is to try to devise some practical schemes that could be put into action at once without unreasonable delay or expense. Would it not be reasonable to get rid of the obviously diseased animals first?—That is almost an immediate duty.

31821. One can do that with a reasonable hope of getting most of them out of the way?—We have been working in Manchester with that object since 1896 with great thoroughness. We have improved the state of the milk supply to an enormous extent. We have now come to the stage at which we cannot rapidly further reduce the amount of tuberculous milk, because slight cases of the disease are constantly occurring which are difficult to detect. The right thing is to get rid of all the worst cases; but this does not solve the difficulty entirely. There is a remnant which is very difficult to control without adopting more general measures.

31822. That remnant is the larger proportion of animals infected, and I confess I am not myself convinced, from all the evidence we have got, that there is anything very much to be afraid of in the animal not recognisably wrong?—So far as human beings are concerned, if you remove the cows which are affected in the udder, and are yielding tuberculous milk, the infant population would be to a considerable extent protected. But if you deal with the question from the agricultural point of view, then you have to consider whether it is more economical to go on year by year getting rid of animals that become dangerously tuberculous, or whether it is not better to make a big effort to prevent further infection of animals. That is a purely economic, but very difficult question.

31823. Turning to a different point of view, it would seem that a way one might get at a solution of the public health difficulty would be for the city authority, the consumers' authority, to do very much as Manchester has been doing, and by employing expert bacteriologists to control the condition of the milk in the city, while in tracking out contaminated samples to the farm you get the veterinary service interested. It would seem that the duplex control of the city authority working with the bacteriologist and the rural authority working with the veterinary service, might get rid of that class of animal with reasonable speed?—Yes. But one of the difficulties of the system we have is that it is expensive. Our inspectors have to go a considerable distance from the town. It would be much easier and more economical for Ireland to divide the country into areas, each with a staff of veterinary in-

spectors under central control, and to leave the boroughs' sanitary authorities power to ascertain whether the work of the inspectors was being properly done. Otherwise, if you have between Belfast and Dublin an area inspected by Belfast and Dublin, both doing the same work, milk from that district, which could not be sent to Dublin or Belfast, would be sent somewhere else.

31824. Lady EVERARD.—Would you bring all by-products of milk under the same regulations as new milk?—Yes. It would be difficult to control the sale of products from person to person unless the farm was inspected in the first instance. The difficulty for the public health authorities is this, that if the control is independent of them they would have to do the whole work again, to satisfy themselves that the milk which is sent to their communities is all right. There should be a close connection between the local inspection of the agricultural districts and the control of the milk supply of the town.

31825. Professor METTAM.—You receive milk at a certain station in Manchester. A quantity is taken by the inspector, who sends it to you. He knows who has sent that milk. You find it is infective. He can communicate to the sanitary authority of the place that the milk from such and such a farm has been found infective, and will they go and see the condition of the cattle in this particular farm and report. Would that suffice?—That is exactly what I mean by close connection between urban and rural authorities controlling cattle.

31826. The CHAIRMAN.—Small units are a danger and a trouble?—The districts I speak of must be centrally controlled. In each district a certain number of inspectors, one or several, must be responsible. Public authorities must be able to obtain from these local inspectors all the information they require to go on with their administration work. There is also the question of a veterinary staff.

31827. Professor METTAM.—That is what I have in mind. These persons would be independent of any local influence or authority whatever. They would be employed by the central authority, by the State, and it would be their sole object to find out the condition of the animals in the country districts. The information they would get would be at the disposal of the public authorities of the country?—This is the view I have always held. It is, however, very important to remember that if a veterinary service were organised for the purpose of inspecting cattle and other animals, it would be absolutely necessary that the sanitary authorities should have the power to obtain all the information and all the assistance they need for the purpose of carrying out their own work. In speaking of the division of the country into a number of areas, the areas which I had in my mind were not small, like the rural sanitary districts, but rather areas corresponding to counties, or even larger districts, when the counties are too small. Each area would have its own local permanent staff of inspectors, the work of the whole country would, however, be co-ordinated by one central authority.

The CHAIRMAN.—Thank you very much.

The Commission adjourned till the 9th November, to Birmingham.

FIFTY-SIXTH DAY.—SATURDAY, 9TH NOVEMBER, 1912.

The Commissioners met in the Queen's Hotel, Birmingham, at 12.15 p.m.

Present :—P. J. O'NEILL, Esq. (Chairman) ; LADY EVERARD ; MISS MARGARET MCNEILL ; SIR STEWART WOODHOUSE, M.D. ; ALEC. WILSON, Esq. ; and Professor A. E. METTAM, B.Sc., F.R.C.V.S.

S. W. STRANGE, Esq., *Secretary*.

Mr. JOHN MALCOLM, F.R.C.V.S., examined.

31928. The CHAIRMAN.—Mr. Malcolm, you are a practising veterinary surgeon in Birmingham, holding an appointment under the Public Health Committee of Birmingham Corporation?—Yes.

31929. Would you kindly inform the Commission what steps have been taken by the Public Health Committee in Birmingham to control the milk supply of the city?—From the veterinary point of view the steps may be ranged under three heads. First, the inspection of the whole of the dairy cows and cowsheds within the city area—there are 170 dairy farms within our present city area. Second, the taking of a number of samples of milk, both from the city area and from outside, and having these bacteriologically tested; and subsequently, if any milk is found infected with tubercle, going to the inside or outside farms and examining the herds for the affected cow, and having that cow slaughtered. Third, dealing with tuberculosis in herds generally, with a view to clearing these from tuberculosis.

31930. Is your public health authority vested with the same powers enjoyed by Manchester and Liverpool of outside inspection?—I believe so. If we find any sample of milk from any outside herd infected with tubercle, we can get a certificate from a Justice of the Peace, having jurisdiction where the herd is located, empowering us to go there and inspect the herd, and bring any samples back with us we think necessary. And if we find a cow infected, then we instruct that the cow must be kept entirely apart from any other dairy cow, and, if we can, we secure its subsequent slaughter.

31931. What proportion of milk sold in the city is raised within the city area?—I am afraid I can scarcely answer.

31932. I only want an approximate figure, nothing too definite—a third, a fourth, or a fifth?—A fourth, fifth, or sixth, or something like that. Great quantities come in from outside by rail.

31933. From what area is it drawn—what distance?—It is drawn from a distance of fifty miles.

31934. During the time your public health authority has enjoyed these powers of outside inspection, how often has it been considered necessary to exercise them?—May be, roughly, about twenty times a year.

31935. And it is only when the milk has been subjected to a bacteriological examination, and after it has been certified to be infected with tuberculous bacilli, that you go into the country to inspect the cows producing it?—That is so.

31936. Have you endeavoured to improve the condition of the cow byres, and the manner in which the milk is handled?—In the city we have.

31937. With what success?—With considerable success. The regular monthly examination of herds has secured greater cleanliness, and the pointing out of wasted cows has induced the cowkeepers to get rid of these cows sooner than they would otherwise have done.

31938. Have you any reason to believe there is carelessness, or want of cleanliness, on the part of persons engaged in milking or handling the milk?—Unquestionably. There are a number of men that you can never make quite cleanly in their habits. I find the best results are obtained by the systematic inspection—the monthly inspection—and by dropping in when they don't expect you; yet, they know you will be there very soon. That has had a better influence than anything else in securing cleanliness. A clean milk supply also depends upon the proper construction of sheds, and we have had a considerable amount of influence in keeping cows and the milk

supply cleaner by having a number of cowsheds altered in their internal construction.

31939. Have you non-professional inspectors as well as professional?—No. There are three veterinary inspectors—myself and two assistant veterinary inspectors.

31940. The city is divided into sections?—The city is divided into two sections. The other men do the regular inspections, and I come in in questionable cases.

31941. In consultation?—In consultation, or if we want alterations, and so on.

31942. Are you satisfied that the cows that are housed in the city byres are in healthy and hygienic surroundings?—On the whole they are.

31943. A great improvement has taken place in recent years from that point of view?—Distinctly.

31944. Mainly due to the additional interest taken by the public health authorities in securing a healthy and clean milk supply for the population over whom they preside?—Yes; essentially due to the health authorities' action.

31945. Have you found willing co-operation from the cowkeepers in carrying out suggested improvements?—Mostly so. There have been a few objectors, but as to the general body, if you point out to them the advantages of such changes as you want, they, as a rule, as practical men, see the advantages, and fall in with them.

31946. Have you ever been obliged to have recourse to prosecution, for the purpose of enforcing the orders you issue?—We have twice had recourse to prosecution.

31947. And did the magisterial authority co-operate with your public health committee?—In both cases.

31948. In ensuring these very essential changes?—Yes; in both cases convictions were made.

31949. Were fines inflicted, or was a period given for the carrying out of the improvement?—Fines were inflicted in both cases.

31950. I take it you have also inspectors under the Food and Drugs Act, who take samples of the milk offered for sale, to ascertain if it is adulterated?—Yes, that is done by one of the inspectors of nuisances, under the medical officer, and not by the veterinary inspector.

31951. I understand it is not part of your duty to supervise that, but such an officer is in existence?—Such an officer is in existence, and it is done regularly. The veterinary surgeon also comes in there; in cases where the milk has been found defective, and where there is no evidence of fraud, the veterinary surgeon is sent to inspect the farm and to interview the farmer, with a view to tracing the defect, and advising such alteration as will improve the quality of the milk.

31952. In gross cases of adulteration prosecutions are instituted?—That is so.

31953. And where adulteration has taken place in a minor degree you try the effect of moral suasion on the cow-owner?—That is so; and particularly if the authority thinks there is no intentional fraud. In such cases the farmer is asked to come before the Health Authority, and discuss the points.

31954. Does that custom prevail here also of summoning the cowkeeper to attend before a meeting of the Public Health Committee, and explain the circumstances relating to the complaints which have been made with regard to the milk coming from his farm?—Yes.

31955. Do you find they are willing to do that; do they obey these orders?—Almost invariably.

31956. And if the cowkeeper gives a reasonable explanation of the conditions found to exist, and promises to be more careful in future, unless there is gross adulteration, no prosecution issues?—No, not in that case

31957. Have you the city dairies more absolutely under control than those that are situated in the country districts?—Undoubtedly. We inspect the city dairies from the hygienic and the sanitary point of view periodically.

31958. One can quite understand that, because it is essential in large centres of population, from many points of view, as well as the point of view of milk supply, that these should be kept in a proper condition. What I want to know is this, how would the efficiency of the cow byres in the city compare with those that are situated in the country?—You have two different classes of men usually in the town and in the country. The town dairyman is mostly a man who goes into the country and buys the best cow he can get, and then at the end of the milk period he sells her as fat. The dairyman in the country is a different man. He is more often a breeder who breeds the cows in his herd, or if he buys them, he retains them and breeds from them later on.

31959. I know. Has any friction arisen between the Public Health Authority in Birmingham and outside authorities controlling public health in districts from which milk is sent into the city?—Not to my knowledge.

31960. You have never found any hostile feeling manifested against you, or any of your subordinates, when visiting these dairies for the purpose of ascertaining the conditions existing?—None whatever.

31961. Have these Public Health Authorities ever been asked to co-operate with your Council in seeing that the improvements recommended by you would be carried out?—I don't know that they have. The Medical Officer of Health, as he will tell you, has on several occasions communicated with an outside Medical Officer of Health. I don't know that we have ever stipulated for alterations to the cowsheds; when we have been outside we have confined ourselves simply to the question of tuberculous cows, and, as a rule, we have not much difficulty in getting the dairy farmer to deal with these.

31962. Your administration so far has not enabled you to effect much improvement in the condition of byres in the country districts?—We have not interfered with the sheds in the country districts; we have regarded that as outside our jurisdiction.

31963. And your inspection has been entirely confined to ascertaining the health of the stock producing the milk?—That is so.

31964. In what number of cases have you been obliged to make this inspection on the report of your bacteriologist?—Roughly speaking, about twenty times a year. In the present year, from February until now, we have made ten different inspections, in which we have had cows killed.

31965. Would you be kind enough just to give the Commission one illustration of the procedure followed in a case in which tuberculous bacilli are found in the milk; what is the first step you take?—We receive a note from the medical officer, who has received it from the bacteriologist at the University, saying that sample so-and-so is infected. We keep the whole record of where that sample came from in our own office—they don't know at the University where it came from. On receiving the note we get a magistrate's certificate, authorising us to go to the farm. Either myself or one of the assistants, chiefly the first assistant, goes out and examines the cows, and if he finds one with unmistakable tuberculosis of the udder he informs the farmer, and requests him to have the cow slaughtered. If, as is more frequently the case, there are several cows with lesions of the udder, more or less suspicious, or one or two cows that look wasters, then he takes a mixed sample of milk again, as well as the individual samples from any suspicious cow. He brings these back to Birmingham, and they are tested again at the bacteriological laboratory, and, as a rule, the infected cow is detected. Unfortunately, the doing of that takes some time; it involves a month's delay. That is the difficulty—one of the difficulties.

31966. If your assistant had reason to suspect a certain cow, which he found in a byre on the day of his inspection, could he order the discontinuance of the milk supply from that cow?—He could, until that cow's milk was examined properly.

31967. Do you ever have resort to the tuberculin test?—Not in these cases. But in ridding certain specific herds we use it largely.

31968. You have never used the tuberculin test for

the purpose of ascertaining what particular cow in a herd was yielding milk infected with tuberculous bacilli, when there were no other clinical symptoms present from the milk bag?—No, we have not done that. As a matter of fact, it is not unusual to find a reacting cow give milk in perfect condition, and the test in that case would not be reliable as regards the milk.

31969. Are any of the cows in the city herds or dairies subjected to the tuberculin test?—Yes, when we are clearing herds of tuberculosis, not, as a rule, otherwise.

31970. There has been no general application of the test?—No.

31971. Is any milk offered in this city certified to be yielded from herds that have passed the tuberculin test?—Yes. That is so.

31972. What number would there be?—We have altogether tested thirty herds.

31973. Are they within or without the city area?—Mostly in the city, or within an area of ten miles of the city.

31974. What proportion of reactors did you find?—36.57.

31975. Out of what number?—823 cows.

31976. You seem to be rather fortunate; the number of reactors is rather below the normal standard?

Professor METTAM.—He means 86 per cent.?—Yes, 36 per cent. We have had them vary.

31977. The CHAIRMAN.—Some were worse than others?—We have had three herds practically free; one was absolutely free.

31978. It was a herd selected only in the ordinary way by an intelligent cowkeeper, I mean without having recourse previously to the tuberculin test?—There had been no previous recourse to the tuberculin test. The herd had been bred at home for many years, not any bought.

31979. It was a herd raised on the farm, and recruited from animals that were raised on the farm as time went on?—That is so.

31980. There was no introduction of fresh blood, and consequently, no introduction of infection?—That is so.

31981. What is the highest percentage that you found?—I think it was 85.

31982. Did any special circumstances point to the probability of that result, either in the appearance of the herd or in the care to which it was subjected?—The herd was a fair and useful herd to look at, but the buildings were situated in a kind of hollow, and there was little opportunity for good ventilation.

31983. Or drainage?—Or drainage away from the place. Apart from that, the herd itself looked a good, serviceable, useful herd. You would say there were not many affected by the normal appearance they presented.

31984. From the casual observer's point of view, there was nothing to indicate that the tuberculin test would have given such very deplorable results?—No, it surprised both the owner and ourselves.

31985. What happened to the reactors in that case?—The owner thought it was too serious a matter for him to go on with, and he did not proceed any further after the test.

31986. Does he continue to be a milk supplier?—He continues to be a milk supplier.

31987. Did you take any precautions about the disinfection of his byres or premises?—We have taken, occasionally, some mixed samples of milk to make sure there was no tuberculosis infection coming in with the milk.

31988. And notwithstanding the fact that this milk came from a herd in which 85 per cent. were reactors?—Examination did not disclose infection in the milk.

31989. Bacteriologically, the fact is that no tubercle bacilli were to be found in the milk?—That is so.

31990. From what period has that been going on; how long is it since the test was applied to discover, and this very high percentage established?—Three years.

31991. And although samples have been repeatedly taken within that period, no adverse report has been furnished to the Public Health Committee?—That is so.

31992. And no radical change has taken place, so far as you know, in the condition in which the cows have been kept?—No change, so far as I know.

31993. Does the milk guaranteed to be supplied from cows that have passed the tuberculin test command higher prices than ordinary commercial milk?—As a rule, it does.

31994. What would be the difference?—As four is to five; you would pay 4d. for ordinary milk.

31995. An additional penny would be charged; you mean 4d. per quart?—Yes.

31996. And 5d. per quart would be paid for the milk which is certified to be from herds that have passed the tuberculin test?—That is so.

31997. Amongst what section of the community would that milk be supplied?—Mostly to public institutions, and the better classes of the community for children.

31998. Has the Birmingham Authority ever thought it necessary to establish a depot for the distribution of milk in the industrial localities?—The matter has been considered, but no depot was ever established.

31999. Perhaps I should rather leave that question to the medical officer of health. What breeds of cows are usually kept in the Midlands?—They are mostly the shorthorn breeds in this neighbourhood.

32000. Shorthorn cross-bred, not pure-bred?—Cross-bred, not pure-bred.

32001. Does the supply of milk to the city vary in the summer and winter months?—Yes, to a certain extent. As a rule, in the summer months there is some difficulty in getting all the milk that is required.

32002. Are there many milk shops in Birmingham?—Yes, a good many. I cannot say how many.

32003. Are they registered?—Yes, all registered; and under inspection by one of the inspectors of health.

32004. If adulterated milk should be found in one of those shops, who would be proceeded against—would it be the vendor or the person supplied?—I think it would depend on circumstances.

32005. Whether a contract exists between the middleman and the producer?—Yes, and if it could be proved the milk had not been altered from the time it came from the farm to the middleman.

32006. Have you had many complaints as to the condition in which milk is delivered in the city, of its being carelessly handled and unclean?—That is a matter that will come under the medical officer of health and his inspectors, more than myself.

32007. Naturally. In the other herds in which the tuberculin test was applied, what became of the reactors; were they cleared out in any instance?—As a rule, the method was to separate the herd. We separate them into infected and free sections, and as soon as the milking period of the infected portion ceases they are sold as fat. The others are retained in the herd.

32008. You have not had the opportunity of following these beasts to the abattoir, to ascertain what conditions were revealed on post-mortem examination?—We have had an opportunity in a number of cases, and it has varied a good deal. In quite a number of cases the amount of lesion has been exceedingly small; very difficult in some cases to detect it.

32009. Have you ever discovered a case in which distinct reaction has been given to the tuberculin test in which you failed to find tuberculous lesions in the body?—I think I remember one case in which we would have had difficulty in establishing the existence of tuberculosis.

32010. Would a post-mortem examination be carried out with sufficient care and minuteness to enable you to ascertain positively?—You may readily get a reactor that will not show ordinary physical or naked eye evidences of tuberculosis.

32011. Even on close examination in post-mortem?—Even close examination in post-mortem. I believe if the animal had been affected three weeks ago, it might readily give a single reaction and still not show lesions.

32012. If visible lesions were formed?—It would be very difficult to the ordinary eyesight.

32013. You might have a microscopic examination?—You might, but from the ordinary examination in the abattoir no man might detect it.

32014. Professor METTAM.—It is possible for infection to be present, and still no lesion be visible to the naked eye?—That is so.

32015. The CHAIRMAN.—What proportion of cases in which prosecutions were instituted would refer to milk raised outside the city area; is the milk coming into the city a purer, a better milk, than the milk raised within the city area?—If anything, we find a slightly larger percentage of milks from outside affected with tuberculosis than those from inside—not such a very marked percentage as one would almost expect—but still there is a distinction.

32016. You would really expect that there would be a larger percentage of sound cattle in the country?—I put it down to the different inspections going on. If they were left entirely alone, there probably would be a bigger percentage of milk infected in the city, but seeing we have monthly systematic inspection of cows in the city, and as a consequence the drafting of animals that are wasters, and don't look right, we get a smaller percentage of infected milks inside the city than outside.

32017. Would you think it desirable that the same supervision which you exercise in the city should also apply to all owners of cows sending milk into the city?—Certainly.

32018. And would you think that could be best accomplished by a uniform administration by all local authorities?—By each local authority carrying out a uniform system of inspection.

32019. Would you have that clearly defined and laid down, so that there might be no variation between the different local authorities as to the standard of efficiency to be aimed at?—Yes, as far as possible.

32020. Do you think it is extremely unlikely that a uniform standard of efficiency will be established unless it is centrally controlled?—It would be difficult to get it unless there was central control.

32021. Professor METTAM.—Would you put it under the Board of Agriculture, Mr. Malcolm?—I think they ought to have a voice in it.

32022. Or would you put it under the Local Government Board?—There are certain points that indicate one, and certain the other. From the health medical officer's point of view it would naturally come under the Local Government Board; but from the ordinary dairy farmer's point of view, he, I believe, would prefer it—and in many senses it would be better, to be under the Board of Agriculture. Tuberculosis, in my opinion, is one of the conditions that should be dealt with through the Board of Agriculture, because it is essentially a contagious disease, and they have the administration of all other contagious diseases in their hands. There does not seem any justifiable reason why you should deal with one contagious disease under the Local Government Board and others by the Board of Agriculture. On the whole, I think the administration, so far as tuberculosis is concerned, should be under the Board of Agriculture.

32023. The CHAIRMAN.—Do you ever find it necessary to order a local authority to slaughter a cow you found in an advanced tuberculous condition?—We have had to use a good deal of discretion. We recognise that we have no absolute power to order a cow's slaughter without the owner's sanction, and we have realised a difficulty in some cases in getting the farmer to have his cow killed. I brought this matter before the Health Authority last February, and got permission to award a certain small sum as compensation in each case, if I thought it desirable. As a result of that the difficulty of having the cows slaughtered has practically disappeared. Every cow since then has been slaughtered. We have made a post-mortem in each case, and the farmer has been satisfied.

32024. Mr. WILSON.—When you speak of every cow, you mean every cow whose milk has been found to contain tuberculous bacilli?—Every cow whose milk is proved to contain tubercle bacilli.

32025. Professor METTAM.—What does it cost?—Since February till now we have killed ten cows, and the net cost to the Department has been £31 10s.

32026. The CHAIRMAN.—So you think it desirable to offer such terms to cowkeepers as would ensure their co-operating with the public health authorities by directing attention at the first moment to an animal which was suspected of tuberculosis?—I think it is a very good thing for a cow-keeper to get some compensation, and practically make it in his interest to co-operate with the authorities in stamping out these cows. At present we have it in our bye-laws that every cowkeeper shall inform us if there is any cow suspected of tuberculosis; but as a matter of fact it is a dead letter, for they never inform us of any.

32027. Professor METTAM.—Is that because you are round so frequently?—I don't think it is. I don't think they seem to realise the condition or pay much attention to it.

32028. The CHAIRMAN.—From the practical point of view, it has not accomplished much?—It has not accomplished much.

32029. You think there is need for some further

development from that standpoint in order to secure the prompt detection of an animal that is suspicious?—Yes, the general system of inspection that you foreshadowed in a question put by you a short time ago.

32030. Unless inspection was universal, and carried out systematically all over the country?—Yes, inspection all over the country. Then there ought to be some financial inducement to farmers to report these suspected cases.

32031. And if the country is ever to be rid of this scourge, don't you think universal application of all precautions is essential?—Absolutely essential, if ever we are going to get rid of it.

32032. It is rather hopeless. I know one local authority using its best efforts to secure this end, with its neighbour doing it less efficiently, and over the border absolutely nothing at all being done?—That is so. The only point about it is, somebody must begin, and there is a certain amount of good done by giving an object lesson in what can be done in certain herds. But, so far as ridding the country of tuberculosis is concerned, the procedure must be general.

32033. It cannot be done by sporadic action here and there?—Not a bit. It must be universal, if anything is to be done at all.

32034. And it is a matter of vital importance to the public health generally, and it is one in which the State might be asked to bear a leading part?—I should think so. I think the State ought to bear a leading part in stamping out such a disease as tuberculosis.

32035. Mr. WILSON.—With regard to this notification of suspicious udders, supposing the local authority were somewhat more generous in the matter of compensation for cases notified by the farmer or cowkeeper; and, on the other hand, if that were coupled with a stringent penalty in the case of a suspicious udder being discovered by the inspector in the course of his rounds, would these two forces working together not tend to bring out all those suspicious cases more quickly?—I scarcely think it would be sufficient in itself, inasmuch as the farmer would say he had not the experience to enable him to say that the udder was suspected of being tuberculous. There are many other morbid conditions of the udder.

32036. To bring them all out?—If you make it that every morbid condition of the udder must be reported under stringent penalty, and leave the diagnosis to the Veterinary Inspector.

32037. And generous compensation if it prove to be tuberculosis?—Certainly that would help, but I think the right procedure is the general inspection—the systematic and regular inspection of all dairy herds in the country.

32038. I quite agree, but one would like to improve all machinery by directing the inspection, as far as it was humanly possible, to suspicious cases at the earliest possible moment?—No doubt, it would have a beneficial effect.

32039. It would not be a serious thing administratively, would it?—No.

32040. It would not add enormously to your staff, for example?—Not enormously. It would cause us to visit certain herds more frequently than at present. It would add very little to the work of the present staff, so far as we are locally concerned.

32041. Lady EVERARD.—What do you think would be fair compensation to pay a farmer, what would be the maximum?—We have made it here a maximum of £4. It was practically recognised that very few cases with tuberculous udders were more valuable than £8, and it was agreed to give half value. It is very rare you will find a really good cow affected with a tuberculous udder, although it does occur.

32042. You don't think it would be better for the health authorities to pay the full value, and let them dispose of the carcasses?—Probably it might be fully as satisfactory if that were done, but seeing that the thing is here a voluntary matter, the committee thought that if they gave half compensation, the farmers would fall in, and that has been the case. Then again, you may have tuberculosis of the udder and the other part of the animal may be quite fit for human food. In that case it was thought best to leave it with the farmer to get a sum for his cow. We do not interfere with what he gets from the butcher.

32043. The CHAIRMAN.—There is a further danger, from the public health point of view, of leaving the carcasses with the farmer. You run the risk of having them disposed of to a local butcher in a small country village, where the carcasses would be subjected to no

examination, presumably; whereas, if you claim the carcass as your own, the animal is sent to the public abattoir, and there slaughtered, and what portions of the carcass are certified as fit for human food would be so sold, and the danger would be checked?—There is certainly a good deal in what you say. I may say here our usual plan is to stipulate that the cow shall be sent to our public abattoir and inspected. It always is inspected, either here or elsewhere; in the majority of cases—nearly all cases—here. Then the meat inspectors know that they are inspecting a cow condemned for tuberculosis, so there is very little risk.

32044. Wherever it comes under the supervision of the public health authority, I would be fairly satisfied that the public would be protected, but the contingency I foresaw is this, where the carcass would get into the hands of a local meat dealer—there are such up and down the country?—I quite agree.

32045. Therefore, it might be sold to an industrial population as food, which could not fail to be a positive source of danger to the public health?—That is so.

32046. And if one is to hope that the dangers arising from the presence of bovine tuberculosis can be obviated, some such precaution will have to be taken?—I agree.

32047. Lady EVERARD.—I think, from what you said, Mr. Malcolm, you recommend licensing, not registration, for the cowkeepers. You would recommend them to be licensed?

The CHAIRMAN.—I don't know that that question rests with Mr. Malcolm.

Mr. Malcolm.—I don't quite understand.

32048. Lady EVERARD.—At the present moment cowkeepers are registered?—Yes.

32049. You would recommend licences instead of registration?—I don't know. I think registration—

32050. We have had a great deal of evidence before us that licences would be more advantageous; you would license him just the same as you license a spirit dealer. Then it could be taken from him.

The CHAIRMAN.—What Lady Everard wishes to know is this; would you think it desirable that it should lie with the public health authority in Birmingham to determine, in the first instance, the character of the man engaged in the trade; subsequently that his premises were suitable, and that, in the event of both these conditions not being present, it would be competent for the public health authority to say "no, we refuse to license you to sell milk"?—Distinctly so; that, I think, is the right procedure. As a matter of fact, we almost act up to that, although we are not quite fully entitled to do it.

32051. I understand, in the question of registration, you go as far as you can along that particular road. At the same time, don't you think it would be more helpful still if you had statutory power to do it?—Unquestionably.

32052. And it would, further, lead to this precaution, that if a man were convicted continually for adulteration of milk, or for other offences against the regulations laid down for the production and care of milk, it would be competent for the public health authority to say to that man—"in consequence of the fact of your having been convicted of carelessness, or worse, in the conduct of your trade, we refuse to license you"?—Yes, distinctly, it would be a most admirable change.

32053. And very helpful to the public health authorities in discharging the very onerous duties imposed upon them?—Undoubtedly.

32054. Professor METTAM.—At the present time, can anyone become registered as a dairykeeper?—If a man comes and asks for registration as a dairy keeper, I understand there is no power to refuse, strictly speaking. In practice we don't quite act up to that. We say, "let us see your shed," and if it is not suitable, we may say, "we cannot register you for this shed"; but I believe he can demand registration, whatever the shed is, and then we can proceed against him for keeping cows in an unfit shed. We try to do it the other way round, and, as a rule, the cowkeeper realises that, and we have no real difficulty. But it would be better the other way, namely, that you can stop a man unless he was the right man, and had proper premises.

32055. Under the present regime you are beginning at the wrong end?—That is so.

32056. The fault is committed, and then you prosecute?—That is the law. But we do not do it that way in practice.

32057. Lady EVERARD.—You feel that the milk supply of the City of Birmingham from the outside area should be really properly looked after by the local authorities, which it is not at present. I mean to say the dairymen and cowkeepers in the districts from which the milk of Birmingham is supplied are not properly looked after by the local authorities?—They are not looked after in the same way we look after them.

32058. You consider, if there was one system all over the country controlled by a central authority, it would make the work of all the veterinary surgeons much simpler?—That is so. The various Councils ought to put in force the regulations. This ought to be compulsory; at the present time it is optional for an authority to put in force the Milk Clauses. It ought to be compulsory in every district.

32059. When you go outside the area, you have power to go without any reference to the medical officer or veterinary surgeon of that district. When you get a magistrate's order you are not obliged to inform the medical officer, nor the veterinary surgeon that you are going?—I am not sure whether there has been a clause that we ought to inform the medical officer. In practice we simply get a magistrate's certificate, and go there. We have never given any cause of offence by doing so.

32060. The CHAIRMAN.—You probably go first, and tell them afterwards?—I think if the medical officer of health for the city decided to stop the supply of milk from any individual farm, either as the result of our visit to a farm or from some other evidence that the milk from the farm was liable to cause disease, then he would at once notify the medical officer outside, and he would not proceed to interdict the milk until he had afforded every opportunity for inspection by the outside authority.

32061. There is a medical officer, say, in a district outside Birmingham; would it be his business or that of the veterinary surgeon in the district, inspecting these byres occasionally, to let you know if they found any suspicious cases of illness. It seems to me, if there is no proper inspection outside, you are very liable to get milk infected by typhoid, diphtheria, or any other disease?—That is so, of course.

32062. If there is no proper inspection from the other local authority?—There is not the same systematic inspection by qualified inspectors. The inspectors of outside districts are mostly inspectors of nuisances.

32063. Professor METTAM.—Lay men?—Lay men in that sense.

32064. Ex-policemen?—They have done a lot of work from a sanitary point of view, but they cannot be supposed to have an adequate knowledge of disease.

32065. Would you approve of the bye-products of milk, such as butter, cheese, skimmed milk, butter-milk, being under the same rules and regulations as new milk?—Yes, on the whole, I think they ought.

32066. At present they are not?—The difficulty is that you get so much butter from abroad. It is very difficult to legislate equally for imported and home produce.

32067. You may get tuberculosis imported in your butter from abroad?—You may, but it would be in such infinitesimal doses that in all probability it would not have a very big effect.

32068. Lady EVERARD.—Still, it is in butter, we have heard?—It is in butter, undoubtedly.

32069. Professor METTAM.—After you supply the public institutions, Mr. Malcolm, do you know if the hospitals in town receive milk which is guaranteed free from tuberculous infection?—A number do, but not all.

32070. They have not got their own herds, tuberculin free herds, for the production of milk?—Hospitals that are under the care of the City Authorities have tuberculin free supplies.

32071. Do they get their milk from Tyburn?—A certain portion, through a dealer. It is not delivered directly from Tyburn to the Health Committee hospitals, it comes through one of the local dairymen.

32072. Is Tyburn herd tuberculin free?—It is. I may say it was fairly largely infected when we tested it first. There were a lot of fine cows that would not give any man a suspicion of tuberculosis, but in testing the herd we found a rather large percentage. The committee decided that we should proceed to eliminate it at as little expense as possible. We separated the herd into two, and all the cows that were reactors, as soon as they become fat, were disposed of

to the butcher, the buyer being advised that these cows had been reactors. In only one case had the authority found it necessary to refund any part of the price of the animal. In that case the carcass was generally affected, and the authority repaid the whole of the money obtained at the sale by public auction.

32073. Most of these reactors, when killed, were found in suitable condition for consumption?—For food. We had only one, as I have said, out of the whole lot that was not suitable for food. The others were quite fit.

32074. The CHAIRMAN.—One out of twenty, thirty, forty?—There were fifty-two.

32075. One out of fifty-two?—One out of fifty-two.

32076. Mr. WILSON.—When you speak of testing that way, and finding there were many giving evidences of tuberculosis, was it by the tuberculin test?—By the tuberculin test only.

32077. Not by the method of analysing the milk?—The milk was absolutely clear and pure. The milk was absolutely free from tubercle infection; we tested it time after time.

32078. It was not through finding tubercle bacilli in the milk?—It was not. We took samples repeatedly; and especially after we had isolated the infected, we made it a principle to take mixed general samples of the milk of the reactors, and in no case did we ever find one of these samples infected.

32079. I was curious to know whether you were induced to make the test by reason of finding the bacilli first?—No, the reason was, frankly, a desire to clear the herd of tuberculosis. We have never found tuberculous infection in milk from Tyburn, and there is no farm from which we have taken so many samples as from Tyburn.

32080. What is Tyburn?—It is what we call the Drainage Board. It deals with the whole of the sewage matters from Birmingham and for a pretty wide area—the drainage area. I am not veterinary surgeon for that district, but I came in in that case. It is really outside of our bounds; the roads divide the outside and inside authority.

32081. Professor METTAM.—You do Tyburn veterinary work?—No, I don't. You remember when you were in Birmingham—Stanley did it.

32082. Stanley did it?—Stanley's successor does it now—Mr. Byner, M.R.C.V.S.

32083. He is an outside practising veterinary surgeon?—In connection with him we are liable for the testing of the herd. We sent for him, the matter was discussed, and the herd was tested by us jointly. Mr. Byner joined us so that we could then act in conjunction. We have always sent in a joint report, and we find it act very well. We find it is rather a good thing to work in co-operation with the veterinary surgeon of the district, and wherever we are called in by an outside farmer we try to do our testing in conjunction with his veterinary surgeon.

32084. As regards the cost of eliminating tuberculosis from that herd, was it impossible, from the commercial point of view, for the ordinary occupier of land—the ordinary dairyman?—I don't think it is at all impossible, financially. The chief difficulty is that of isolating the herd effectually, and especially of late years, since contagious abortion became so prevalent. If you had a herd to be cleared from tuberculosis, and it was the subject at the same time of contagious abortion, you could not deal with that herd unless you divided it into four sections.

32085. And that, practically, was impossible?—Yes. Impossible.

32086. Excluding contagious abortion for the moment, say you have only tuberculosis, and you want to get rid of that, you don't think it is an insuperable difficulty on the part of the ordinary dairyman or farmer to get rid of it?—No, provided he gets rid of the reacting animals as early as possible. But I don't think farmers in this country themselves like to do the elimination of tuberculosis. I believe you cannot clear a herd from tuberculosis if you have an infected herd and a free herd on the same farm, in the same buildings. You must have two separate premises: one for the free herd, the other for the infected herd; and there are few farmers who have two farms and two sets of premises.

32087. Then there is a considerable amount of trouble arising to the owner?—There is a good deal of trouble, and he must be a man entirely in sympathy with you, or he won't see that his men keep the animals entirely separate.

32088. As regards the testing of tuberculosis, I believe you do it gratis for the owner's stock?—Yes. The Corporation supplies the tuberculin, and also pays the veterinary surgeon's fee. When we are called in to an outside herd—outside the city—I have the power to engage the owner's own veterinary surgeon to do the testing for us, and we pay him a certain regulation fee for testing the herd. We never pay him less than a guinea for one cow, and we never pay more than five guineas for the highest number he may test.

32089. You pay him that fee; he is paid by the city?—The city pays him that fee.

32090. Consequently, it is possible for the owner to know the condition of his stock, *qua* tuberculosis, free and for nothing?—Yes; free and for nothing.

32091. Lady EVERARD.—Anybody selling milk to the city?—This applies to anybody selling milk in the city.

32092. Professor METTAM.—And if his herd is outside?—Inside or outside. There was a regulation up to ten miles outside, and we have never gone beyond that. But the city boundary has recently been extended, and we are testing a herd really fifteen miles out, at Kingsbury, and we have a return this morning. Mr. Olver, of Tamworth, has done the testing. The return shows that we have practically cleared that herd. We have only four or five cows that reacted formerly. We test them twice a year. At the last testing there were four or five cows affected. These cows have been retested, and are still affected. Those that passed the test the previous time have passed it again to-day. There were some few cows that were not tested previously; all that were tested and were free before are free still.

32093. As regards milk coming into the city; who takes samples at the station?—The veterinary assistant, if it is in connection with tuberculosis; if it is in connection with the quality of the milk otherwise, the inspector of nuisances.

32094. Samples of milk will be taken at the station for bacteriological investigation?—Yes, we do that.

32095. Any time one of the assistants might go down to the station and take a sample?—That is so, and when they are inspecting dairies. If they see any cows which are the least suspicious, they take one or more single samples, and if they deem it necessary a mixed sample, and send them in. That is a standing regulation; also we go to the station any time, if there is any herd under suspicion.

32096. You have a live stock market here?—Yes.

32097. Where cows are exposed for sale?—Yes.

32098. Have you power to go into the market and secure any animal you suspect of tuberculosis?—It is rather difficult in connection with that. You have to deal with cows in various conditions. A veterinary inspector must not make a mistake. He therefore hesitates a little before he condemns a cow. We went in the other day and found a waster, and under the new Act (cruelty) we had that cow killed on the place. It proved not to be affected with tuberculosis, but with John's disease.

32099. The mistake is pardonable, of course?—We thought so, as diagnosis by clinical examination is sometimes rather difficult.

32100. Lady EVERARD.—If you see a cow with an obviously diseased udder, you take action?—Unquestionably.

32101. Professor METTAM.—Have you the power of applying tuberculin in those cases where you think it is necessary for purposes of diagnosis; can you apply tuberculin to any cows you wish in going about your inspectorial duties?—If the Board of Agriculture Order had come into force that was prepared and issued, we would have, but at the present time we have not. We cannot go and apply the tuberculin test without the owner's sanction.

32102. Mr. WILSON.—How long have you had the system of bacteriological examination of milk in force?—Four or five years.

32103. Have you had any change in the percentage of tuberculous samples that you have discovered in the ordinary milk supply?—Yes, it has been reduced somewhat. We got fifteen per cent. to start with, and at the present time it is eight per cent.

32104. As high as that still?—Yes.

32105. The examination, of course, has been by inoculation by an expert bacteriologist at the University?—Yes.

32106. When you get a sample of milk proved to be tuberculous, I think you told us that you traced it to the farm where the sample came from, and you some-

times discovered the animal that was at fault at once; sometimes, on the other hand, you say, there may be several animals more or less suspicious in appearance, then you re-test the milk?—That is so.

32107. Would it not be a possible plan at that stage to apply the tuberculin test to all suspicious animals on the farm which had produced the tuberculous sample of milk; have any animal clinically suspicious tested by tuberculin, and if she reacted get rid of her, instead of leaving the process for a fortnight or three weeks, while the milk goes through the University again?—I don't think the tuberculin test in that case would really be serviceable, because it is not at all unusual for a real waster practically not to react, whereas those that are only slightly affected might react.

32108. I was assuming you would get rid of the real waster straight off, but I invite you to say if there was a doubtful case—a case there was suspicion of—you would make up your mind without going through the process of actually testing the milk?—It is not at all infrequent to find a cow, even on post-mortem, whose udder scarcely shows any, or may show no actual tuberculous lesion, and yet she can supply tuberculous milk.

32109. Barring any exceptionally bad cases, one has always to legislate for normal and not abnormal tests. Normally, the animal that was in a doubtful state of health, and probably was passing occasional tuberculous bacilli, would react to the test. I am wondering whether it was possible—whatever scheme you have got, and it seems to work very well—to eliminate these animals as the result of a bacteriological test?—If anything can be done to shorten the test, it ought to be done. The length of time in testing the milk is one of the difficulties in dealing with it; but I scarcely think that testing with the tuberculin test would help us very much, unless we were prepared, if they react, to have them killed, and to compensate the farmer for them, and that is a bigger undertaking than anyone contemplates.

32110. Oh, yes; I am assuming that?—It would mean, in the country, a very big thing.

32111. A very big sum of money?—A very big sum of money, taking the country all over. I am not prepared quite to advocate that each cow with a suspicious udder we took a sample of milk from ought to be killed because she reacted to tuberculin.

32112. Professor METTAM.—Tuberculosis gives you no criterion as to the point the lesion was manifested?—Absolutely none.

32113. Mr. WILSON.—We are limited to observed cases whose samples have been proved to be tuberculous, collected in the ordinary course. Your maximum figures are that about 8 per cent. of samples are at present tuberculous. Assuming, for the sake of argument, that only one-tenth of the farms are producing tuberculous milk, you do not have to go to very many byres in order to get the head quarters of the great majority of the tuberculous samples coming into the market?—That is so, but we find a number of cows that may have some abnormality of the udder suspicious of tubercle, and yet their milk is proved to be quite clear. We bring a sample back from them, because when we go out we are bound to get the offending cow, and we daren't leave any cows' milk untested whose udder is questionable. If it is a big herd, we divide it up, and take two or three general sectional as well as individual samples. If we happen by any chance to miss the cow, then we have, by our sectional samples, limited the suspected to a few cows, and then we can go back and get the cow with certainty. It would be carrying it further than I think I can advise, to have all cows killed which react to the tuberculin test.

32114. Professor METTAM.—What is done with the milk, Mr. Malcolm, of the cow that you have reason to suspect is tuberculous, but you can't say until you get your report from the bacteriologist?—If we really suspect any milk, we can stop the supply of that milk for use for the time being, but often there is nothing about the milk to warrant us, from any physical examination, in saying the supply must be stopped. If we can see anything abnormal about the milk, we at once say that milk must not come.

32115. Supposing you interdict the milk from a particular cow, do you know what is done with that milk by the dairyman?—If we interdict the milk of a cow with tuberculosis, we would give a distinct instruction that it must not be used for anything—it must not be used for food for pigs, or anything like that, unless sterilised.

32116. Unless it was sterilised?—Yes, undoubtedly. A farmer generally feels inclined, if you interdict any of his milk from coming in, to say—"oh, it is good enough for the pigs," and the result is you get the pigs infected with tubercle.

32117. The CHAIRMAN.—The pigs get it?—It is not at all unusual to find pigs affected in that way. We get pigs into our markets, maybe a single herd, everyone affected with lesions in the digestive organs, though the pigs themselves are looking very well. They had not been very long affected, but probably they had been getting a big dose of tuberculous infection before coming in.

32118. Mr. WILSON.—Have you got any cowsheds from which the cows go outside your area during the summer months to graze?—Not now, we used to, but we have none now.

32119. We have had a good deal of evidence on our side of the water that the division of authority between the rural and urban authorities becomes rather acute?—We do not offend the outside authorities. We keep strictly to our own part of the business.

32120. There is really no overlapping in that respect?—Not at present.

32121. Sir STEWART WOODHOUSE.—What guides you in the selection of outside farms for inspection. Is it a report of tuberculosis being suspected, or do you take them because they have not been looked at for a long time?—We go down to the station, or elsewhere, and take samples indiscriminately of the milk, and if any of these are returned as being infected, we go to the outside farms.

32122. It is tuberculosis in the milk that guides you?—At present.

32123. Does the owner get compensation for the destruction of cattle suffering from tuberculosis of the udder alone. If you saw, clinically, an advanced stage of tubercular disease, would that animal be slaughtered and the owner compensated, or is it a question of tubercle in the milk alone?—Tubercle in the milk; if we suspect tubercle is in the milk. We are not supposed to go indiscriminately.

32124. If your assistants, in visiting a country farm which supplies you with milk, observe a defective state of buildings or sanitary arrangements, piles of dirt near

the cows, etc., does that come within your purview, or is it the disease of cattle alone?—In some cases we do speak about it, but we do not act very largely.

32125. You leave that to the authority of the district?—Yes. We have no real jurisdiction in connection with that, and unless we saw something that was liable to cause disease in the milk we would not act upon it.

32126. In what proportion, roughly speaking, of tuberculous cows as a whole, would the udder be affected?—I think it is generally given about 2 per cent. of infected cattle, and I think that is probably not very far out.

32127. What proportion of cattle would give tuberculous milk where the udder was not clinically affected?—The proportion of clinically affected giving infected milk is small unless in very markedly affected clinical cases; unquestionably some emaciated, and even some slightly emaciated, animals do give tuberculous infection in the milk whose udders do not show any specific sign of tuberculosis.

32128. Can that be found during life?—Proved during life and on *post mortem* in the abattoir.

32129. The CHAIRMAN.—It is a very great difficulty of the situation?—It is a difficulty of the situation, undoubtedly.

32130. Sir STEWART WOODHOUSE.—Are premises sometimes disinfected with a view of eradicating tuberculosis on the farm?—We recommend all premises to be thoroughly cleansed and disinfected. Whenever we are testing a herd we stipulate that the dairy shall be thoroughly disinfected.

32131. Has that been applied in any way to fields by clearing the manure?—No; we have not done that here. Yet one can well conceive in certain instances that the fields should be dealt with. I remember having a man from South Australia before us some time ago, and he said that the animals he saw there affected with tuberculosis were affected with tuberculosis in the throat glands, and he put that down to the soiling of the pastures. He said the coastal district was a very foggy and misty district, and the faeces did not dry up readily on the pastures. He believed that a lot of the infection was caused through the stock feeding on contaminated grass, and it is quite conceivable that it should be so. We have done nothing in connection with soiled pastures here.

Dr. JOHN ROBERTSON, M.D., B.Sc., examined.

32132. The CHAIRMAN.—Dr. Robertson, you are the Medical Officer of Health for the City of Birmingham?—Yes.

32133. We have had from Mr. Malcolm the details of your administration with regard to the control of the milk supply of your city from the veterinary surgeon's point of view, and we should be glad to have the aspect of the question from the medical officer of health's point of view as well. He told us that the custom was to take samples of the milk at the various railway termini and other places, and have these sent for analysis to the public analyst of the city. That is so?—Either to the public analyst or to the Professor of Bacteriology here.

32134. At the University?—Yes, we take both—a chemical analysis and a bacteriological test for tubercle.

32135. Have you any considerable preponderance of tuberculosis amongst the inhabitants of this city?—Of course, we have, what one gets in all large industrial communities, a large amount of tuberculosis; but comparing our tuberculosis with the tuberculosis in some of the other large comparable towns, I think we have got quite decidedly fewer cases than many large towns.

32136. Similarly situated?—Yes.

32137. Amongst the industrial population are the children well nourished?—I think we may take it here they are well nourished.

32138. And you have no reason to believe that infants and children of tender years are fed on improper, unhealthy food?—Oh, yes, there are many ignorant mothers. We get many cases where children are fed on quite improper food. I mean to say that here, like everywhere else, you get many cases of children being fed on what is going in the household, or, to a very limited extent, on separated condensed milk. That is only to a very limited extent though. We do a very great deal in the direction of visiting and instructing mothers on the methods of feeding. We have had in Birmingham for many years now a large organisation of paid, trained lady health visitors.

32139. Miss McNEILL.—What is the nature of the training they get?—First of all, they are selected as being competent women; that is the foremost, and most important thing. Nearly all of them possess the certificate of the Sanitary Institute or the health visitor's certificate; but we think it much more important to get the proper kind of woman.

32140. Than the subsequent training?—More important than the subsequent training.

32141. In some places they have appointed people who have had training as general nurses?—Many of ours have had training as general nurses and as midwives; but the point we see to is that they are competent women. It is their duty to visit houses where a baby has been born. We have the Notification of Births Act in operation, and we visit about six-tenths. We may miss some that ought to be visited. We know the streets pretty well where our visits are required, and the streets where we think our visits may not be required; but I think we reach them all, or practically all, and that has been a distinct gain in getting amongst the more ignorant people some notion that they ought to give their children proper milk and adopt proper methods of feeding.

32142. Lady EVERARD.—These are paid helpers?—Paid by the municipal authority.

32143. What is the usual salary—it seems a very desirable thing—what is the general run of the salaries?—Our salaries are rather too small at the present time, we recognise that. We commence our lady health visitors at 30s. a week, and increase them to 35s. Some get more, but those are exceptions. The chief superintendent gets £150 a year.

32144. That 30s. includes everything?—We give uniform and boots and travelling allowances as well: certain travelling allowances for the outlying districts.

32145. The CHAIRMAN.—What this Commission is most concerned with, Dr. Robertson, is how far the milk supply, or the scarcity of it, would be responsible for the improper nourishment of the babies. Is there

a sufficient quantity of milk available at all seasons of the year for the mothers having infants desiring to feed them artificially if they have money to buy?—Yes.

32146. And with regard to the quality of the milk, are you satisfied that it is such as is likely to nourish the children properly?—Yes. That is a point in regard to which I think there are some wrong opinions held at the present time, and I should like you to know my view on the matter.

32147. We should be very glad to?—It is this. I admit at once that a certain part of the milk that goes into every town in varying proportion is not as good as one would like it from the point of view of cleanliness, but I feel very strongly that the milk that does come in is not the great cause of the infant mortality, which is often attributed to it: that is to say, that by establishing, we will say, milk depots, or by various similar methods, I do not think that we should gain a very large amount by the extra cleanliness or the extra disinfection of germs in the milk that would arise from such procedure. You know now in American cities what a lot has been done there—all for the good, I admit at once, and a thing one would like to see here—in the direction of certified milk; but I do not think that alone is going to lower our infant mortality. In fact, I am quite sure it will not. My reason for that is this. We make very careful inquiries into the causes of the death, and the type of dwelling in which death takes place among infants, and we find that among the poorer half of the population of Birmingham—I am using the word poorer in its ordinarily accepted term—among the poorer half of the population, the whole of the deaths from, we will say, summer diarrhoea take place, and that you have practically no deaths among the other half of the population. That is to say, you have got a town of 850,000. There is one 400,000 with the whole of the deaths taking place among that group, and another 400,000 with a very large number of infants with practically no deaths.

32148. A very limited death-rate?—It is practically a negligible thing. Now, I am certain there is not very much difference, there may be a little, but there is not very much difference in the milk supply of the two classes. That is to say, the better half of the population get ordinary commercial milk, and the poorer class get ordinary commercial work. Some of the better class probably get a better quality of milk I grant you, but that does not account for the difference; the difference is in the handling of the milk, and the care and feeding of the child in the dwellinghouse. While I say that I want to guard myself against any suspicion of being thought to be satisfied with the cleanliness of our milk supply as it is at the present time.

32149. The point you make is this: that the immunity from death amongst the better half of your population is not accounted for by the superiority of the food on which the children are nourished?—That is right.

32150. And most of the trouble that arises is consequent on careless or negligent habits on the part of mothers and nurses, and those in charge of baby children in the industrial houses?—Within the industrial houses.

32151. That is a clear and definite statement. You have no reason to believe or apprehend that these mothers are from any cause unable to procure milk for their children if they have money to buy?—No; I am quite sure that in Birmingham we have got an ample supply if they have money to buy it.

32152. And you have not considered the situation so acute that it would be necessary for the public health authority to undertake any scheme for the establishment of milk depots to distribute milk to the industrial population at a reduced rate and to ensure its purity?—The question has not arisen here, so far as the inability of the poorest classes to obtain something which was a reasonably good article. Of course, we have considered the question of whether the establishment of a milk depot would be advantageous or not. I have had the question under consideration for a great many years now; in fact, I think I was one of the first in the United Kingdom to look into the question and draw attention to it. But I have never myself advocated a milk depot on the ordinary lines on which they have been advocated in St. Helens, Liverpool, Battersea, Edinburgh, Glasgow, and many other places, because I recognised at once that in all these places only the people who most needed it did not get it.

32153. Lady EVERARD.—Do you allow your health visitors to order nourishment if necessary?—No, we do not allow the health visitors to give any charity whatever. What we do is this: they are in contact with

all the charities, and if they come upon a family requiring anything they give advice as to how best they can go about getting it, but they do not actually give it. For instance, we have in Birmingham the Charity Organisation Society; we have also got the City Aid Society, both aid societies, which give help in many ways.

32154. I see, yes?—And the health visitors instruct the parents how to approach these societies, or other kindred societies.

32155. The CHAIRMAN.—Those are purely philanthropic organisations, and receive no aid from the rates?—No.

32156. Do you believe that the good properties of milk are impaired by pasteurisation or sterilisation?—To a limited extent they are.

32157. But not to any serious extent?—Not to a serious extent.

32158. And would you think the elimination of danger from bacilli would compensate for whatever injury might be done to the food properties of milk?—Well, I should have to qualify my answer to give it correctly. I think it would be undesirable to feed a child continuously upon something, milk being one of the things, which is continually sterilised. The danger, however, to young children of conveying disease by milk is so great that I think you would undoubtedly be wise to sterilise milk, but allow the child to have other things which were not sterilised, possibly later on. If a child were fed on sterilised food until four or five years old I am quite certain damage would result, but before the child becomes a year old he gets many things that are not sterilised, and the danger is removed.

32159. Have you ever traced an outbreak of infectious disease to the milk supply?—Oh, yes, many.

32160. And do you consider the powers at present vested in the Public Health Committee sufficient to deal with those cases?—Yes, in most instances. I have always found them ample. We have had many outbreaks, we will say, of scarlet fever and typhoid due to the milk, and by taking immediate action, and going to the source of the milk, and pointing out exactly what the dangers were, and what would result if they did not take action, we have got the necessary action taken at once. So that I think, as far as prevention of the serious infectious diseases goes, we have got powers that are quite good.

32161. And how far are they effective in the rural districts from which a large proportion of your milk supply is drawn?—Of course, we only know when somebody in our own town, in our own city, becomes ill, and there is some evidence that the illness is due to the milk supply; it is only then that we have any power to make any investigation. Stray cases, single cases, do happen, due to the milk supply, where we cannot take any action, because we have not any evidence with respect to that supply, but where a number of cases occur, and where we have got suspicion, we go out to the farm and make inquiries and put the thing right.

32162. Yes, but is not that rather a slow process to arrive at a result that would seem to need urgency. If the medical officer of health of a district in which a farm, say, twenty miles from Birmingham, is located, knows that scarlet fever or diphtheria is present in the family of the owner of the dairy, or any of those engaged in handling the milk, would it not be a more direct and proper method of arresting the supply if he were in a position to communicate with you straight off, and warn you against all probability of danger?—Obviously. It would not always follow, of course, that the milk supply would be stopped.

32163. Not necessarily stopped, but at the same time would it not be a precautionary measure that would be helpful to you in limiting the spread of the outbreak or the development of it?—Very much so, indeed; it would obviously be an advantage to us to know that one or two cases about which we are doubtful just now were traceable to the milk.

32164. At the present moment, if you get a sporadic case cropping up here and there, and if it does not spread, you may come to the conclusion that that is due to some local cause, but if it becomes generalised in a district from which the milk supply is derived from one farm or one animal, then, of course, your suspicions are at once aroused. What I suggest is in order to lead to a more prompt discovery of danger, and thereby lessen the chance of its infecting the area outside that in which it is generated?—Obviously it would be of great advantage.

32165. Some co-ordination of the work which is carried out by medical officers of health all over the country?—We do get it in a great many cases at the present time, but we do not get it in all.

32166. Nor is it incumbent on the medical officer of health?—No.

32167. Wouldn't you think it desirable it should be made incumbent?—Yes, very desirable.

32168. And would be most helpful to those who, like you, are engaged in protecting the health of large centres of population?—Yes. I think I ought to say that the number of cases of illness directly traceable to the milk in this city is a relatively small one, smaller than I have ever had experience of before. I know what happens in other districts, and I feel quite certain that is not due to lack of method in checking them here, because our method, I think, is quite a trustworthy one. In the case of every patient, for instance, who suffers from an infectious disease which might be in any way communicated by milk, careful inquiry is made into the milk supply, not only of the milk-vendor, but the persons who supply the vendor. One man may get it from many sources. That is easy enough in regard to the great majority of milk-vendors, but with some of the big milk companies it is quite impossible, because they "bulk" their milk nowadays. In the vast majority of the milk supplies it is quite easy to get the information, and having got that information it is tabulated under the vendor's name. We have a record for every vendor, and we have a record for the farmer sending in.

32169. I see, the producer of the milk?—So that if a farmer sends to two vendors we have got the cases down on his list, as well as on the others, and in case of disease happening on those lists, we should see at once whether there was more than just the coincidence.

32170. I am not suggesting for a moment that the best effort is not being made with the machinery at your disposal for the purpose of checking possible danger, but what I am looking at is the possibility of improving that machinery without increasing very much the cost of administration; only a little better co-ordination and a reorganisation of the system under which medical officers of health discharge their duties?—There is no question you can improve it very much on the lines you mention.

32171. Have you had much typhoid fever?—Very little in Birmingham; less than 100 cases a year.

32172. You seem very fortunate from that point of view; it is a very limited percentage with such a large population?—Yes, it is a very limited percentage. We have reduced ours from 700 cases down to—I think I might put the average at 80 or 90 for the last two or three years—in ten years.

32173. That is a very rapid decline indeed; it is very gratifying. Have you ever traced to the milk supply an outbreak of typhoid fever?—Oh, yes, we have had several; never a large number of cases, but there is no doubt about the milk supply having caused them. When we have done certain things to the milk supply no more cases occur. I think that is one of the best methods of testing.

32174. Have you ever had recourse to the Widal test?—Yes, we have in many cases.

32175. With regard to people handling milk to ascertain whether or not they are typhoid carriers?—No, it has not been necessary, recently at any rate. Of course, we should do it if there was any doubt at all.

32176. The necessity for it has not arisen?—The cases I refer to are cases where they had been using foul water in washing cans, and that sort of thing. We stopped that and the typhoid stopped.

32177. There, again, the administration seems to be imperfect, when there is no uniformity, and when there is not sufficient supervision in the outer area to ensure that the water used for the cattle and for the cleansing of vessels is of a pure character?—That is one of the things we want to improve in our milk supply more than anything else—a pure water for the cleansing of cans, and for the cattle generally, at the dairies.

32178. Do you think any danger arises to the milk supply from cattle drinking water into which crude sewage is discharged?—No, I do not. I think that when cattle foul themselves by standing in the water, e.g., standing in a pond, and come to be milked, you might get some of the germs of the sewage into the milk supply. I do not think there is any doubt about it.

32179. From outer contact?—So far as impure water is concerned, it may make the cow ill, but I do not think you are going to pass the germs the cow drinks through its milk.

32180. The number of tuberculous samples of milk which are discovered in analysis coming into this city seems still pretty high, according to the figures we had from Mr. Malcolm, and in recent years, notwithstanding the vigilance you have shown in the discharge of the public health duty, there does not seem to be a very sensible diminution in the number of infected samples?—There has been a diminution, I think, but not a big diminution.

32181. Not quite as much as one would have hoped?—No.

32182. Have you any scheme in your mind which would be helpful in securing the detection of tuberculous samples at an earlier stage than it is possible to secure them by the present methods?—No; I have not. I know there are many methods that have been recommended, but I don't think they are going to be quite reliable enough to take action on, because we may have to take very drastic action, and unless you have got a method that is absolutely reliable, I think one has got to stick to the slower method.

32183. Do you think the application of tuberculin to the herd would at least be helpful, at all events, in ensuring a purer milk supply?—Yes, absolutely. There is no question about it. It is just a question of what, having applied your tuberculin, you are going to do with your reactors. The matter, of course, is a fearfully big one, a fearfully expensive thing. I don't know whether Mr. Malcolm gave you the reports we made here on that subject.

32184. He did. Mr. Malcolm gave us some interesting figures on that particular question?—Did he give you copies of the report?

32185. No; I do not think he did?—I have brought some down with me if you care to have them. I think they give you figures of what we found here. We took the matter up some years ago very keenly in Birmingham with a view of seeing if we could not get some method that would give us at any rate a better supply than we have got at the present time.

32186. Do you subscribe to the belief that the bovine bacilli is similar in character to the bacilli that infects the human being?—Yes. I think nobody who has a large experience of dealing with bovines and with human beings can doubt that the processes and course of illness are nearly identical.

32187. Professor METTAM.—At any rate, you have no doubt at all that bovine bacillus is pathogenic to man?—No.

32188. The CHAIRMAN.—What form of tuberculosis is most troublesome in this huge city—pulmonary?—Oh, yes, pulmonary.

32189. Lady EVERARD.—I don't think the Chairman asked you whether you consider that to license a dairyman would be more advantageous for the public good than to register him?—Yes, I think it would.

32190. We have had evidence, all over Ireland I may say, and in England too, that it is considered licensing would be more advantageous to the public; you would have more hold over the dairyman?—Yes, absolutely.

32191. We have also had evidence that it would be much more conducive to the working of the Cowsheds and Dairies Order, if it was made compulsory in all places; not "may" do it, but "must" do it. You may in your district put the Cowsheds and Dairies Order into operation, but outside your district it might not be properly worked, it might be worked perfunctorily?—The point is that a great many of our rural districts are peopled by the milk-producers, and, quite properly, those districts are represented by the milk-producers on their councils, and I know several instances where bye-laws have been passed in order that they may not be put in operation, and in order that they may be able to say, "Oh, yes, we have got bye-laws, here they are." But they are not put in operation at all. Those districts are very limited, and growing less every day.

32192. Do you think it would be more advantageous to have it administered by a central authority by whole-time officers?—There is no question about it; the milk supply wants to be put under the county, rather than under the local authorities.

32193. Would you suggest that these whole-time officers should be appointed by the Board of Agriculture or the Local Government Board?—I think that for the administration of the milk the county is the best

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authority myself. I think the county is much better than the Local Government Board or the Board of Agriculture.

32194. You mean to have the whole-time officers appointed by the county?—You will find the county administration will meet local requirements better than a central authority could possibly do.

32195. But would you not like it supervised by, say, a central authority? We have had evidence, in Ireland certainly it has been said to us that if there was a central authority to supervise the local man he could then say, "I must do this thing and the other, because I shall be supervised myself"—I am not quite happy over having two authorities. We suffer too much at the present time from having two authorities doing work. For instance, I think that the failure of our English poor law was due to having two authorities, a local authority and a central authority in London, both with certain ideas, and one more or less over-riding the other. Neither had free scope to do anything. I think you can get very much better work done if you establish a good authority, and give it absolute control. I do not like the idea of having two. If you have the County Council—as far as I know the County Councils in this neighbourhood are extremely good bodies, and would do the work extremely well. I should think they would resent having regulations made by the Board of Agriculture or some other board in London, which would limit them if they desired to take any action.

32196. The CHAIRMAN.—But there is another aspect of the question, Dr. Robertson, and it is this: One quite sympathises with your idea so long as you can get absolute efficiency in the local administration, but one knows quite well that different local authorities will set up different standards of efficiency for their own guidance, and that will probably lead to a want of uniformity in the administration, which would not exist if it was all carried out under regulations that are provided for the guidance of every local authority dealing with similar situations?—My answer to that would be this: That the regulations which you would have to draft, if you drafted them for every local authority, would be the minimal of the requirements which could be demanded. It would standardise the poorest standard you could reasonably set up, instead of helping a very much better standard to be set up.

32197. You would encourage progressive bodies to work according to their own ideas?—If you have got regulations you will find those regulations will be made for the minimum requirements.

32198. What one desires to see is whatever scheme would best tend to uniformity of administration?—I quite agree with you. It is just a question as to whether the one or the other is the better method.

32199. Lady EVERARD.—Have you tubercle free milk for the hospitals of Birmingham?—We have four hospitals now getting tubercle free milk. At our fever hospitals, where we have 600 or 700 children all acutely ill, we give them tubercle free milk.

32200. Miss McNEILL.—Where is that procured; from a farm belonging to the hospital?—No, from contractors.

32201. From whom you exact that guarantee?—Yes. The contract requires them to supply us with the name of the farmer who has supplied the milk, and also with permission to go to that farm to test the cows, and prove that they are tubercle free.

32202. Do you know at what period these cows are re-tested?—Every six months and oftener. Cows brought in are visited oftener than that.

32203. Professor METTAM.—Referring to the question as regards administration by a central authority. How many County Councils do you yourself come in contact with here in the City of Birmingham. Three?—Oh, no, we get more than that. We have Stafford, Worcester, Warwickshire, Derby. Derby doesn't join on to us, of course, but it is very near us. We get a lot of our milk supply from Derby, and Shropshire also does not join on to us.

32204. In how many counties is the present administrative area?—Only one.

32205. Well, now, here you have got five county councils to deal with more or less. These five county councils might view a particular question from five different standpoints, and they might treat it in five different ways?—Yes.

32206. Wouldn't it be well to have one method of treating any particular thing, and not allow each county council to run on its own?—It all depends on how much control you are going to have over the county

council. If you put full control by the central authority over the county council then the county council is going to say like every other authority, "We are only going to carry out the work that somebody else has asked us to do," and they carry it out in a careless, perfunctory manner, without taking much interest in it. But give them the business of making the regulations, and enforcing them for their own district, and you will find that a good authority—and the county council is in all cases a good authority—will do it, and do it well. All our bigger cities do the work extremely well. There is no difficulty about it whatever.

32207. We admit that. But here in England you have county medical officers, haven't you?—Yes.

32208. And these county medical officers more or less work upon one plan and one system, and have more or less one standard, generally speaking, of administration?—It cannot be otherwise very much, because they have to work the same Acts of Parliament.

32209. At the present time there is no such officer as a county veterinary inspector?—No.

32210. And inspection occurring in the county, or in certain districts of the county, is more or less a whim, as it were, according to the reading of the veterinary surgeon as to what shall be the standard he himself shall desire or require as regards the cowsheds. For instance, two veterinary surgeons will disagree. Don't you think it would be a wise precaution that there should be an officer appointed like a county veterinary inspector, a whole-time officer, who should have under his purview the whole of the cowsheds, and so on, in the county; in other words, that he should be able to go to the local inspectors and insist upon the regulations up to a certain standard being carried out?—Yes, that would be quite good.

32211. It would correlate different parts of the country?—That was foreshadowed in Mr. Burns' Milk Bill.

32212. It would, at any rate, lead to a general level of the administration of the various Orders and Acts?—Yes.

32213. I presume you do not find any great difficulty in going into the country districts to follow up a polluted milk supply?—No; if the farmer is at fault it is generally due to ignorance. For instance, if the case were an urgent one, I should have no hesitation in getting into the train and going straight off without any magistrate's order or anything else, and I am perfectly sure every right-minded farmer would be glad I took the action I did in the matter. But every now and again, if you have got to do it according to legal formalities, a good deal of delay might take place.

32214. With the exception of tubercle, and probably one or two minor things, the diseases traceable to milk supply affecting man are infectious which are of human origin?—It is generally so.

32215. You do not subscribe to the idea some people have, that the cow suffers from scarlet fever?—Oh, no, no; but I have got a strong idea that there are certain ailments in the cow which produce sore throat in children.

32216. That is another point altogether?—Resembling sometimes scarlet fever.

32217. You don't know the cause of scarlet fever?—No.

32218-9. You do not believe that cows suffer from typhoid or diphtheria?—No.

Professor METTAM.—And when you get an outbreak of scarlet fever or typhoid or diphtheria it means, of course, that the milk has been soiled from a human source.

32220. Mr. WILSON.—We have heard this morning from Mr. Malcolm that there has been a distinct reduction in the number of tuberculous cases you are discovering from time to time, and a reduction in the number of samples of tuberculous milk. Can you correlate that at all with any result in your death-rate or the number of cases of illness?—No; the amount that comes into Birmingham is so small that it cannot have any obvious effect upon the mortality figures.

32221. What about the reduction in the samples that are discovered to be definitely tuberculous. I think Mr. Malcolm told us the percentage of samples being discovered is less?—We used to have, roughly, 14 per cent., now we have something less than 10. I suppose that is due to the fact that the farmers in the neighbourhood have got rid of their tuberculous cows, and it pays them to keep clear.

32222. Have you got a regular scheme of control to try and weed out these tuberculous animals?—I daresay Mr. Malcolm told you that the Health Committee have offered to supply to every farmer residing within a near distance of Birmingham veterinary services on condition that he supplies Birmingham with milk. A good many farmers have taken advantage of it—at least a certain number, not so many as I would like—but the price of that milk is a good deal more than the price of ordinary milk. The consequence is the poor don't get that milk at all, only the better class people and our hospitals, so that the number of people among the poorer classes who get tubercle free milk is practically nil.

32223. Professor METTAM.—It has only been running for about four or five years?—Yes.

32224. And in time you will have a pure supply coming into Birmingham?—Yes.

32225. The CHAIRMAN.—Supposing for a moment that the supply of tubercle free milk to those who can afford to purchase it is found to be efficacious in limiting the number of cases of phthisis amongst their families, would you be in favour of the municipality bearing the cost between the price of the tubercle free milk and ordinary commercial milk, provided it would be possible to supply it. In other words, would you confer at the expense of the rates the same advantage which the better-to-do people have derived by reason of their ability to purchase milk at a higher price?—Well, if I may answer that question just in my own way, I think nothing we can do is too expensive to stop tuberculosis, and therefore we would say at once, "Bear the cost" as you say; but I cannot help feeling that is the wrong way to do it, and that the only scientific method, and the only proper method, is to make an effort to rid our herds from tubercle. I am not a veterinary officer, but I have taken a great deal of interest in tuberculosis in all its forms for the last twenty-five years, and I am quite certain that if really definite steps were taken we could reduce enormously the tubercle from amongst our dairy herds, and not at anything like the expense that would be incurred in paying the difference between the tubercle free milk and the other milk.

32226. I am putting your own theory into practice. You tell me the number of farmers who are availing themselves of this offer of your Public Health Committee is much more limited than you would like to see it, the reason being that the number of purchasers who were willing to pay for the expensively produced milk is very limited. If you increase the number of those capable of purchasing the expensively produced milk you offer a subsidy to the dairy farmer to carry out the method that you think will help in ridding the country of tuberculous cattle?—Quite right.

32227. So that the one will react on the other?—When you got competition the price of milk would come down.

32227A. The price of milk would ultimately return, if the disease could be stamped out, to its normal commercial value after the lapse of a few years?—It would be a good many years. Another point is that we draw our milk supply from a hundred miles round Birmingham, and one town cannot undertake a business like that. Besides, you are going to get a change of farmers continuously.

32228. I can quite understand, but there again the uniformity of the administration comes in. Of course, we cannot carry out these desired reforms without making them general and universal. If they are to be done in one area efficiently, and in a neighbouring one inefficiently, and in one still further distant not done at all, the effect of what is expended by the first district is considerably discounted by the imperfection of the administration in the adjoining districts?—Quite.

32229. If you must look at it from a national point of view you must have uniformity of administration, and I am afraid that can only be accomplished by central control?—As regards tubercle, I think there is nothing but centrally devised methods applicable to the whole country that is going really to be of much value, because unless you deal with all districts the tubercle free herds would be liable to be infected by the herds all round them.

32230. Professor METTAM.—Then you cannot guarantee that the milk you are paying for in the shape of assistance is going to come into Birmingham at all?—We only give them the assistance provided they are supplying Birmingham.

32231. But you cannot guarantee that he will not send it somewhere else after a time?—No.

32232. Mr. WILSON.—Have you any desire to seek further powers to go outside your own area for inspection? It was impressed upon us in Ireland several times that the urban authorities were anxious to get more powers of control outside?—If the general control were in proper hands I would be quite content, and would not desire powers to go outside more than I have got at the present time; but while there is no reasonable control in these outside districts, I should like to have power to stop the milk coming into the town, because it came from, say, dirty sheds or places where the water supply was bad.

32233. You wouldn't, I think, want to say that the milk should not leave a particular dairy, but you wish you were able to say it should not come into your administrative area?—That is so.

32234. That power you have not got at present?—No.

32235. Has there been any direct result of this interesting little report that was sent in?—Yes, I think there has been very considerable result and very good result, and there would have been a bigger result but for the fact that we have all been expecting a Milk Bill to come along quite quickly, and everybody is holding their hand. But I think the farmers in this neighbourhood all now realise that something is going to be done, and they are marking time until some general steps are taken, rather than the special measures dealt with there. We started that work with a view to demonstrate beyond a doubt in this neighbourhood that the thing can be done, and that a man can get his herd free.

32236. And yet you say milk is distinctly more expensive as the result?—Yes.

32237. Looking very far ahead, if the disease was eradicated altogether the prices would come down again, but that would be a long way ahead, and it is doubtful whether they would ever come down once they got up. That brings one to a question we have been up against in several places. Will you give us your opinion as to whether it is more desirable to have a comparatively plentiful supply of milk produced, not under ideal conditions, but with the worst evils cut out, or a less supply of more expensive milk?—I have not the slightest hesitation in saying that a plentiful supply is the better of the two. The children want plenty of milk.

32238. Human nature has the power of throwing off mild infections as long as they are left mild?—Yes.

32239. We have got, of course, situations where the milk is absent, or practically absent, and the condition of the children in consequence is more appalling than when milk was plentiful and very bad?—I do not think the question of the eradication of tuberculosis amongst bovines is going to be anything like the difficult question that many imagine it to be. For instance, I do not think that you need immediately go and test every dairy herd with tuberculin. I have been for the last fifteen years doing a large amount of work in the treatment of human beings suffering from tuberculosis, and what is the method we adopt? We simply put them under better conditions. What you want to do with bovines is to put them under better conditions also. This would mean pulling down most of your cowsheds and making decent cowsheds. Make them open-air cowsheds; give the cows plenty of air. The experience seems to be that a cow kept practically in the open air gives about as much milk, or nearly as much milk, as one kept in a closed warm cowshed. I know the point is one that is not generally agreed to at the present time.

32240. The CHAIRMAN.—Not beyond the region of controversy?—There is evidence up to a certain point, and now I think the Government would probably be wise to make certain large experiments, because it is quite the easiest way of stamping out the disease, and the cheapest way by a long way.

32241. Professor METTAM.—Those that are clinically affected might be wiped out to commence with?—Yes.

32242. Sir STEWART WOODHOUSE.—You spoke of some of the poor of Birmingham being unable to purchase milk as they had not pennies enough. Does that prevail very much; is there a considerable portion of the city unable through the want of means to procure milk?—I don't think so. The number is, I think, as small here as in any of the towns in England.

32243. At present trade is very good?—Trade is particularly good just now. Of course, with our staff of visitors we are in intimate touch with most of these

people. The number of people who suffer from lack of milk is not a large one, and I think you will find that in most cases it is not due to direct poverty. It is due to misapplication, drink, and that sort of thing; carelessness.

32244. Miss McNEILL.—What is your infant death-rate?—Well, of course, we have had many fluctuations within recent years.

32245. You have changed the area?—Yes. Of course, that makes it difficult to make a statement. I have a report here which gives you the figures for a number of years, which you may care to have. (Report handed in.)

32246. Last year was not a year you would take as a characteristic one?—No; but still, in further reply to your question, we have in Birmingham a very large amount of unskilled labour in our factories, large brass works, we will say; that is done by practically unskilled labour. A man may go in without knowing anything of it before-hand, and pick it up in an hour or two, and go on with it. All that unskilled labour is poorly paid labour.

32247. Sir STEWART WOODHOUSE.—So that there is some proportion of the community hardly able to procure milk?—Yes, you get that everywhere.

32248. What is the ordinary price of milk?—It varies. In the poorer districts 3d., 3½d. In the better districts they pay 4d., 3½d. and 3d., according to the time of year.

32249. I suppose samples are very frequently taken as to the composition of the milk?—Yes.

32250. And the ordinary standard guides you in directing prosecutions, 3 per cent. of butter fat?—Yes.

32251. Are there frequent prosecutions?—Yes, very frequent.

32252. Are the fines adequate to have a deterrent effect?—Well, I think the fines now meet the case. Probably a few years ago for some reason or other they did not, I think. Now I think we get pretty large penalties. £10 or £5 is quite a frequent penalty.

32253. That ought to have a good effect?—Yes, quite.

32254. Is there much pasteurised milk sold, or is it mostly raw milk?—No, we do not have a large amount of our milk pasteurised. We get a certain amount cold stored. There are one or two of the larger dairy companies that heat up the milk to a certain temperature and pass it on—the milk left over—but the total amount would not be a very large one.

32255. Heat the milk for what purpose?—The milk they cannot use that delivery. They put it through a thing which they call a pasteuriser. Of course, they do not pasteurise the milk in these heaters. Then it is cooled, and sent out next delivery, or mixed with other milk and sent out later on.

32256. The CHAIRMAN.—That is not always harmful?—It is quite a good method of doing it. It is better than putting the new milk with the old milk without doing anything with it.

32257. Sir STEWART WOODHOUSE.—What staff have you; a large staff of sub-sanitary officers?—It differs very much in different towns. I have 150. It does not mean very much, but all depends on what you have to do with the 150. I am generally in charge of all the hospitals, for instance; that takes a very large number of men. In my own office I have about 150, more or less, engaged in sanitary work. There are six doctors and a great many inspectors.

32258. In the general sanitary work?—Yes.

32259. Is there a separate staff for the Cowsheds and Dairies Order?—I daresay Mr. Malcolm told you this morning. He does entirely the inspection of cowsheds where the milk is produced. That, of course, is not a very big thing in Birmingham, because we do not have—at least we did not use to have in older Birmingham—a large number of cows in the town. As to milkshops and places where milk is sold, we have two men continuously at work going round these.

32260. And as a rule are these kept as you would like them to be kept?—No; oh, no. The milkshops, the smaller traders, the men who sell two or three gallons of milk, are very difficult men to deal with. I think they are a convenience to the public. The mother in the poorer class, and especially the improvident mother sends a small child to that shop. I think if that shop was not there she would not use her foresight and buy when the milkman came round, or be a regular customer, but would go without the milk probably, so that the possibility in the poorer class areas of the shops doing more good than harm I think is quite evident.

32261. These are little shops in a general way?—Which we regulate up to a certain point. We have done a great deal within the last five or six years to make these little shops provide a shelf.

32262. The CHAIRMAN.—For milk only?—For milk only, and to prevent them keeping unsuitable articles in the same place, and to prevent them putting articles on the shelf above where the milk is supplied, so that in pulling down the one article they do not drag a lot of dust into the milk.

32263. Professor METTAM.—And you insist on it being covered?—Yes.

32264. The CHAIRMAN.—The smaller the trader the greater the difficulty?—Well, I think there is a distinct value in having these shops. I believe the children get milk they otherwise would not get.

32265. Sir STEWART WOODHOUSE.—The milk receptacles are covered in the shops; you require that?—We ask them to. We cannot, for instance, demand them to be covered; we have no authority to demand that. If a man likes to refuse to cover them, we could not enforce it.

32266. In inspection outside the district, we heard from Mr. Malcolm as to inspection for disease amongst cattle, that he has powers to go outside. Have you the same powers in case of an outbreak, say, of scarlet fever on a farm?—Yes; we have practically the same powers.

32267. You can send out a man who has got a magistrate's order to examine as to the condition of things there?—Yes.

32268. What do you do afterwards. Supposing you found a case of typhoid fever in the family of a man supplying milk, what is your course of procedure?—Well, it would clearly depend on circumstances.

32269. Supposing you had traced an outbreak, eight or ten cases, of typhoid fever to one milk supply, and you had ascertained there were some suffering from typhoid fever on that farm?—Under those conditions, the thing is so serious, that we should take absolutely legal steps, steps that we are allowed to take by law, to stop the milk supply coming into Birmingham. But what I have always found has been this: when you get out there you find something very obvious is being done to contaminate the milk, and that by taking the proper remedies you make it unnecessary to stop the supply. Supposing a typhoid carrier had been milking a cow, one would see that that man was removed, or get the local doctor or the local sanitary authority to see that he was removed entirely for a time, and there would be very little use in stopping the milk. It would not be of any value to stop the milk. In several cases we have not stopped the milk supply, and we have stopped the evil at once.

32270. What do you do with the sanitary authority in those districts you go in; do you inform them at once?—Yes.

32271. As soon as you satisfy yourself there is a connection between the typhoid and the milk?—We generally communicate with them at once. My quickest way to get to the farm would be to telegraph to the medical officer of health for the district, and say I had a suspicion, and would he come with me, and I should expect a telegram back to say "Yes, I will meet you by a certain train." That is much quicker than going to a magistrate and getting an order.

32272. Then you would leave the case over to the sanitary authority of the district. But you have power to stop the milk coming in?—If there was any doubt about it we should get an order to stop the milk coming in.

32273. Would you apply the Widal test to the suspected person if you had strong reason to suspect the typhoid fever was coming into the city through the milk from that farm?—I think you should apply the Widal test to every person coming into contact with the milk, but I am quite certain that the Widal test won't find out all typhoid carriers. I can show you an excellent carrier in Birmingham who gives no reaction whatever.

32274. Professor METTAM.—Still you know he is infected?—Yes.

32275. Have the organisms been isolated from him?—Yes.

32276. And they are virulent?—Yes.

32277. But he is an exception, of course?—I am not sure that he is a very great exception. I think the general statement has been that these carriers have all had typhoid. I am not sure they all have. Just as

many people have never had diphtheria, and are diphtheria carriers, so you get typhoid carriers that have not had typhoid.

32278. Sir STEWART WOODHOUSE.—The utility of the Widal test may be exaggerated?—Yes. I do not think it would be wise to rely upon it.

32279. The negative result would not satisfy you in a case where you had grave cause for suspicion?—No.

32280. Are preservatives used much in Birmingham; are they allowed?—No, my predecessor, Dr. Hill, made

a study of preservatives in milk, and took drastic action many years ago, with the result that I think we have suffered less from the addition of preservatives to milk than most of the big towns. Of course, we get farmers who put preservatives in milk every now and again. It is illegal now.

32281. Even in creams?—No, it is legal in creams if the amount is declared. That is by a recent Order.

The CHAIRMAN.—Thank you, Dr. Robertson. We are much obliged.

Mr. JOHN SMOUT LLOYD, F.R.C.V.S., examined.

32282. The CHAIRMAN.—Mr. Lloyd, you are the chief veterinary inspector in Sheffield?—Yes, sir.

32283. Would you kindly tell the Commission what arrangements have been made by the public health authority there to supervise and control the milk supply of Sheffield?—The control of the milk supply is practically with the medical officer of health, and he has a certain department called the veterinary department which has a staff of three veterinary surgeons.

32284. Of whom you are in charge?—I am in charge of the sub-department.

32284A. What proportion of the milk consumed in Sheffield is raised within the municipal area?—Roughly, a third.

32285. And the other two-thirds are derived from areas within forty or fifty miles of the city itself?—To a great extent that is correct. We have also supplies from as far as Somersetshire, and as far as Hawes Junction, in the North, where the railway accident was.

32286. That is quite a long distance?—Yes; it comes from the milk factories.

32287. Miss McNEILL.—Creameries?—Yes.

32288. Professor METTAM.—What time of the year does that come, Mr. Lloyd?—It comes all the year round.

32289. The CHAIRMAN.—What supervision is exercised over the milk coming by rail into Sheffield?—We have what we call the food and drugs inspectors, who meet the trains that bring milk into Sheffield, and take samples both for adulteration and also for tubercular infection. They also to some extent overlook the supply of milk as regards cleanliness; visible dirt.

32290. Professor METTAM.—As regards tins?—Tins and the milk itself.

32291. The CHAIRMAN.—Have you acquired powers similar to those enjoyed by other large centres of population in the Midlands to go into the outer area from which milk is sent?—Yes, that is so.

32292. And have you been exercising those powers?—Since 1901.

32293. How far have they proved effective?—Well, we have got rid of a considerable number of cows with tuberculous udders. This statement (statement handed in) will give you great assistance with regard to tuberculous milk. It is a copy of my report complete from the first year up to the year ending 1910.

32294. If you would be good enough to quote from the report itself it would be a speedy way of getting what the Commission desire to know?—Would you like me to take the report just through, sir?

32295. Perhaps it would be the most convenient way to avoid missing points?—Dr. Sourfield, medical officer of health, is coming to give evidence before you on Monday, and the first paper I gave you is practically something we drew up together, generally. Mine follows on.

32296. Be good enough to take your own report so far as it deals with the animals in the first instance?—Practically, of course, dealing with disease as connected with milk; animal disease. We have the powers of the Dairies and Cowsheds Orders, and regulations which the Sheffield authority made under the Orders, the tuberculous milk clauses similar to those in force in Manchester and other large towns. Then, of course, the medical officer of health deals with the typhoid, scarlet fever, diphtheria, that you have been asking Dr. Robertson about, under the Infectious Diseases Prevention Act, 1890.

32297. What inspection and control do you exercise over these dairies situated within your own area?—We practically have a veterinary inspection of the cows and cowsheds and dairy premises every two months by a veterinary officer.

32298. And if he finds in these cow-byres any

suspicious animals does he subject them to the tuberculin test?—No.

32299. In no instance?—In no instance.

32300. Either in the inner or outer area have you ever subjected cows to the tuberculin test?—Not since I have been in Sheffield. I have done so when I was in Manchester.

32301. But Sheffield has not adopted that method?—No.

32302. Professor METTAM.—Have you another method?—We take samples of milk from any cows that have abnormal udders, and more particularly if we suspect tuberculous.

32303. The CHAIRMAN.—Is the inspection of the cows always carried out by a qualified veterinary surgeon?—Always.

32304. And is he assisted in the other branches of administration by non-professional assistants?—Only as regards supervision of any alterations that may be necessary for any drainage or construction of cowsheds, or alteration of old buildings into cowsheds.

32305. Have you found much difficulty in having the orders you make carried out by the occupiers of these premises?—We found some opposition from the occupiers because they thought that the alterations required in the buildings ought to be done by the landlords. That has been the great bugbear in many instances. Still, in the majority of cases we have got them to do eventually what we wanted. In some cases we had to wait four or five years.

32306. But ultimately you secured it?—Yes.

32307. At the present time, I take it, you have got these into a moderately satisfactory condition?—Some years ago Dr. Harvey Littlejohn was the medical officer there, before Dr. Robertson, who has just gone out, and in 1895 or 1896, before I went to Sheffield, he had a scheme of reconstruction of cowsheds carried out which was to a large extent complied with, and that scheme has always been carried on up-to-date.

32308. Professor METTAM.—So that there was really not much fault to find with the cowsheds when the 1901 Order came into force?—No, but we have extended the area twice since then, and the outside areas had to comply with the same regulations as those inside.

32309. The CHAIRMAN.—With regard to the other areas, have you any knowledge that would enable you to say what condition they are in?—They are in a bad condition. For every farm the veterinary inspector visits there is a sheet of that description handed to him. (Specimen sheet handed in.) It is made as comprehensive as possible, and to give him as little trouble as possible we simply use the words "satisfactory" and "non-satisfactory," and all he does is to cross out the one he does not want left in.

32310. You give him as little writing to do as possible?—It is a thing he can easily do while the farmer is fetching the cows up.

32311. He doesn't always have the opportunity of making out voluminous reports?—That is so. With regard to the city, we keep a book of that sort. (Specimen produced.) It is complete for the year. This is not alone a check on the way in which the cows are kept, and the manner in which the entire premises are kept with regard to cleanliness, but it is also a check on the inspector to show he makes his visit.

32312. Professor METTAM.—Can you put that in?—Unfortunately I cannot. Up to now he has been using some sheets, and these books have now come in from the printers. (Specimen copy has since been forwarded.)

32313. Professor METTAM.—It might be useful for the Commission.

32314. The CHAIRMAN.—It might be possible to send a copy later on?—Yes; I think so. The sheets we have

got do not quite correspond with that, but still they are on that same principle.

32315. This has been drawn up with a wide experience?—Yes.

32316. Dealing with the circumstances that have arisen and come under observation after careful working of the Order?—Yes, that is so.

32317. You think, then, in the outer areas, they are in an unsatisfactory condition at the present moment?—Some of them are very bad; others, of course, are much better.

32318. I quite follow. Have you ever sought to induce the owners of premises sending milk into Sheffield to improve them by making alterations?—Yes, what has been done is this. We have reported to the medical officer of health that such a farm is found in a very unsatisfactory condition. He then finds out the medical officer of health in which the farm is situated, and writes to him, and leaves him to accomplish the rest. In some cases much has been done, because I have been often sent out by the medical officer to go and advise the owners or agents as to what we think should be done to make the place sanitary.

32319. In some places a great deal has been done, and in some cases nothing?—Quite so.

32320. And you have no means of compelling it?—No.

32321. In every district you are obliged to visit do you find there is a veterinary officer appointed by the local authority?—No, not as far as milk is concerned.

32322. And no supervision is exercised over the cows other than what you give them?—No.

32323. Are you obliged to have recourse to a magistrate's order?—Yes, we never go out without one.

32324. Has your reception been sometimes chilly?—No. There are isolated instances, but the farmers, as a rule, welcome inspection. Of course, you get a cantankerous man now and again. What they do kick about is getting rid of the cows and having them slaughtered without compensation.

32325. That is the great difficulty?—Yes.

32326. And do you think yourself, if the thing is ever to be dealt with on a commercial basis, that it can be done without giving them some compensation?—No, I do not think it can be done without giving them compensation. No scheme of notification I have ever known has been satisfactory unless there was compensation accompanying it.

32327. With regard to the area within the city boundary, have you there ever paid compensation for animals so slaughtered?—No, we have paid no compensation.

32328. Are you able to succeed in inducing cow-keepers to get rid of suspected animals?—In most cases, yes. We have to some extent the whip hand on them. The tuberculous milk clauses of the Act give us power to summons for failure to notify. I might say notification is practically a dead letter under those clauses. They also give us certain powers to prohibit the milk supply coming from outside, or from a dairy farm inside the city. By exposing our hand and telling them certain things would have to be done they generally fall in. I have a case this week where the farmer thought there was nothing much the matter with the cow. As a matter of fact, it will be killed next Monday.

32329. If that cow happened to be in a dairy in the outer area you would have no means of securing that her milk would not be sent into Sheffield?—The only possible way of being certain is to get the cow slaughtered, and in the majority of cases we have got the cow slaughtered.

32330. Even in the outer area?—Yes. Since the Farmer's Union has been in existence we have had a little more trouble than previously, but I think the opposition is dying down.

32331. A sort of agricultural trade society?—It is a large Union, formed by the farmers in England three or four years ago, to fight the warranty question against the Butchers' Federation on tuberculosis.

32332. And it has extended its operations into other walks of agricultural industry?—Yes, it is a strong body at present.

32333. And they employ professional assistance to resist any prosecutions or to defend any member accused of breaches of local regulations?—We have not had a large number of prosecutions, only some six or seven during the last eleven years, in regard to failure to notify, and in those cases we have had very ridiculous penalties. The highest has been a sovereign.

32334. Those are by no means prohibitive?—The

clause itself provides for a full penalty of £2, so that if we get a sovereign we get fifty per cent. In some cases they have only had to pay 8s. 6d. and the costs, and in these cases we make an enemy of the farmer.

32335. It is not a deterrent?—No good at all.

32336. In fact, it leaves the matter worse than it was before?—Yes, we have made an enemy.

32337. The man will fight you and say "you have done your worst, and I don't care what you do against me?"—An order has been made to prohibit the milk supply, but, generally speaking, the farmer has not cared, and in some cases he has been glad, because it has allowed him to break his contract.

32338. If he had a bad contract made?—Yes, sir. I find the advice of an experienced veterinary surgeon, in whom they have confidence, will, in the majority of cases, get you through.

32339. Do you carry out *post mortem* examinations?—In the majority of cases. Of 231 cases I do not suppose we missed a dozen.

32340. Tubercle bacilli were to be found more or less well developed in some of the organs of the body?—I have yet to see a cow that has got a tuberculous udder and has not got disease in the mesenteric glands.

32341. Do you control the inspection of the abattoir as well?—Yes.

32342. And, of course, you have large experience there of seeing *post mortems*?—Unfortunately we have a very large number of private slaughterhouses. We have 185 in the city.

32343. Professor METTAM.—Three times as many as Dublin, and we thought it was unusually well provided?—We have 97 in one position, called the Killing Shambles, under the Corporation, and all the rest are scattered about the town in the hands of private butchers.

32344. The CHAIRMAN.—Has any attempt been made to compel them to do their slaughtering in the public abattoir?—There is not the accommodation. The City Council have had in view the matter of providing an abattoir for some years, and at present they are negotiating for a large site close to two railways. If that comes to a head there will probably be a good modern abattoir built and equipped.

32345. Do you ever find clinical symptoms in the udders likely to excite suspicion which do not prove to be tuberculous afterwards?—Yes.

32346. And in those cases how would you determine in the absence of the use of the tuberculin test?—We take a sample of milk and send it to the Sheffield University bacteriological department.

32347. If the certificate shows that the milk is infected?—Then we follow up the cow.

32348. I suppose microscopical examinations are taken as confirmatory of clinical symptoms?—I have only known one instance where a failure has been made. This particular case was a cow with a tubercular udder, situate in a cowshed close to the laboratory at Manchester. Professor Delépine's assistant discovered acid fast bacilli, which he reported were tubercle. Professor Delépine at that time wanted a series of tuberculous milk samples from the same udder for further investigation. I arranged to let him have a sample, say, every other day, roughly. But on fetching subsequent samples I found that the cow's udder was getting better. I reported that to the medical officer of health, and he reported it to Professor Delépine. In the meantime it had been arranged that the cow should be killed on a certain date, and on examination it was found that the cow was free from the disease. On complete examination the original sample of milk was also found to be free of infection.

Mr. WILSON.—Sacrificed to science.

32349. Professor METTAM.—What was the source of these acid fast bacteria?—I don't know.

32350. You took the milk yourself?—I took the sample myself, and I don't know where they came from.

32351. The CHAIRMAN.—Is there any diminution in the percentage of infected samples?—The percentage varies from 17.8 in 1902 to 6.7 in 1904, and up again as far as 10.4 in 1910. Practically speaking, I think we can say that the milk supply of the country is tuberculous to the extent of ten per cent. That is my experience. We had a big discussion on this last year when Professor Delépine gave us a paper on the subject, and gave us interesting figures from several large towns. He struck an average of ten per cent.

32352. Notwithstanding the diligence with which inspection is carried out?—We do not do the least bit of

good towards reducing the percentage of tuberculous milk; we are only following the outbreak of disease to the farm.

32353. You are not arresting it?—Not getting in front.

32354. Are you unfavourable towards the tuberculin test yourself?—Oh, no, not at all; but it is absolutely of no use as far as seeing whether the cow has got a tuberculous udder or not. It simply shows she has got tubercular disease somewhere in her body.

32355. Isn't it some help?—Oh, yes, it does point that out.

32356. And does it not also follow there is much more danger of that cow developing tubercular udder than the cow which has not been a reactor?—Oh, certainly.

32357. And then, in order to secure that information, would not the application of the tuberculin test be warranted?—It would be, I think, better used as a means of prevention, or trying to get a tubercle free herd built up by, say, an energetic farmer or stock-breeder.

32358. Professor METTAM.—And protecting himself from re-infection.

32359. The CHAIRMAN.—At what point do you suggest the application of tuberculin should begin?—In establishing a tubercle free herd. I should say probably when the calf was three to six months old; the first test.

32360. Do you think it could be more successfully accomplished in that way, by applying to the animals that are young, that live to be the milk producers, than by applying it to the developed animals that are already engaged in milk production?—Much more so.

32361. What class of cows are kept in the locality; are they pure-bred or cross-bred cows?—Cross-bred largely, I think, called the Lincoln Red.

32362. Lincoln Red Shorthorn?—Yes; the Derbyshire cow is more of a hilly nature; a hardy cow.

32363. Smaller animal, less weight, and less value?—Yes, considerably. A large Lincoln is very often worth from four-and-twenty to thirty pounds.

32364. Has Sheffield a market?—I should say for a large town probably the poorest market in England, because we are dependent upon surrounding smaller towns, such as Rotherham, Chesterfield, Penistone, and so on.

32365. Professor METTAM.—Those are, comparatively speaking, near to Sheffield?—All within twenty miles.

32366. And there are markets held every week?—Yes.

32367. And it is easy for a cowkeeper to get a cow any day of the week, because there is a market held every day of the week in some form in the neighbourhood?—That is so.

32368. The CHAIRMAN.—With regard to the administration, Mr. Lloyd, don't you think that so long as it is carried on fitfully as at present, efficiently in one place and not at all in another, it is likely to lead to no definite results?—It is the belief both of the medical officer and myself.

32369. So long as it is dealt with piece-meal that undoubtedly must be the case?—Yes.

32370. Is any particular breed of cow more subject to tuberculous infection, so far as your experience would enable you to say?—Put the question the other way about. Ask me some particular breed comparatively free from tuberculosis and I can answer.

32371. Have you discovered that cow?—Hereford cattle and Welsh. I have an experience of a large herd of Welsh cows, where there was very little tuberculous disease, as shown by the tuberculin test, but in the course of a number of years over fifty per cent. had become tuberculous.

32372. Was that owing to the way in which they were kept?—It was owing to the place in which they were kept.

32373. It is part and parcel of their keeping?—Quite so, yes. That was in a herd that originally supplied milk to the Manchester Fever Hospital, situated in Staffordshire, not far from Stoke-on-Trent.

32374. Are the Welsh breed natives of Wales?—The Welsh black cattle.

32375. In the hilly districts?—Yes.

32376. Are they to be found all through Wales?—The Welsh people themselves sub-divide them into North Wales and South Wales cattle. Still they are all black. One lot, I don't know whether it is the north or the south, has considerably more white on them.

32377. Lady EVERARD.—That is mid Wales?—I am a native of Shropshire, a county adjoining Montgomery-

shire, and I used to see, when I was in practice there, hundreds of Welsh cattle. Since then I have not had much experience of them.

32378. The CHAIRMAN.—They are regarded as a distinct type?—Oh, yes, they have their own herd book.

32379. And so far as your experience enables you to state, those are the two breeds that are most immune from tubercle in their system?—Of our native British cattle.

32380. Professor METTAM.—You would prefer to say rather you find them more commonly free from tubercle than the others, not more immune?—Free, yes. The immunity, as I pointed out, disappears if they get into infected buildings.

32381. Mr. WILSON.—There are some remarkable figures in this table. Of country cows clinically examined for tuberculosis the percentage found to be tuberculous is 2.6 on the average, whereas in the city cows, examined under presumably similar conditions and similar method, the percentage is only 0.8. Are those two strictly comparable? Is it fair to say that the city cows and the country cows were examined under the same conditions?—You have to add these two figures together to make the one set comparable with the other.

32382. It is the percentage of the total animals examined that struck me as so remarkable?—The explanation is this. In examining cows in the country we only go to the farms where we have had tuberculous mixed samples from. A large number of samples are not tuberculous; only ten per cent. is, as I say. We ought really to multiply the percentage by the other figure to compare it with the clinical examination of every cow in the town.

32383. This list consists of the number of country cows clinically examined for tuberculous udders in following up tuberculous mixed samples?—Yes.

32384. And this is the number of city cows clinically examined for tuberculous udder, which is the same thing?

Professor METTAM.—No, they examine every cow in the city, but in the case of the country they only examine where suspicion is aroused.

Mr. WILSON.—That explains it, because the discrepancy was so remarkable. It is an extraordinary difference.

32385. The CHAIRMAN.—What becomes of the condemned animals, Mr. Lloyd. What is their ultimate fate. I mean those found to be affected. Are they slaughtered in your abattoir?—Out of 260 cases, according to the latest return, 231 were killed and 21 were missed.

32386. Lost sight of?—They were sold by the owners before we could get there, after we had taken special samples, or else they were sold in defiance of us after we had told the owners they were tuberculous. I have seen that happen.

32387. Professor METTAM.—You have no power of following them up?—We don't know where they have gone to.

32388. The CHAIRMAN.—Do you find that in some particular districts you get more persistently samples of infected milk than you do from other localities?—I could not give you any figures for Sheffield, but when I was in Manchester we dealt with the tuberculous milk there in districts very considerably. I found in Manchester that Cheshire was a markedly tuberculous district.

32389. Would you think that low-lying pasture would have anything to do with producing infection of that kind?—I think the fact that Cheshire is practically lying in a basin is the deciding factor there. I don't know what else it can be. That does not apply when you come to speak of the Valley of the Severn; but Herefordshire cattle are kept on totally different lines. Herefords are practically out-liers on the banks of the Severn, whereas the Cheshire cows are kept in insanitary buildings very often, and forced for milk producing.

32390. As it was described to us, they are turned into milking machines?—That is so.

32391. And you have no figures that would enable you to determine that such a condition of things exists in any of the districts from which Sheffield derives its milk supply?—No, I cannot give you any figures to support that at all, and I have not drawn any conclusions.

Mr. JOHN SMOUT LLOYD.—9th November, 1912.

82392. Has any effort been made by the corporate authorities in Sheffield to provide milk depots or to secure a supply of milk for the industrial population?—No, the only thing they have in Sheffield that you may call a milk depot deals with dried milk for infants. I should like you to put that question to Dr. Scurfield because he is greatly interested in it.

82393. Is there a dried milk factory in Sheffield?—No, we buy the milk.

82394. Miss McNEILL.—They use two or three kinds in Sheffield.

82395. The CHAIRMAN.—There is a considerable trade in that dried milk.

Miss McNEILL.—The Corporation itself has arranged for a supply of it to the homes visited by the health inspectors.

The CHAIRMAN.—I suppose it is hardly a fair question to ask you, but why do they elect to use dried milk rather than fresh pure milk?

Miss McNEILL.—Economy. The cost of bottles and depot expenses in the other case are so much greater?—The Corporation are buying the milk at a price which does not allow the shopkeepers to compete with them. They are actually selling the milk at less than the shopkeepers can buy it. They began it at a certain price, and the manufacturers continue to supply the Corporation at that price, which is much less than it costs the shopkeepers.

82396. They still do it at a price which practically covers expenses?—There is a slight profit as a matter of fact.

Miss McNEILL.—As a matter of fact there are no expenses.

82397. Professor METTAM.—Mr. Lloyd, would you prefer that, in general principle, all inspection should be controlled by a central board for cattle?—In regard to dealing with the milk supply, or in regard to eradicating disease?

82398. The milk supply?—I do not know that any advantage particularly would be gained by the control of the inspection by a central board, but I think that inspection in each district should be compulsory, and probably to get uniformity as near as possible it would mean each county council would be the controlling body.

82399. Wouldn't a central authority be necessary to ensure uniformity, because is it not a fact that the inspection in a certain district may be strict, whereas in an adjoining district it may be more or less lax?—There is very often none at all.

82400. In order to protect the public, and in order to ensure the milk supply, you think that the cattle should be periodically examined by veterinary inspectors?—My experience is this, that the more inspection is carried out by veterinary surgeons the better the results obtained. Even in regard to tuberculous udder, we find that the larger number of times we inspect the cows the more tuberculous udders we find. That is taking only the city, but I think it would apply to any part of the country.

82401. Is that because you are more skilful?—I have no doubt about it.

82402. Really it is experience and practice which helps one in finding out more cases of tuberculous udder?—Yes.

82403. A clinical examination of the udder is not an easy thing?—It is a very hard thing. I have got in my figures here the samples from cows with suspicious udders for the years 1901 and 1910. I might say that up to the end of 1906 the examinations were all carried out by myself, and in that year I took 17 special samples, of which 11 were tuberculous. In the beginning of 1907 I had an assistant who had no previous experience whatever of the work. He took 188 samples, of which 43 were tuberculous.

82404. Mr. WILSON.—That is to say, you having had several years of experience, got 64 per cent. correct, and the new man only got 23 per cent.?—He took 28 samples without having one tuberculous. Of course, I encouraged him to take samples from every cow he thought was not right.

82405. Miss McNEILL.—He took samples from cows which you would have thought it unnecessary to have samples from?—Certainly.

82406. Professor METTAM.—So it becomes really a specialised work?—Yes.

82407. The CHAIRMAN.—It is manipulating, isn't it?

Professor METTAM.—This examination is really specialised work?—Yes, there is no doubt about it. Any assistant who goes out to a farm in the country

never comes away without a control sample when he has found one or two suspicious.

82408. Mr. WILSON.—A control sample is a mixed sample from, not necessarily the whole herd, but from a given group?—We may sub-divide the herd into four groups and take a sample from each group.

82409. Professor METTAM.—Do you think your work would be facilitated if you were able to give some sort of compensation to those people who had cows with diseased udders?—Yes, I think the welcome they give us now would be strengthened if we were able to give some amount of compensation. I do not think the compensation ought to be a lot.

82410. What would you suggest?—Well, the 1904 General Powers Act, London, goes up to three-quarters. I think you have a Tuberculosis Prevention Act in Ireland which gives up to £10. I think the amount should be carcass value.

82411. The CHAIRMAN.—Here in Birmingham they go up to £4.

Miss McNEILL.—That is the owner retains the carcass?

The CHAIRMAN.—£4 compensation and the carcass remains the property of the owner.

Professor METTAM.—£4 is the full amount of compensation they can give, but the amount of compensation may be less than £4?—If the value of the animal is £6 I suppose they would give £3. Of course, we have no powers under the Tuberculous Milk Clauses, and I don't know that they have any legal power in Birmingham to do that. They might bring it in in a roundabout fashion.

82412. Mr. WILSON.—I should like to put to you a scheme we have discussed in two or three districts in that connection, a scheme whereby compensation would be given if the farmer or cowkeeper notified the presence of suspected udder trouble; but linked up with the other half of it, it seems to be necessary, if you give compensation to the man who notifies, you must penalise the fellow on whose farm a cow is found in a suspicious condition not notified?—I wrote that down in the train. I quite agree. It would encourage notification. I have known no system of notification, as I said before, of much good unless it was accompanied by compensation.

82413. You would not compensate unless you had a penal clause to prevent others breeding trouble?—Certainly, but then after compensation and notification you are spending money and getting no appreciable benefit, except getting rid of one or two animals.

82414. But you are reducing the sources of infection?—Yes, I grant that.

82415. Those are factors that must necessarily produce beneficial results?—It is the first step towards controlling the disease, no doubt. The Sheffield Corporation have discussed this matter several times with the Butchers' and Cowkeepers' Associations, and they have always passed a resolution that they are in favour of compensation, provided it was taken in conjunction with some steps to get rid of the infection, and was paid by the Government rather than out of the rates.

82416. Professor METTAM.—If you gave compensation in Sheffield you would have all the tuberculous cows dumped down there?—There would be a certain class of dealers looking out for that class of animals, and glad to get rid of them.

82417. That was found in pleuro-pneumonia, where Edinburgh had to pay compensation for cases of pleuro-pneumonia, when the animals had obtained their infection in England or in Ireland?—Yes.

82418. Have you in your district any herds where they have seriously attempted to get them free from tubercle?—None at all. I have done my best to get one or two good class farmers in the city to do that, but when they begin to make inquiries from the dealers, and find they have got to pay from £3 to £5 per head more for the cows, subject to passing the test, they said, "We cannot do it."

82419. Dealers refused a warranty that the cattle they were selling were tubercle free?—They could not do it. We have no farmers in the city that rear their own cows.

82420. How long are those cows in the byres?—According to their milking properties. Some cows milk on for fifteen months, and I have known occasionally cows to go on for two years.

82421. Are those locally bred cows or cows with Dutch blood in them?—As far as I know Lincolnshire or Nottinghamshire or Derbyshire cows.

32422. A cow as a rule does not stay in the byre any longer than one lactation period?—I should think the majority go out under the year.

32423. And they keep in such condition that when dry they go into the abattoir and kill for beef?—Yes, every one.

32424. So that, practically speaking, it is only a question of seven, eight or nine months, or up to a year, that they are in the byre?—That is so.

32425. Have you had any serious deficiency in the milk supply of the city in recent years; has there been any falling off in the supply coming in?—No.

32426. Last year, for instance, was exceptional, of course?—Milk dealers put up the price, because they said milk was hard to get. The better class customers I do not think had any trouble in getting it, but possibly the poorer people had to go without.

32427. The CHAIRMAN.—What is the price, Mr. Lloyd?—It varies from 2d. or 2½d. in the summer—that is factory milk—up to 4d. I may say that, practically speaking, ever since I have been in Sheffield I have never paid less than 3½d. in summer or winter; usually 4d.

32428. Professor METTAM.—How long does it take this milk to come from Somersetshire or Hawes Junction?—It arrives in Sheffield early in the afternoon, starting midnight or afterwards, or else it comes in the early morning, started the previous morning.

32429. It must be twenty-four hours old?—Some of it more.

32430. Does it come in any special van, or in a refrigerating van?—My opinion is the milk has all been heated and cooled before it started, because we have taken sample after sample and never got tubercle in one.

32431. It has been pasteurised or sterilised in some way?—I have no proof of that, but that is the conclusion I have come to.

32432. You did not test it to see if it had been boiled?—No, the milk samples do not come into my hands. They are taken by the inspectors, brought into the Town Hall, and labelled and sent to the University. The samples we take as veterinary inspectors we send up in the same manner.

32433. I presume you never came across a case of tuberculosis in the udder but what there were other lesions in the animal's body?—No; but I have had in two instances considerable trouble in finding lesions in the body. In one case Dr. Robertson and other medical officers were with me, and it took about twenty minutes to find any tubercles in the mesenteric glands.

32434. Although there was disease in the udder?—Yes.

32435. But that is an exceptional case?—I have only had two.

32436. Sir STEWART WOODHOUSE.—What do you do with the calves in Sheffield?—There are practically

none produced there. We have a calf market on Tuesday, where a considerable number of Derbyshire dealers bring calves for slaughter, generally three or four days' old to as many weeks. As a matter of fact, we are doing our best to stop them bringing any calves in. The Health Committee passed a resolution a fortnight ago that no calves less than a fortnight old should be brought in for slaughter. Next week a Councillor is going to address the dealers on the point.

32437. On the ground that it is poor food?—Immature.

32438. Professor METTAM.—Do they go in for veal much in your neighbourhood?—Veal pies.

32439. Sir STEWART WOODHOUSE.—It has been said that boiled milk is practically as nutritious for calves as raw milk?—Does that mean skimmed or unskimmed?

32440. The difference of boiling only?—If the milk was boiled I should think it would be absolutely free from tuberculosis.

32441. Farmers might rear calves free from tuberculosis by boiling the mother's milk?—Yes, that is so.

32442. Is there any objection except the time and trouble that would be involved?—I don't know that there is any particular objection. Some people have said in regard to human beings that they have scurvy, but that is a point I am not qualified to speak upon.

32443. The CHAIRMAN.—Even on that there is a difference of opinion?—I am aware of that. I think in Denmark that boiled milk or pasteurised milk has been used to a large extent, and I do not think any objection has been taken to it.

32444. Sir STEWART WOODHOUSE.—It would lessen the amount of tubercles up to the lactation period?—Yes.

32445. It would start the calf free in life?—That is one of the steps that would have to be taken to establish a tubercle free herd.

32446. The CHAIRMAN.—If you feed it into the calf you get a bad chance of getting a sound cow?—In my experience as a meat inspector I have known young litters of pigs come to the abattoir all affected with tuberculosis, and my conclusions have been these, that they have been fed with tuberculous milk, either from the cow or the sow. I have found tuberculosis in the udder of the sow. It is quite uncommon, but I have found an occasional case. Dr. Malcolm has a very fine specimen of it, because he put it to me in my examination.

32447. Thank you, Mr. Lloyd, we are much obliged for your attendance.—I am pleased to be of service, and I hope some good may result from your Commission. In Ireland you are certainly in advance of Great Britain in regard to dealing with tuberculosis.

The CHAIRMAN.—You think we are?—Well, you have the powers at any rate.

The CHAIRMAN.—We have power to pay compensation, which you have not got apparently.

The Commission then adjourned until the following day.

FIFTY-SEVENTH DAY.—MONDAY, 11TH NOVEMBER, 1912.

The Commissioners met in the Queen's Hotel, Birmingham, at 2 p.m.

Present :—Sir STEWART WOODHOUSE, M.D. (in the Chair); Lady EVERARD; Miss MARGARET McNEILL; ALEC. WILSON, Esq.

S. W. STRANGE, Esq., Secretary.

Mr. J. W. ROBERTSON-SCOTT examined.

32448. Mr. J. W. Robertson-Scott, author of several books on rural subjects above the *nom de guerre* "Home Counties," including one about goats, said :— "Perhaps it would be for the convenience of the Commission, sir, as I have had an opportunity of running rather rapidly through the evidence taken, if I were to make a little statement of the points which have occurred to me as likely to be of value.

32449. Sir STEWART WOODHOUSE.—That is just what the Commission would like?—Well, in the first place, I should like to say: I am a literary man, living in the country; I have been living in a village for eleven or twelve years, and it is in that way I have become interested in goats.

32450. In Essex, I think?—Yes. In a small hamlet, and I have been much struck by the cans of condensed milk in the labourers' cottages, and by the way in which their families are deprived of cow's milk. As to goats, in running through the evidence, the first point which attracts my attention is that of tethering. I suppose, in regard to tethers, there must be a dozen different sorts, not one of which can be recommended as absolutely safe. In my own experience I have found the most convenient plan has been to make a kind of rough paddock in which to keep the goats practically confined, a place about the size of this room (about 50 feet by 20 feet), and to bring a great proportion of their food to them, and giving them exer-

cise—and plenty of exercise is essential to their well-being—by allowing them to be led about from time to time. The difficulties and damage brought about by their breaking loose from their tethering are avoided, if the goats are kept in a small paddock as shewn here (Mr. Robertson-Scott here produced an illustration in one of his books, and showed it to the Commissioners), and the children at dinner-time and after school can take them for a run along the road side, and other places where they can do no damage. Several occupiers of small holdings, market gardeners, and others, have taken a decided objection to goats, because of the damage they do, and that is the way in which I think the difficulty could be met. I don't know whether it is necessary to lay any emphasis on the importance of proper feeding to keep a goat in good health, because a goat is not what can be called a grazing animal, but rather a browsing animal—an animal which always thinks there is a better bit further on, and usually a little higher up, and nothing will restrain its desire to keep moving—and if a goat is kept continually in a small area it gets in bad health very quickly. One of the witnesses has said that the goat is easy to please in the matter of water; that is not in accordance with my experience. It is a matter of some importance to get an animal you are getting milk from to take a drink as often as possible. When the water is not perfectly clean, or has been tasted by some other animal, my goats have always refused it, and as dirty water has an effect on the milk it is as well to remember this. As to the popular prejudice about goats doing damage, I think one ought to bear in mind that when other animals break loose—say pigs for example—they soon make a mess of the holding. If a herd of pigs breaks loose, they do almost as much damage as a herd of goats. As the Commissioners are perhaps aware, I am the author of a book on Dutch agriculture, and when in Holland I was much impressed by the great number of goats kept there; and also by the fact that some State assistance is given to goatkeeping in Holland. I imagine that assistance takes the form of some slight assistance at shows, and, perhaps, assistance in the form of keeping stud goats. If the Commissioners attach any importance to that, I could put them in the way of getting that information.

32451. Lady EVERARD.—I think that rather important.

Sir STEWART WOODHOUSE.—We should like that.

Witness.—Mr. Timmermans could give it you. I don't know whether it comes within my province, but if the Commission is going to consult any Continental books about goats, I should like to warn them against a French one, which seems to me to contain some extravagant statements as to the prevalence of large yields of milk.

32452. We prefer to lay stress on the useful books?—It seems a pity that statements should get about as to immense yields from goats which cannot be realised in practice in this country. But I should like to get back to that matter of tethering. What happens is this—the tether is not an efficient tether, although it has swivels in it; it is not an efficient tether, because as the goat drags the tether round it picks up little bits of wood, and eventually one of the swivels gets blocked and curls round the centre pin, and then up comes the tether, and the goat is free.

32453. Is there any form of tether which is practically useful in tethering a goat?—I don't think there is any better tether than the relatively simple form of an iron post about one-and-a-half feet deep, with a swivel, and a chain with three swivels in it; but, as I have explained, you have always to see that the swivels do not get blocked with a bit of wood or a knot of grass.

32454. That iron post is like a great iron skewer?—Yes. It is very seldom the goat is able to lift out the tethering pin until the swivel is blocked, but when that happens, the goat soon winds the chain round the post and in due course it is pulled out. And now, with regard to what can be done in Ireland, I am in absolute agreement with the plan of giving well-considered assistance to goat shows, and goat exhibitors at agricultural shows; or the providing of stud goats in suitable centres would be a practical thing to do. I don't know whether the Irish Board of Agriculture is—

32455. Lady EVERARD.—There is the Irish Goat Society, which sends out leaflets.—I should like to lay stress, as one witness has already done, as to the value of good milking strains, rather than breeds.

32456. Sir STEWART WOODHOUSE.—We have not had that consideration brought before us yet.—It is in the same way as it has been with poultry. Some of us interested in utility poultry have felt that a great deal of money has been wasted, and energy misdirected, by the interest taken in toe nails and the combs of poultry, forgetting that the chief object in keeping a hen is to get eggs. In the same way one feels that when goatkeeping becomes popular there is the possibility of too much importance being attached to colour and the tints of the coats instead of to the utility of the goat.

32457. You believe that strain is more the matter of importance in the ordinary English or Irish goat, rather than breed?—What I mean is—take an illustration from poultry. The best layer is not necessarily to be found in any particular breed. The thing for the practical poultrykeeper to go for is the best laying strains in it may be wyandottes, buff-oringtons, or what not. Do I make myself clear?

32458. Yes?—That does seem to me to be rather a real danger; that if there are great developments in goatkeeping in this country, prizes might be given at agricultural shows, or points given for other things than the most important thing, which is the quantity of the milk. Mr. Holmes Pegler lays stress in his book on this particular point. I don't know whether the Commission considers it within its range to make inquiries about milk sheep? In Holland I found a good many labourers kept sheep for milk.

32459. We have had that point brought before us in Ireland by Sir Richard Barter. He brought that before us, and recommended a particular kind of sheep as a milk-giving animal?—Sheep are kept all over Holland by labourers for milk.

32460. Lady EVERARD.—What variety is it?—I am not absolutely sure, but I am told some admirable milk-sheep come from the Lincoln and Texel cross.

32461. Sir STEWART WOODHOUSE.—What breed of goats have you used?—I have had experience of Anglo-Nubian, and ordinary English and Irish goats.

32462. You believe there are different strains in both these qualities of goats which may be improved?—I think it is possible to get a good milking strain of Anglo-Nubian and a bad milking strain. The difficulty we are really up against in England is that there are not enough goats to go round.

32463. What yield of milk do you get in twenty-four hours?—I have had more than two quarts.

32464. In the day?—Yes; and I have had it last for some time.

32465. That was from an English goat?—From a Saanen and Anglo-Nubian cross. I do not profess to have spent a lot of money on goats.

32466. That makes it more valuable to us, because it is material within the reach of all. Do you find a much smaller yield from the English goat; I want to find the proportion?—I think it is quite possible to pick up a mongrel goat which would probably do as well as any more fancied goat. On the other hand, I have English goats not worth keeping, and not giving a pint-and-a-half a day.

32467. For what do you consider a goat worth keeping?—We all seem agreed that a goat ought to give two quarts a day at the second kidding, and to keep it up for some time.

32468. Irrespective of breed?—Yes; a milk-giving goat. How much a really good goat of good strain is worth I don't know. At present people are asking £5 for a decent goat, and even as much as £20, and that is ridiculous.

32469-70. How long would a goat give a yield of three pints or two quarts a day?

Miss McNEILL.—Have you kept a record of the number of quarts?—No. I have no record here, but you will find in my book, and in Mr. Holmes Pegler's, some records.

32471. Sir STEWART WOODHOUSE.—How long will an English goat yield?—The maintenance of the yield at the second kidding depends very largely on how the goat is milked and how fed. If the goat is milked thrice, or even twice a day, and every drop is got out of the udder each time, the yield would last much longer than if the goat is carelessly milked.

32472. If milked three times instead of two you would get more milk?—I think that at times the udders are so swollen with milk that from a humanitarian, apart from the utilitarian, point of view, they should be milked three times a day. If milked three times

a day you would get a little more milk than if milked only twice.

32473. How long would an Anglo-Nubian, for instance, maintain this supply—for eight or nine months after kidding a second time?—It gradually decreases, but you should get two quarts for a month or two before it drops gradually to two pints or a pint and a half.

32474. How long do you expect to get milk in diminished quantities?—I have had a goat which I was never able to dry up. I don't mean there was always a large supply, but a cupful, or something like that. From the humanitarian and utilitarian point of view it was desirable this goat should be dried up, but this particular goat I could not dry up. Of course, that is very rare. It was an Irish goat, and it cost me 10s.

32475. I am speaking of averages?—I would not like to bind myself as to time, but we might regard it as an axiom that a goat with foreign blood in it will be a better yielding goat than an English or Irish goat.

32476. Both in length of time and quantities?—Yes; that is one of the reasons I recommend foreign goats, because they keep in milk longer.

32477. Do you consider there is much difference or advantage to be found in a pure-bred Toggenburg or Anglo-Nubian rather than a cross-bred?—I would rather just say what I would do if I had £5 to spend on a goat. I should have it milked twice or thrice in my presence, and buy it on yield and its physique and general appearance, and should not consider its colour, coat or ancestry.

32478. Or whether it was a pure Anglo-Nubian or half-breed?—No; if I wanted yield I should go for yield, and not for colour, general appearance, etc.

32479. Do you think if goats are paid attention to, taking one year with another, and with foreign blood in them, they should give milk more or less for eight months in the year?—Yes; I have known a goat give milk three years, though it had only one lot of kids.

32480. That was exceptional?—I think many goats would give milk for two years if carefully milked and fed.

32481. You submit a plan for keeping goats, by having a small paddock no larger than this room, and a shed—would that be for winter only or for summer and winter?—I want to speak a little carefully, because one is always under the dread of recommending something which, from the humanitarian point of view, may not be desirable. When I contemplate keeping goats in a paddock I contemplate children leading them out several times a day. I have found goats for a long period perfectly healthy kept in a space half the size of this room if they get exercise once, twice, or thrice a day, and a complete variety of food.

32482. What food do you give a goat kept in this way?—The danger to a paddock goat would be that it might get a sameness of food, and from my experience there is, practically speaking, no food which a goat will not take. I cannot think of anything edible which goats refuse, with the exception of some poisonous plants listed in the goat books. The greater the variety of the food you give a goat the better it is for its health. I have found from experience that the best of all hay for goats is not what is generally regarded as the best. I get permission from the farmers and others in my neighbourhood to cut the hedge bottoms, which is generally weeds and rough stuff, and I have found that please the goats better and suit them better than the best clover hay.

32483. Is it necessary to give them anything coarser and shorter?—I have given my goats oats, but that is expensive food, and unless the oats are crushed the goats do not get the nutrition out of them, but swallow them and bolt them whole. But what we are up against in England is that there are not enough goats to go round. Several times a year I get applications from people who want addresses from which they can get goats, and I cannot supply them. Mr. Holmes Pegler, the Secretary of the Goat Society, is constantly getting applications which he cannot satisfy, and the reason is, that as long as the Board of Agriculture will not allow the importation of the best blood, we cannot go ahead, because most of our best strains have been as much in-bred as it is wise to do. Of course, the Board of Agriculture is—and very justly so—afraid of the foot and mouth disease, but we think it ought to be possible to devise some system of quarantine on both sides of the Channel, that is, at the Continental port and the English port. Lord Onslow, when President of the English Board of Agriculture, allowed the importation of goats from France, and the goat

which made the record yield of a measured gallon was a goat belonging to that importation. That seems to me strong evidence of the improvement we might make in the yield of goats if we could get some new goats.

32484. Are they much used by the farmers and villagers round your place?—I think in the ten or eleven years I have been living in that hamlet nearly a dozen goats have come into the district within a radius of five or six miles, and not due to my efforts, but simply to a greater interest being taken in goat keeping.

32485. What class of people?—Labourers almost entirely.

32486. Not farmers?—No; in Essex the farmers are in a large way.

32487. Is there a strong prejudice with a number of farmers against goats?—As long as they are tethered, and the children walk about with them, I don't think the farmers object, but if they are allowed to stray they do serious damage to the hedges. Most stock owners also believe that a male goat is a protection against abortion.

32488. What bounds the paddock you speak of?—Anything to close it in—strong wooden palings in my case.

32489. No hedges?—No; hedges are no earthly good. I should like, if I may while I remember, to say something more about importation. Your Board of Agriculture is reluctant to import fresh goats, and yet—this is one of the arguments we use—at the present moment there seems to be more or less a regular importation of hoofed animals, such as antelopes, for instance, for our Zoological Gardens, and for the Zoological Gardens which I think you have in Ireland. We say that our need to have a dozen good stud-goats is of greater importance to the public than to have mere antelopes and such like for Zoological Gardens. And, moreover, if these antelopes can be imported without bringing foot and mouth disease, goats, under double or quadruple quarantine, might be allowed into the country. The Goat Society is prepared to accept any commonsense kind of quarantine both on the English and foreign side.

32490. Lady EVERARD.—Is it your experience that foreign goats kid at a different time of the year?—By using a foreign sire you could get them to kid at any time of the year?—Yes, with those with foreign blood in them there is more chance of getting kids later in the year, than with the ordinary goat where you get them generally in the spring.

32491. Lady Dunleath believes you can get goats to kid at any time of the year. That is my experience also. We have had one in November?—I am most interested in hearing that. I have even heard of one kidding in December. That is one of the great arguments for introducing foreign blood, as by that means, instead of only having milk in the spring, you might, by the introduction of foreign blood, have it all the year round.

32492. Yes, a labourer having one goat to kid in March and another in November would have milk all the year round, I think; that is one of the great claims the Irish Goat Society make to use them.

32493. I have not spent much money on goats, but one year I had a supply all the year round. Lady Dunleath does not recommend particularly Anglo-Nubian or Toggenburg. Our experience is that Toggenburg gives a greater yield and Anglo-Nubian a richer milk. Lady Dunleath does in certain circumstances recommend Toggenburg, but the great point is to have the dam the good milker if you want to propagate the breed?—Those who have influence to bear might use it with our Boards of Agriculture to see their way to have this sort of small and exceptional importation.

32494. The trouble is—where can they get enough goats?—I understand it is quite possible in Switzerland to buy at reasonable prices.

32495. I don't think you can get them under £5.—I think there might be a more moderate figure for a lot; but even at £5 it might be a profitable investment, because you can sell the progeny. Of course, one is hoping this trial importation would lead to an improvement.

32496. I think the idea in Ireland is to try and get people to keep a stud farm. That is what we hope to do. I think you will find you have to feed your goats in winter and house them?—As they are in paddocks they are fed all the year round, but in cold weather they get a much more ample food supply.

32497. Have they a house to go into at night?—Yes, they have a half-open house at the end of the

paddock, with foot-high benches out of the wind, and perfectly dry. I think there is a saying in Horace:

"My little goat safe from wind and wet."

32498. Mr. WILSON.—With regard to the reason for having the goat developed in these islands, you wrote an essay to draw attention to the milk-failure in rural districts. Are you able to say something as to the difficulty the labouring man in rural districts has with regard to the supply of milk?—I can only say that in my own hamlet, which is within 35 miles of London, and at night-time, within the glare of the city, there are a considerable number of labourers who never have any milk supply at all.

32499. Do you mean for their infants?—No, nothing but condensed milk; they get into the way of drinking it, and even make rice puddings of it. They also get into the way of drinking their tea and coffee without milk.

32500. Lady EVERARD.—Are they labourers or small farmers?—In my district all the farmers are large farmers. These are the agricultural labourers I am speaking of. All the milk is sent to London.

32501. Do not the farmers give them milk or allow them to buy it?—No, there is the difficulty of—

32502. Peddling it you mean?—Yes, that is the very word; peddling it out in pennyworths and half-pennyworths to the labourers, whose children do not always bring the money with them, all of which means a lot of work, and so keeps the servants from doing other work. I had a surplus once; and offered to let the labourers have it, and asked them only the same price they had to pay for condensed milk. But eventually I had to find some excuse for not supplying it. It caused such a lot of bother; they would not come at a regular hour, and as often as not they forgot to bring the penny. It was no end of bother. I can quite understand the position of the farmers, although it seems dreadful, and undoubtedly the children are suffering from lack of milk.

32503. Mr. WILSON.—Very interesting. We have a very similar state of affairs in Ireland. Most of the creameries take the milk wholesale in Ireland, and do away with peddling.—Mine is not exactly a dairy district in Essex; the farmers keep cows for their own use, so that it is a bit of a favour to get milk at all. There have been occasions when cottagers have been ill, and they could not get milk; but I have had my ordinary supply and have given them some of it.

32504. I see that in an article you mention families brought up without an adequate supply of milk, and that they were ready to buy it?—That is so. It is not so much a shortage of money, but we have to remember some households have got into the way of doing without milk, and that being so the more they do without it.

32505. Sir STEWART WOODHOUSE.—Do you know whether the condensed milk is condensed from separated or whole milk?—I don't know. There are very different brands.

32506. Mr. WILSON.—Have you any other suggested alternative besides the goat for getting over the lack of milk in the labourer's cottage? We have had it suggested that it would be possible to have milk clubs, and order the milk from the farmer or creamery in large quantities and to have it delivered round?—That is an admirable idea, and would meet the difficulty.

32507. It would get rid of peddling for pennies.—The farmer is not prepared to keep a slate for halfpennies and pennies, and to have the servants worried and always making excuses when wanted for something else that they have been attending to the milk. (To Mr. Wilson): It is not your experience that in the Scottish dairying districts—Aberdeenshire for instance—there is any shortage?

Mr. WILSON.—I don't know the country.

32508. Miss McNEILL.—In Holland is it not the custom to deliver milk from dog wagons?—Yes; but in Holland there must be quite a large number of small men keeping cows, and they would not feel the same objection as the large farmers—I am speaking of farmers of five or six hundred acres.

32509. Mr. WILSON.—Well, we find the small man with only one cow sends his milk to the creamery wholesale rather than sell it to the neighbours and labourers.

Miss McNEILL.—That is true of labourers themselves who have had a cow. Is it not a question of trading when they get into trouble with their neighbours?—The children appear without the money, and it makes trouble between the neighbours.

32510. Mr. WILSON.—How have they got over that trouble in Holland when the labourer has no sense

enough to send the money at the time? Do you know whether there is any device by which that difficulty is got over?—I shall be pleased to make an inquiry about this and let Mr. Strange know.

32511. Sir STEWART WOODHOUSE.—We have had suggestions of a ticket system?—I should think the milk supply is met to a very considerable degree by the large number of goats and milk-sheep in Holland. The number of goats in Holland is enormous for six million people. There are some 230,000 goats, and the number increases. I was assured by the State agricultural teachers more than once that their labourers did not suffer from a lack of milk.

32512. Mr. WILSON.—With regard to Holland, it would be interesting if you could give us on our notes a few figures with regard to milk-yielding, etc., in Holland. We have started in many parts of Ireland cow-testing associations, and the more information we can get the better?—Certainly. No one can go through rural Holland, and make inquiries as I did, without being struck by the way the milk yields have been increased by the State control. (Reading from his book)—"In Friesland the average milk yield in the best herds of cows is given as 860 gallons and over when all the animals, including those which have calved for the first time, are included. On best soils an average below 645 gallons is not found, but on sandy soils there must be lower yields." Shall I pursue the question?

32513. Mr. WILSON.—Yes.

Witness (reading)—"In the one province of Friesland milk records are kept of 53,000, or nearly one-third of the milking cows in the province." Here is a case in a report to the dairy instructor of the province of what a farmer, whose cows were controlled, obtained in 1909—"1,300 lbs. more butter than in 1909 under similar conditions."

32514. Do you know what has been done in Holland with regard to the elimination of tuberculosis from cattle?—I have noted the conditions in which the State compensates for slaughtering tuberculous cattle.

32515. That will be interesting to us?—For cattle slaughtered for tuberculosis generally, or of the udder only? I simply describe them as tuberculous cattle, and would not like to charge my memory. "The farmer agrees to permit his whole stock to be examined by the Government veterinary inspector, to assist in the examination, to lead all diseased cattle to slaughter after valuation, and to buy only healthy cattle inspected by the Government vet."

32516. Lady EVERARD.—Do you remember having seen any of the tubercle-free herds?—I have an impression of seeing several tubercle-free herds.

32517. Sir STEWART WOODHOUSE.—Thank you very much for your expert knowledge on goats, which was very material. The goat has but few friends with us?—If there is any information I can obtain I shall be glad to do so if Mr. Strange communicates with me. May I add that in reading Mr. Prothero's new book on the "History of English Farming" he speaks of six or ten ewes giving as much milk as a goat.

32518. Sir STEWART WOODHOUSE.—Does he say what breed?—That was in the Middle Ages. You must, of course, remember that goats' milk will stand the addition of water.

32519. Sir STEWART WOODHOUSE.—And ewes' milk even more, because there is more fat in it.—Have you any evidence that goats' milk wants careful handling in cooking, because otherwise it curdles?

32520. We have not had any evidence?—Well, there is an objection because it curdles, but anyone accustomed to use goats' milk would never use cows'.

32521. From my own experience I prefer goats' milk?—Even to a cup of coffee it gives quite a different flavour.

32522. It is excellent for porridge. Have you any experience of making butter from it?—Yes; an ordinary grocer's sweet bottle will do. About half a bottleful, give it a shaking, and in ten minutes you have butter. But people must understand that in handling goats' milk the vessels must be perfectly clean, because of the fat, which more readily takes up odours and more readily goes bad.

32523. Have you ever drunk ewes' milk?—No, I never tasted it.

Sir STEWART WOODHOUSE.—It is very rich.

In a subsequent communication to the Secretary of the Commission, Mr. Robertson Scott wrote:—I learn from Holland that the labourers in the province of Groningen had difficulty in getting milk from the farmers, when their milk-sheep or goats were dry. But the families on the route of the co-operative

creamery cart bought from it. The Dutch Government has given in a year as much as £485 for the encouragement of goat-breeding, and £60 for the encouragement of milk-sheep breeding. The money is given to Societies in the different provinces concerned with these matters. For instance, the Groningen Goat-breeding Society got £58. Some of the Societies spend the money in arranging "milk controls," that is, systems for having the milk of members' goats regularly tested for quantity and quality. The money for encouraging milk-sheep keeping sometimes goes in the purchase of good rams. Some of the goat money has been spent on importing good breeding stock from Germany, mostly white Saanens, on goat shows, goat literature, and goat insurance societies. The official cattle "consultant" of each province is often the backbone of the local movements for goat and milk-sheep improvement. A good milk-sheep is supposed to give 2 litres and upwards. Undoubtedly, the practical sympathy of the Govern-

ment with goat and milk-sheep breeding has done a great deal of good. The old Frisian milk-sheep seems to have suffered from the incoming of our Lincolns, but the surviving Frisians are now being got together into a herdbook, which has a small grant from the Government. What has driven out the Frisians is the poorness of their mutton, which makes the ram lambs worth very little. It is held that the milk-sheep is more serviceable to the poor man than the goat; but it will not thrive without a good meadow, while the goat will do well with rough feeding.

The moral of all this seems to be—(1) That the utility of the milk-sheep is worth consideration. (2) That there is a warrant for Government help in forwarding goat-keeping. (3) That importations from abroad, forbidden to English and Irish goat-keepers, play no small part in developing the efficiency of the goat stock in Holland.

Dr. HAROLD SCURFIELD, M.D., examined.

32524. Sir STEWART WOODHOUSE.—Dr. Scurfield, you are medical officer of health for Sheffield?—Yes.

32525. We have not the advantage of a synopsis of the evidence you are to give us, but we will be very glad if you would just mention to us the points you think would be of use?—I don't know what Mr. Lloyd told you on Saturday. I drew up some notes with him before coming. He probably was dealing with the question of tuberculosis.

32526. He did, and he said we would hear more definite information on certain points from you than he was prepared to give us.

Mr. WILSON (pointing to typewritten document).—He dealt chiefly with the second half of that. The first half of that synopsis he hardly touched.

Dr. Scurfield.—I think the point I should like to bring out with regard to the tuberculosis question is that our system is at the best a makeshift. I mean it is a clumsy makeshift. It is only an attempt to weed out cows that supply Sheffield with milk which are found to be suffering from tuberculosis of the udder at a slightly earlier period than they would be found in the ordinary course.

32527. We would be glad if you would tell us your *modus operandi*?—With regard to the city cowsheds, the veterinary surgeons examine the cows about once in two months. They examine the udders carefully, and they take samples from any cows that are found to have suspicious udders, and control samples from the rest that appear to be healthy. The suspicious samples and the control samples are sent to the University to be analysed. We get the result in about a month. Inoculation is performed on guinea-pigs. If the result is positive then we persuade the dairy farmer to have the cow slaughtered in presence of our veterinary surgeon. So far we have been usually successful in getting these cows slaughtered. Sometimes we have had trouble; a man has objected because there is no compensation.

32528. Lady EVERARD.—You have no compensation?—No compensation.

32529. Sir STEWART WOODHOUSE.—Even for tuberculosis of the udder?—No. Of course, there is no provision by law for compensation. Then, again, the Sheffield Health Committee have passed various resolutions on the subject, bringing the matter before Parliament, and they have always asked, as has been put in these notes, that the Government take up a complete scheme. They have opposed the idea of compensation unless it is coupled with a scheme for the eradication of tuberculosis, or at any rate for a reduction of its prevalence. Otherwise there is no encouragement for the farmer to take any trouble in the matter.

32530. Would he not be wise to have the animal carefully examined before he adds it to his herd?—That isn't any sound protection, as I think the veterinary surgeon will tell you. When I was in Sunderland, before going to Sheffield, we endeavoured to start a system there, by which the Sunderland Corporation gave a certificate to any dairy farmer who only kept cows that passed the tuberculin test. That meant that he had to buy cows subject to the test, and in both Sunderland and Sheffield the farmer, as a rule, buys his cow when it has just calved, and keeps it for one milking period. The cows are not put to the bull; as a rule they are simply kept for ten or eleven months and then go to the butcher. The farmers in Sunderland who were endeavouring to keep tubercle

free herds were not doing anything towards the eradication of the disease. They merely had the cows tested, and if they reacted they did not buy them. They went back to the vendor, and there is a certain difficulty in selling the cows in consequence of that.

32531. At Sheffield have you any tubercle-free herds?—No. It has never been taken up in Sheffield. In Sunderland it began with the farmer who supplied the fever hospital there. I had charge, and we got our milk from a neighbouring farmer, and I got him to do this. He got extra for his milk. I think he was only getting about 8½d. a gallon to begin with. There was no cost of delivery, because he was on the other side of the road. He eventually got 11d. per gallon. Farmers who bought in this way used to reckon that the cows cost them on an average £8 more. If it cost them £21 to buy a cow without the test it would cost them £24 to buy a tubercle free cow. That was arrived at in various ways. A man might have one or two cows sent him. They had to be kept for a week. You cannot go and test a cow when it is unsettled. It has to settle down to its surroundings before applying the test. If it reacted it went back to the vendor.

32532. If two or three cows happen to come in together it may be cheaper?—Yes. If he has luck he might get one to pass the test the first time. They used to say the average cost was £3 more.

32533. It would add to the price obtained for the milk?—They got nothing extra for their milk, but they may have got slightly greater custom. They used to grumble about it in a way, that the public did not consider it worth while to pay any more for tubercle free milk, although advertised or guaranteed that it was tubercle free milk.

32534. Still a section of the public did appreciate it and support them?—I suppose they did advance their business somewhat, and I think they all told me they would not go back to the old system, because they found their cows were so much better.

32535. That is very interesting?—That is what they told me quietly.

32536. That applies to Sunderland?—Sunderland. I have had no experience of the tuberculin test in Sheffield.

32537. Have you any recent intelligence of how Sunderland is doing?—I believe they are still going on with it. There was considerable difficulty in buying the tested cows. They used to have the cows tested and brought in from Wensleydale; the cows used to get the test beforehand. At one time they used to come down in the trucks with the other cows, and they were put up for sale. Whenever the farmers in the district saw these particular farmers were bidding for a cow they concluded it was one that had passed the test and the price was run up. I think my experience there was sufficient to show me, that while you can do this tuberculin business on a very small scale—one or two dairy farmers can do it—it is quite impossible for it to become general without the Government taking charge of the thing, as the Danish Government do.

32538. On the ground of expense?—No, on the ground of the frauds that are liable to creep in.

32539. Such as you mentioned now?—I understand if a cow has been tested once or twice it may not react to subsequent tests. I had the pleasure of meeting Professor Bang in Denmark, and I was much interested in the scheme he was carrying

out there. The Government supply the tuberculin, and a condition is that the farmers will keep the "reactors" separate from the others. That was the system. I believe they are still going on with it, and that it gives very satisfactory results.

32540. You think that these are grounds which render it unlikely that a system such as you mention in Sunderland would be adopted?—I don't think it could become general without the Government taking up the matter. Then I think a great objection is that when a cow reacts it should go back to the vendor and be dumped on somebody else. It is an objectionable system I think. What you want is for the Government to take charge of the tuberculin business altogether, and enact that no cow shall be tuberculin tested except by a veterinary surgeon, and that any cow that reacts should be branded forthwith, so that everyone may know it as a "reactor." That, of course, should be coupled with a compensation scheme. Some such scheme, I would suggest, ought to be taken up.

32541. In Sheffield there is no compensation given?—No.

32542. But you have power to order slaughter?—We haven't. We have power to stop a cow being used for milking purposes, or from being kept in the same cowshed with other milking cows, so that practically means that the cow is of no use commercially, except for its value as meat. We put that to the farmer, and suggest to him the best thing he can do is to have the cow sent to the butcher as soon as possible, and that the veterinary surgeon would like to be present.

32543. To see if the meat is fit for human food?—Yes.

32544. Then, in the case of tuberculous udders, have you any powers of slaughter?—No. Of course, if the veterinary surgeon were to come across a regular screw, a waster, I suppose he would report the fact to the farmer, and the farmer would get rid of it.

32545. In that case you could stop the milk coming in, and if it was a waster, and if the surgeon saw it was clinically affected with tuberculosis, would you stop it?—No. Only tuberculosis of the udder is scheduled.

32546. Mr. WILSON.—Don't you think that tuberculosis of any kind ought to be included; I don't mean merely a reacting cow that is otherwise apparently healthy?—I certainly think we ought to be empowered to exclude a cow that is a waster from the milk supply. I think it is probable that very much the greater part of the danger is from tuberculous udders, and that it may be only a sort of freak cow which passes tubercle bacilli in its milk, without the udder being affected. Of course, there must be a beginning of the infection. The veterinary surgeon can spot it after a certain period, but there must be a period of some days before that.

32547. Miss McNEILL.—For the manifestation?—Yes, when it can be found with a microscope and cannot be felt by palpation.

32548. Sir STEWART WOODHOUSE.—What guides you to an examination of the milk with reference to tuberculous bacilli; is milk taken at random and examined?—With the outside milks we do that; the milk produced outside the city and brought in by road or rail is met by the inspector.

32549. This gives you power of inspection both within and outside the city?—We have no power to inspect outside the city unless something has happened.

32550. You have not the powers of Manchester?—I think so. The preliminary thing is you have to get a wrong sample. That gives you the power. If you get a sample by road or rail which bacteriologically contains tuberculous bacilli after an interval of four weeks or so for the examination, then you have power, by getting an order from a magistrate who has jurisdiction in the district, to go to that dairy farm outside the city and examine the cow. That is to say, the veterinary surgeon has.

32551. The Corporation of Sheffield have that power?—Yes.

32552. Lady EVERARD.—You cannot exercise that power unless diseased milk so classed comes into Sheffield?—That is the first stage.

32553. If you have a suspicion of typhoid or diphtheria coming from the milk of a certain district then have you the power?—We have the power to stop the milk. We have sometimes used the power when we have had difficulty with a farmer who says, "I won't give any satisfactory undertaking as to what I will do with this cow." I mean the outside farmer. The first stage is, you take a road or rail sample. If

it contains tubercle bacilli, when the report comes in the veterinary surgeon goes out to examine the cows. He finds, perhaps, one very suspicious one. He takes samples. They are sent to the University. Another month elapses before you get the results. If they are positive the veterinary surgeon goes out a second time to the farm and tells the farmer such and such cows have tubercular udders, and advises him to have them slaughtered. They are outside the jurisdiction of the city. You cannot bring the same pressure to bear. That is why they say "The cow is a very good-looking cow and all that. I don't care about having it slaughtered. I won't give any undertaking."

32554. Lady EVERARD.—Do you find the medical officers of these districts assist you?—They do to some extent, not very much. We always write to them. I write to the county medical officer, and generally the medical officer of the district. I think they do help, but they haven't the same interest in assisting us in that way.

32555. They don't have the milk?—They don't have the milk.

32556. You haven't a county veterinary officer, have you?—No, a medical officer of health. I don't know what their arrangements are regarding the veterinary surgeon. Where we do get a little power is this, if a man won't give a satisfactory undertaking we call a meeting of the Health Committee, and we give him notice that we are going to make an order preventing his milk from coming into Sheffield.

32557. Any of his milk?—Yes. We take that line, because we say this man has been sending milk containing tuberculous bacilli. He has been told about his cow with a tuberculous udder. He says he is going to keep it in this or that shed, but won't give any really satisfactory undertaking, so we had better make an order stopping his milk.

32558. Mr. WILSON.—Have you had occasion to enforce that?—Yes. In several cases the animal has been slaughtered and the order held over.

32559. You have used the threat?—We have used the threat, and also made the order in one or two cases.

32560. And that was sufficient to bring the man to reason?—In certain cases a man has been brought to reason by it. In one case, certainly, we made an order and it went on. The farmer was rather cheeky. He came to the Committee and told them he did not mind if they made an order, and they made it. I don't know whether he really meant it or not.

32561. Sir STEWART WOODHOUSE.—In case it came to the knowledge of the sanitary authority that someone in connection with a dairy outside the city had typhoid fever, have you power to go and examine into the health of the household on that dairy farm? What is your power in case there were a number of people who got their milk from one dairy farm, and these people were more or less affected by typhoid fever?—We would certainly have power then. If I heard of a case of typhoid fever at a farm I would certainly communicate with the medical officer of the district, and find out from him if everything was done that ought to be done. We sometimes have cases like that. In these cases we certainly get the co-operation of the medical officer of health. We have never had any trouble in that respect. I remember one case in a rural district where the medical officer of health did everything that could be done, and told me everything that was being done by way of precaution.

32562. Have you had any outbreaks of infectious disease in the city that you attributed to contagion conveyed by milk?—Yes, we have had two, I think, during nine years, and both of these were inside the city.

32563. The milk was produced inside the city?—Produced inside the city. So we have no complaint to make in that respect as regards the outside sources. I suppose there is really more infectious disease in the city. The children of farmers in the city are principally attending elementary schools.

32564. Were these outbreaks of typhoid fever?—Scarlet fever. When I was in Sunderland we had a bad outbreak of scarlet fever, and that was from an outside farm, and there was another just before I was appointed, a very bad outbreak of typhoid. That was also from an outside farm.

32565. Is most of your milk produced inside the city or outside?—Most of it outside. (Dr. Scurfield here handed in a statement.) He proceeded: I will leave that. That gives the number of cows outside. You will see more milk comes from outside. If I may say so, I have given a description in a paper that was

prepared for the Rome Congress on Tuberculosis. On page 9 the system is described pretty accurately.

32566. Sir STEWART WOODHOUSE.—We shall be glad to have that. (Copies of the paper were handed to each of the Commissioners.)

Witness.—I may just run over some points in this. I mention there that there is one month's delay in the case of a city cow and two months' delay for an outside one. I give the number of city cows and outside cows that have been condemned. I may point out that this, of course, is no guide to the amount of tuberculosis outside as compared with the tuberculosis inside. We condemn more city cows in proportion, because our system of examination is much more perfect. The examination of the outside milk is haphazard, by means of taking samples of mixed milk as they arrive at the station.

32567. You are guided simply and solely by the discovery of tubercle bacilli observed from the outside cows?—That is right.

32568. Lady EVERARD.—Must your tuberculous bacilli pass through a guinea-pig before you are perfectly certain?—You can sometimes get a direct microscopic result from the milk itself by using a centrifuge, but the number of these is comparatively small.

32569. If it is at all a doubtful case you think it necessary to pass it through a guinea-pig?—Inoculation of a guinea-pig is always done.

32570. Miss MCNEILL.—It may escape you by the microscopic test?—Certainly. I have mentioned that in the 2,400 city stalls there were 127 cows with tuberculous udders found in four years. On the assumption that we have not missed any, and that the proportion of outside cows with tuberculous udders is the same, I think what has happened is, we have found 75 out of 296 cows with tuberculous udders of the outside ones. I mean if the proportion of cows with tuberculous udders was the same among the outside stalls as the inside there ought to have been 296, and we have only found 75. I would suggest that there is every reason to suppose that there are probably more tuberculous udders among outside cows, because the inspection is not so stringent.

32571. Sir STEWART WOODHOUSE.—A goodly number would escape detection?—Yes. That shows what a comparatively small thing our outside inspection is.

Lady EVERARD.—More probably there is double the number.

32572. Miss MCNEILL.—About the milk from these cows from the outside, where has it gone to, do you suppose?—It goes down the throats of the Sheffield citizens. Perhaps I might just mention this. I think we may take it a great many children consume cows' milk containing tuberculous bacilli without harm.

32573. Sir STEWART WOODHOUSE.—I was going to ask a question bearing on that. We have had it before us that tubercle bacilli were found in milk supplied by ten per cent. of the herds examined, which seems a large number, and from which we may infer that a good deal of the milk contains tubercle bacilli, perhaps in small quantities. I suppose you hold that many children acquire a limited amount of tuberculosis, but that they outgrow it owing to their vitality?—Yes. I think there is no doubt about that. There is no doubt a large number of children get it. The percentage is given tremendously high by some authorities. I should think also a number of children in good health swallow milk containing tubercle bacilli without it doing them any harm. The highest number of tuberculous udders we have ever found in the city stalls was 42 out of 2,400. That is a very high percentage, 42 cows with tuberculous udders in one year out of 2,400 stalls; 2,400 stalls might represent 3,000 cows. It is a very high percentage.

32574. It is over one per cent.?—You might take the average—127 cows over four years; that is 30. That is practically one per cent. That is over the period of four years, 80 tuberculous udders among 2,400 stalls. If you call it 3,000 cows you get somewhere about one per cent.—one per cent. of all cows, not tuberculous cows. It means that with a herd of 50 cows it is an even money chance whether the milk contains tuberculous bacilli or not. So there must be a very large amount of tuberculous milk consumed, that is quite certain.

32575. Mr. WILSON.—About how large a percentage of the samples taken in Sheffield are—the normal market milk supply—found to be tuberculous?—From the outside? Mr. Lloyd would tell you it is somewhere about ten per cent.

32576. Miss MCNEILL.—He said roughly about ten per cent.?—Roughly. One point I refer to on page 9

is that perhaps most of the children who suffer are children living under very bad circumstances, and getting very little milk indeed. I give some results on page 9 of the amount of milk taken by poor families, and they probably bear out the contention, that if an infant is well fed and kept in good condition it has power to resist, but if an infant is run down and given living bacilli—

32577. Mr. WILSON.—A plentiful supply of milk in its existing condition is more important than cleansing the existing milk and reducing the amount available?—I should say it is. I should say children suffer more from the want of milk than from the effects of milk.

32578. Miss MCNEILL.—That is our evidence?—That applies only to infants. There were 154 families which used ordinary cow's milk, consisting of 820 persons, including 506 children under 10 years of age. The total milk consumed in the week was 1,070 pints, equal to about 26 ounces or $\frac{3}{4}$ of a litre per head. Another inquiry by a different investigator, made in one of the poorest districts in Sheffield, showed that 43 families, consisting of 228 persons, and including 139 children, only spent in the aggregate 30s. per week on milk. I think my own family spend about half that, and they are only five strong. It works out at 1½d. per head per week, or an equivalent of one pint or four-sevenths of a litre of milk at the summer price.

32579. Lady EVERARD.—Where does Sheffield get its supply from?—Chiefly from the West Riding and from Derbyshire. We don't as a rule have milk come from a long way out. We have some from Hawes. That is about the farthest distance. They tell me they never had a tuberculous udder at Hawes.

32580. Where is Hawes?—Hawes is on the border of Yorkshire and Westmoreland. I think the Hawes milk is put on the train somewhere about eight o'clock in the evening, and gets to Sheffield at four or five in the morning.

32581. It must be pasteurised?—It would keep all right if it was got off just in time and properly cooled.

32582. Sir STEWART WOODHOUSE.—Is there much pasteurised milk used in Sheffield?—No. I should rather qualify that. There is a considerable quantity of pasteurised milk supplied in connection with one of the co-operative dairies. They have a good plant, and have a large and increasing business springing up in pasteurised milk.

32583. Is the milk sold at a higher price than ordinary milk?—No; I think not; but it would be better for me to find out that. It is better that I should not give you guess-work, because it is quite easy for me to find out when I get back. It is rather easy for a co-operative society. They have got a lot of customers ready-made when they start dairying. The difficulty with an ordinary dairy is to get up sufficient custom to make it pay to do these things. I know Mr. Sorensen, who has a dairy at York.

32584. Mr. WILSON.—Is he still going on?—He is still going on. He had difficulty at first. Then the Danish Milk Supply Co. in Copenhagen—they got no profit for a number of years until they got a certain turnover.

32585. Sir STEWART WOODHOUSE.—Is it from want of money or from ignorance that so many people in Sheffield fail to purchase an adequate supply of milk?—I think it is partly the idea that children after they are a year old need little milk.

32586. Do these under a year old get anything like an adequate supply?—I don't think there are many bottle-fed babies actually starved for want of milk. There may be a few getting some of the cheaper forms of condensed milk.

32587. Lady EVERARD.—Do you use milk powder?—We use milk powder a lot. We sell the milk powder—the dried milk. There was a Sanitary Committee inquiry into infant mortality, and one of the witnesses mentioned dried milk. As a result it was thought that we would try in the hot weather to supply dried milk to bottle-fed babies. We have several women inspectors.

32588. Miss MCNEILL.—Under supervision of your trained women inspectors?—Yes. That was tried. I don't know whether it did much to prevent diarrhoea, because only a few infants were fed on it. What we did find was that it was a milk easily digested, and that a lot of infants have taken to it at once.

32589. Mr. WILSON.—What particular variety?—We had several brands.

32590. Miss MCNEILL.—You saw it in various fatty transitions?—Yes, to a certain extent. We had milk from three or four companies. I think every doctor will agree that the difficulty about a baby with ordinary

cow's milk is that the curd is indigestible; but the curious thing with the dried milk was that we found some of the very delicate babies got on better with half-cream milk, that is milk with the whole of its curd and with half of the fat taken out. As a rule, they get glaxo just as supplied. This year we got in a large supply of dried whey for the diarrhoea season, but there wasn't any diarrhoea season owing to the cold weather. The dried whey was returned.

32591. Has there been any sign of trouble such as one would expect because of that deficiency?—No; but we have very few on half cream. I know a man quite well both of whose babies were brought up on the half-cream milk, and they are quite old children now, and he says they are in excellent health. They don't seem to have suffered very much. I suppose they must get enough fat in it.

32592. Does this cost much more?—As we sell it at present, it works out at the same price as ordinary milk. It is 1s. a lb.; we sell it at less than it is sold in shops. That is one of the attractions. People come to us because they can get it cheaper, but we only supply it on the condition that they bring the babies to be seen by the doctor, and to be weighed, and their progress marked on a chart. The dried milk is in addition to being an easily digested food for the infants, a peg on which we hang any amount of advice on other things. They are shown model clothes, and they can buy patterns at one penny each of model clothes.

32593. Sir STEWART WOODHOUSE.—They get more than dried milk?—They get advice with it.

32594. Lady EVERARD.—Do you give any free to the very poor?—Occasionally. What we do is, we make bad debts.

32595. Sir STEWART WOODHOUSE.—The Corporation lose on the supply of milk?—No.

32596. There is no charge on the rates?—The expense is the money paid to the doctors who take charge.

32597. Miss McNEILL.—Do you pay them a fixed sum?—£50 was paid the first year. It was called an honorarium. Last year it was £150. I ought to say the £150 was for about three half days a week; something like a guinea a day. I hope they will increase it this year because we have had too many babies coming already. On one afternoon 117 came, which is perfectly ridiculous. The doctor's wife is also a doctor, and they were both at it on that occasion, and they got through them.

32598. You have home supervision of these babies?—Yes; we have notification on purpose in force. And we have a staff of women inspectors—qualified nurses—and midwives, and sanitary inspectors, who visit the babies' mothers. In that way they hear of a mother who is in difficulty with her baby, or they may hear of one from a neighbour; and anybody they find with a bottle-fed baby not thriving they advise to come up and see the doctor. They come quite readily.

32599. Is there any difficulty in clashing with the ordinary medical attendance?—We don't give any medicine.

32600. Advice on feeding?—My own contention would be, the system leads to more doctoring, rather than less. If the doctor in charge of the consultations found a baby sick at all he would say, "You must take this baby to a doctor." In some cases the babies are sent by a doctor. Quite a number have been sent lately. I don't see why it should do them any harm. It is more or less the same as medical inspection of school children. We give advice, but we do not give medicine, and I do not see why it should interfere with the doctors.

32601. How long has Sheffield been carrying it on?—I think something like five years.

32602. What I really wanted to know was, has there been any expense to the Corporation which was not met by the sale of milk in that time; have you had any debt in connection with it?—No, with the exception of the fees to the doctors, and these have been partially paid by the profits on the dried milk in some years.

32603. Supplemented by some grant from the Corporation?—The Corporation provide the money for the doctor, and if there is a profit from the dried milk it lessens the amount to be provided.

32604. Sir STEWART WOODHOUSE.—Is there one station, or are there several stations?—One station. We have a cheap tram system. The station is quite near the Town Hall, and anybody can get there for a penny from any part of Sheffield—a penny ride will bring them to the Town Hall, and it is only once a week.

32605. Miss McNEILL.—They haven't to go for the dried milk the same as the fresh milk?—No. They

get a supply once a week and sometimes once a fortnight.

32606. The dispensary is open daily?—Three half days a week. I hope next financial year they will make it five. We have probably 250 on the books, and probably 200 come every week. We have had 225. That is too large a number for three afternoons. If we could get it down to 40 an afternoon that would be reasonable.

32607. Lady EVERARD.—You have not got any printed matter about it?—I was just wondering if I had brought anything. There was a paper by Dr. Naish. I could easily send some reprints. It is not quite up-to-date.

32608. Still it would give some idea of the lines you are working on?—Of course, one danger of all these things is the idea of suggesting that any kind of artificial food is a proper substitute for mother's milk. We are very strong on that.

32609. Miss McNEILL.—Have you tried it by your visitors?—Yes, and I hope we shall have a special hour for mothers who have difficulty about breast-feeding. You meet a mother who says her supply is short. It may be due to starving, or she may be going out to work when she is not absolutely compelled to. Everything that can be done should be done to stop weaning.

32610. Sir STEWART WOODHOUSE.—Do you think this dispensary for the supply of dried milk has had an effect in checking diarrhoea?—I should not like to say it has had much effect in that way, because there are so many ways of babies becoming affected. Even if the milk is clean they may have dirty comforters. The comforter is dropped in the dirt and picked up and put into baby's mouth.

32611. Lady EVERARD.—I take it you don't approve of the long-tubed bottle?—That is referred to in this report. Perhaps I had better put this in.

32612. Sir STEWART WOODHOUSE.—Is that the report of the Committee on Contamination of Milk?—That is here. I will leave it if you like.

32613. Mr. WILSON.—I think it would be very useful to the members of the Commission. If you have any spare copies we would be glad to have them, because it is a most interesting analysis.

32614. Lady EVERARD.—I take it when a mother comes for this dried milk you tell her she should not use the long-tubed bottle?—Oh, yes. That is one of the great things we always struggle against—the use of the long-tubed bottle. I was looking to see what was in this report about it.

32615. Lady EVERARD.—I think in France they are not allowed at all?—Page 41, reference to women inspectors' work, "The objectionable long feeding bottles are becoming less popular. In 1906 there were 310 of these to 761 of the tubeless pattern, while last year the proportion was 361 to 1,049."

32616. Sir STEWART WOODHOUSE.—You believe the dried milk, as administered in this dispensary, is the least objectionable substitute for mother's milk?—Yes. I think so. We have not found there is any particular danger from scurvy or rickets. I think there is no doubt that rickets is due to fat starvation and want of fresh air.

32617. Miss McNEILL.—That is what most people accept to-day?—We have given dried milk with plenty of fat in it. We have had weakly babies occasionally put on half cream, but they have got back to whole milk as soon as they can stand it. Comparatively speaking, rickets is a bottle-fed babies' ailment. There is nothing special in our Dairies, Cowsheds and Milkshops Order. These are copies of our regulations (handing in copies); they are more or less the ordinary type to try to prevent the contamination of milk.

32618. Mr. WILSON.—With regard to this report* of 1906—1908 is the date of the report?—Yes. I suppose the inquiry went on for about fifteen months.

32619. It seems to have begun July 23, 1906. Has it led to any direct result on the conditions of the milk trade in that area?—I don't know that it has. Of course, I would not be able to speak as to that, because I haven't inspected the country cowsheds.

32620. They drew up a certain list of conclusions—recommendations—at the end of the main report. Some 31 items there are altogether, and I was wondering whether these suggestions had any considerable influence?—I should think probably they have stimulated inspection and general interest. I don't know whether you would like to have these regulations; they speak for themselves. We had under discussion the question of having new regulations for dairies, cowsheds, and milkshops. The cowkeepers heard they were going to be very stringent, or they were afraid they were going to be, and as a result there was a conference.

* Extracts from this Report are printed in Appendix D, page 195.

A committee was appointed of the Health Committee and the Cowkeepers' Association, and that committee drew up a pamphlet which were the recommendations of both. It is signed by the Chairman of the Health Committee, and by the President of the Cowkeepers' Association. That was intended to represent for Sheffield the standard that every dairy farmer should aim at. I think that did good, and it gave the authorities a handle to say to any farmer who thought he was being unreasonably dealt with, "Your own association recommends it."

32621. It is a most excellent schedule. I was only wondering whether it had got any further than paper?—I should say it has. There are certain other things I should like to see. There is not much smock wearing done.

32622. Miss McNEILL.—There seems to be a great difficulty about smock wearing everywhere?—Yes, and there's a difficulty about the washing of the udder. There is a good deal of objection to that handed down traditionally.

32623. Mr. WILSON.—It still exists?—It still exists.

32624. Lady EVERARD.—There is a very interesting chart here. I see the death-rate from phthisis is pretty high in Sheffield?—Among men. We have the grinders. It is very low amongst women.

32625. Sir STEWART WOODHOUSE.—Is that the cutlers?—Cutlers and grinders.

32626. Do you think the milk supply has anything to do with that?—I don't think so. I give my reasons in this paper. The figures for infants are given on page 8, and these show there has been a great diminution. In the letterpress I have dealt with that subject. There certainly has been an exceptional reduction in the last two or three years. It may be that the elimination of cows with tuberculous udders has had some effect.

32627. Lady EVERARD.—That is an extraordinary low rate for women in comparison with men?—Yes. I say, "I think the Sheffield experience also suggests that abdominal tuberculosis is often due to infection from a human source, and that the greatly increased institutional segregation of advanced consumptives during recent years has probably had its effect in reducing the prevalence of this form as well as of all other forms of tuberculosis." I also think it is worthy of note that we have had this reduction in three or four years. We have certainly been more active since 1907 in eliminating these cows with tuberculous udders. It may have had some effect.

32628. I take it consumption is a notifiable disease in Sheffield?—Yes, it has been notifiable since 1904.

32629. Sir STEWART WOODHOUSE.—Compulsory?—Compulsory. I put it on page 12: "There is good reason to suppose that the elimination of infection from the milk supply during the last few years has had some effect on the prevalence of abdominal tuberculosis." I notice that remark was considered to be inconsistent with what I had said elsewhere, but I don't think it was. I think it was some anti-vaccinator who was criticising.

32630. Do you happen to know if any other city has adopted the sale of dried milk. It is very interesting?—Leicester is selling dried milk.

32631. Miss McNEILL.—Leicester changed from dairy milk to dried milk gradually?—Yes. It was Dr. Newman, who was medical officer for Finsbury, who suggested we should have dried milk. He said he had tried dried milk at Finsbury, and he thought it gave as good results as bottled milk, but he did not seem to be in favour of extending it.

32632. Sir STEWART WOODHOUSE.—Do you think it is likely to extend among the fairly well-to-do classes. I suppose it is among the poor it is mostly used?—I should think it will extend.

32633. Miss McNEILL.—Was Dr. Newman's fear not that the greater facilities for getting dried milk in comparison with the difficulty of going and fetching other milk would lead to less breast and more bottle feeding?—Very likely. Of course, you must have a propaganda. We regard breast feeding as most important. You must do all you can to encourage breast feeding.

32634. Sir STEWART WOODHOUSE.—Is the dried milk used for anything except babies; is it used for the purpose of colouring tea?—It tastes rather like boiled milk, and you see little tiny fat globules coming to the top. I think some of the forms go better with tea than others. I knew one doctor who liked it better

than ordinary milk, and he used to take some round with him in a flask in his brougham and drink it. I cannot say I should like it as well as ordinary milk.

32635. Miss McNEILL.—I don't like it at all?—Certainly the proof of the pudding is in the eating of it, as regards the children.

32636. Lady EVERARD.—Arising out of your evidence, Dr. Scurfield, you would recommend cowkeepers to be licensed instead of registered?—You mean so that the licence could be renewed every year?

32637. Yes; and, therefore, you would not grant a licence until their premises were in order, or the cowkeeper carried out what the sanitary authorities considered to be necessary?—I think it would be better.

32638. We have had so much evidence on the point both in Ireland and in England, and in every case there has been one consensus of opinion?—I think it would be better. I have voted at Sanitary Congresses for resolutions in favour of licensing. We have had much better control of the slaughter-houses in that way.

32639. You license slaughterhouses, do you?—All the modern houses have annual licences, so that at any time when the licence comes up for renewal, if the premises are not up to the mark, it forms a convenient time to have them put right. But there are other slaughter-houses that have a sort of permanent licence, and you cannot deal with those satisfactorily.

32640. I think you said yourself the outside areas do not co-operate as willingly as they might with the town area?—I don't think they do. There is this in it; they are ratepayers in the district, and the milk is not coming to their district, so they don't bother so much about it.

32641. I take it you would have all the provisions of the Cowsheds and Dairies Act made compulsory?—Yes.

32642. In some districts we have had evidence that perhaps a town had been very rigid in its observance of the regulations; perhaps a district outside moderately so, and another district not at all?—You may have two farms on opposite sides of the road under different regulations.

32643. If it was compulsory you would say it would be advisable to have an inspector appointed by a central authority?—You mean the difficulty would be to find a local authority whose interest it would be to push inspection or carry it out in a *bona fide* manner. You think the County Council would not do it?

32644. The County Council might do it with a whole-time officer?—Yes. I should be inclined to think that the County Council should act.

32645. Provided they had a whole-time officer?—Yes.

32646. You would have a compulsory officer, would you not?—Yes, I would.

32647. We have had much evidence, especially in Ireland, of a veterinary surgeon having a very small pittance from the County Council, and it was very difficult for him to prosecute?—Because he has greater financial interests in his clients, naturally.

32648. Exactly. And it is a most difficult thing for a man to go and prosecute another man who is really giving him his livelihood?—Yes.

32649. Sir STEWART WOODHOUSE.—And be severe enough?—I don't know whether this would interest you. This is a paper by Mr. Spear; we had it printed. The reason was this. These farmers are practical men; they look upon representations from a medical officer of health as coming from a person who lives in the clouds; so we thought if we could give them a paper by one of themselves—by a farmer—it would have more influence.

32650. Lady EVERARD.—Have you found it have very much effect?—I think it had good effect. I send copies to architects when they are going to prepare a cowshed plan, so that they may see what a progressive Scotch farmer says.

32651. You know the by-products—butter, cheese, skimmed milk—are not under the same regulations as the sale of new milk; do you consider they ought to be under supervision, that farmers should not be allowed to make butter in an unsatisfactory condition and sell it, the same with skimmed milk or buttermilk?—Yes, but skimmed milk is.

32652. No, new milk only?—Of course, we deal with skimmed milk for adulteration, and dirty skimmed milk.

32653. That is a different thing. We have had evidence of tuberculous bacilli in butter several times?—Yes, there is quite a lot of literature on the subject

of tubercle bacilli in butter, but is has generally been held that the risk was considerably reduced, as the tendency is for tubercle bacilli to go to the bottom.

32654. In buttermilk you may have any amount of tuberculosis?—Yes, undoubtedly.

32655. Of course, there is many a farmer who has tuberculosis on his farm that the general public knows nothing about, nor the veterinary surgeon?—Yes. I am very strongly of opinion the way to do is to try and diminish the amount of tuberculosis. I think it is beginning at the wrong end to devote yourselves to by-products. I do not think the evidence is quite sufficiently strong that these are a sufficiently fruitful source of infection to justify very strong legislation with regard to by-products. I think what we must hope for is dealing with the disease, and get it reduced to manageable limits.

32656. Mr. WILSON.—Are you satisfied with the powers you have of inspection and control outside your own area, or would you like any more power?—I think it would be extremely difficult to attempt any system of inspecting all the farms that supply towns with milk.

32657. Obviously?—It would be extremely difficult to send men about. From experience I don't think it is satisfactorily done, but I don't think it ought to fall on to the towns to do it. I think it ought to be done locally.

32658. Failing a rural authority doing its duty, and you discovered contaminated milk either tuberculous or otherwise in your area, you have power, and occasionally you have used the threat, to stop the supply of milk?—Yes, and that has proved satisfactory.

32659. Sir STEWART WOODHOUSE.—Have you many prosecutions for adulteration?—Oh, yes, a great many.

32660. Are the fines a deterrent?—The fines are very small.

32661. Miss MCNEILL.—Is there publication of the fines in the newspapers, and does that act as a deterrent?—I think it does. I think there is no doubt it acts as a deterrent. There is no doubt, too, the co-operation that we have from the Cowkeepers' Association is a good thing, because they set their faces against anybody whom they think to be guilty.

32662. Sir STEWART WOODHOUSE.—That is a very good thing?—I think it is quite a good thing.

32663. Are preservatives much used?—Preservatives haven't been used for a long time. The Cowkeepers' Association also set their faces against preservatives. I think that is one of the things mentioned in that circular.

32664. Lady EVERARD.—I think they are illegal now? They are illegal now. We have prosecuted for 12 gr. of boracic acid, and got a conviction (handing in circular). That was in connection with the circular sent out with regard to preservatives. That copy is not dated. That was sent out some years ago when the Local Government report came out on the subject.

The Local Government Board report suggested that proceedings should be taken if boracic acid exceeded a certain amount, and that seemed to convey a mistaken idea, because it seemed to suggest a permissible amount. We sent this circular out as a warning that we were determined to take proceedings in cases of boracic acid, with the idea that if we failed we would tackle the Local Government Board, but we never failed. I invented the term pickled milk. It was helpful for the prosecuting solicitor, to say that people who asked for fresh milk did not want pickled milk. This is the latest circular sent out since the preservatives were forbidden. That was sent out to all the restaurants as well as the milk-sellers. One of the things that has not been dealt with satisfactorily is the little milk-shops. The milk is not properly protected from flies and dust.

32665. Sir STEWART WOODHOUSE.—It is sold in conjunction with a number of other things?—We have endeavoured to get them attended to, and we have threatened proceedings and got a specimen counter-pan to show the people. They had a copy of the circular sent out on that subject. There is a curious idea you meet with that milk requires to be ventilated.

32666. Ventilated cans?—By a little opening at the top. We know quite well that if milk is cooled and bottled, and the air kept from it, it is the best way to keep it. That quite knocks on the head the idea of ventilation.

32667. It lets in dust, of course?—Yes. It will keep out the flies probably, but gauze will let through a certain amount of dust. Then you have to go into details about the question of the dipper to be used.

32668. Miss MCNEILL.—These are very small shops, in the poorer districts chiefly?—Yes. There are not very many dairies in Sheffield, very few. In Edinburgh there are any number of dairies, and I suppose there are in London many shops where only milk and eggs and butter are sold.

32669. Lady EVERARD.—Are there any cows kept in Sheffield itself?—About 2,400.

32670. Miss MCNEILL.—Is milk sold in shops with many other things—is that what you mean?—Yes, sold with other things, and we have generally recommended people either to provide a special cupboard with a gauze ventilator, or else have a counter-pan. In some cases, of course, we recommend them to stop selling, inasmuch as there seem to be quite unsuitable things sold in the same shop.

32671. Sir STEWART WOODHOUSE.—Onions and paraffin?—Yes.

We are very much indebted to you for giving us information we were anxious to have on several matters. That point about dried milk was exceedingly interesting and very useful. We have no knowledge in Ireland practically of dried milk.

The Commission then adjourned.

FIFTY-EIGHTH AND FIFTY-NINTH DAYS.—29TH AND 30TH NOVEMBER, 1912.

The Commission sat at No. 5, Upper Castle Yard, Dublin, to consider various subjects in connection with the Draft Report.

SIXTIETH DAY.—FRIDAY, 13TH DECEMBER, 1912.

The Commission met at No. 5, Upper Castle Yard, Dublin, at 11.30 a.m.

Present:—P. J. O'NEILL, Esq., J.P. (Chairman); LADY EVERARD; MISS MARGARET MCNEILL; Sir STEWART WOODHOUSE, M.D.; G. A. MOORHEAD, Esq., F.R.C.S.I.; ALEC. WILSON, Esq.; DERMOT O'BRIEN, Esq.

S. W. STRANGE, Esq., *Secretary*.

Mr. J. L. SMITH, Principal Clerk, Local Government Board, examined.

32672. The CHAIRMAN.—Personally I feel very much indebted to you, and, I think, I can also speak for my colleagues, for the admirable paper which you have prepared for their information, and may I say, too, that the facts disclosed in this paper would seem to indicate that this Commission has not sat a day too soon.* Apparently much preventable human suffering has been inflicted under existing laws and conditions, and if this Commission can, by its recommendations, alleviate any of the suffering which exists at the moment, its labours will not be in vain. The record of the number of cases of infectious disease traced to the milk supply presents rather alarming reading, and if any doubt existed as to the wisdom and necessity of further supervision of creameries, I think the table with which you have supplied us would certainly dispel any doubt that might have existed?—If I may make one remark, it would be that I should be very sorry, and I know that the Local Government Board would be very sorry, if this memorandum I prepared for you about creameries was taken in an alarmist sense. I think the general effect of the record I presented to you is to show that these outbreaks of enteric fever are diminishing year by year. I know that the suggestion that creameries were in any measure or in any way connected with such outbreaks has been challenged; and from time to time the Local Government Board have been accused of misrepresenting and damaging a great industry. From the point of view of the creamery industry, it seems to me that the tendency which this paper shows is a distinctly hopeful one, inasmuch as there is a marked decline in the occurrence of infectious diseases.

32673. Yes, but at the same time it indicates the gravity of the situation. It is gratifying to know that the number of outbreaks is steadily diminishing, but at the same time your statistics also warn one that any lapse on the part of the local authority, or whatever authority is responsible for the diminution of the number of outbreaks, would at any time cause a recurrence of the outbreaks which have been so lamentable in their consequences. The fact that 700 cases of enteric fever in one particular district were distinctly traced to milk and creameries is an appalling state of things, and if our recommendations could be in any way helpful in obviating the possibility of a recurrence we shall have reason to be gratified with the result of our labours?—I wish only to guard against any possibility of misunderstanding.

32674. The Commission decided that the Press should not be invited to to-day's Sitting, and the reason was that we thought we could speak more freely to each other, and with less restraint, than if the Press were present?—Yes. After the occasion of my first examination before this Commission, some question was raised as to a newspaper notice of my evidence. It was rather an abbreviated account, and an impression appeared to be created in certain quarters by it that the creameries were largely responsible for the spread of enteric fever. The Local Government Board wrote to one gentleman who took exception to the newspaper report of my evidence, and more or less promised that this subject of the possibility of infection through the agency of creamery butter would be dealt with in a more explicit manner in further evidence before the Committee, so if the Commission could see their way to give publicity to the paragraph about butter it might, perhaps, remove any misconception. I rather went out of my way to

refer to the question of butter which was not strictly relevant, but at the same time, it was a question that was very closely connected with the main issue before the Commission. I think anyone reading my evidence, as published by the Commission, would draw a different conclusion from it than from the abbreviated newspaper account which gave rise to misapprehension.

32675. That is always a difficulty when you have abbreviated reports taken of proceedings, because the very points that would qualify or elucidate statements might be the very points that are omitted?—Yes, but at the same time it is the newspaper accounts that reach the public.

32676. That is so. Abbreviated newspaper reports are a danger which we must always encounter, and one which I am afraid no Commission can control. The Press publish whatever they regard as interesting to the public. Their idea of what is interesting to the public would probably differ very widely from the opinion of the Commission on that point. Very often the Press will publish an insignificant point if there is any element of humour in it, rather than a solid statement of fact which deals with a question of importance to the public health and to the interests of the public at large. However, these are dangers and difficulties that we must always run in connection with the report of our Sitings, and not only this Commission, but, I take it, of other bodies similarly circumstanced, and we can only hope to escape with as little stigma as possible?—The stigma, such as it was, was not attached to the Commission, but to me as the representative of the Local Government Board.

32677. The Commission would not like that those who come to assist them should be misunderstood or misrepresented?—Of course, I am aware of that.

32678. I don't know if the members of the Commission are aware that at a recent meeting of the Council of Agriculture Mr. Campbell read a paper on the question of tuberculosis in animals. Mr. Campbell dealt with the subject in his usual masterly style, and invited discussion. I ventured to make some observations in order to start the discussion on the paper. I made some reference to the evidence that had been given before this Commission. I was anxious to educate the public, and to show them that a grave condition of things had been disclosed and brought under our notice, notably in reference to the conditions which were deposited in a southern county. I studiously avoided mentioning the name of the centre from which the information was obtained. I spoke of the country as a whole, and of the information we received, without indicating in any way the locality. When I had finished a number of farmers interested in the creamery industry in the South immediately protested against the statement I had made, which they said was calculated to damage a large industry in the country. The discussion ultimately fizzled out, because the Vice-President suggested that as a Commission had been appointed to inquire into the milk question, and was expected to report in a short time, it would be premature to discuss the matter. In closing the discussion, I said I made no statement on my own responsibility; that I had merely repeated the statements made in evidence before us by a prominent public official in the presence of the Press. I also said that I felt at the moment that the state of things he indicated was so very alarming that I felt it was possible that the state of affairs might have been overstated, and that I endeavoured

*The statement referred to is printed *in extenso* in Appendix C, page 191. The Lists of Outbreaks of Enteric Fever attributed to infected separated milk from creameries are printed on pages 179 and 180 at the end of the witness's evidence.

myself to shake him in the statements he made before us, but I failed absolutely—that he adhered to his statement, and that his statement was subsequently corroborated by other witnesses who could have no collusion with this gentleman. I mention that to show that people are particularly keen to watch all that bears on their own particular industry, and no one finds fault with them for doing so; but at the same time the public weal is above all these personal considerations, and at the present moment we are dealing with the public weal, the public health being the most essential part of it. That must be our justification for anything we say or do that may hurt susceptible people whose houses may not be in order. Mr. Smith, we have had a number of witnesses examined before us, and we discussed with them the question as to whether they would be in favour of licensing instead of the present system of registration, and we would like to know the opinion of the Local Government Board on that matter. Have you ever thought would such a condition as that be helpful to local administration to secure the object we have in view?—I am distinctly in favour of licensing as compared with registration. I think I brought that matter before the Commission on the occasion of my first examination.

32679. Do you see any serious obstacle to putting into operation a recommendation of that kind if your Board should be empowered to do it?—There is no serious obstacle, but, of course, it would require legislation, and I don't think it would rest with our Board to license.

32680. What I want to know is whether from the practical administrative point of view, provided the necessary power was conferred on some body, you think there is any serious obstacle to putting it into practical effect?—No. We have been approached on many occasions to permit—if we had the power—licensing in place of registration, and our reply has invariably been that the local authority has power to register, but they cannot attach any condition to registration.

32681. But you do think it would be helpful to local authorities if such power were conferred, and you don't think it would seriously interfere with the legitimate carrying out of the trade, or be likely to limit the number of these who would be prepared to supply milk for local consumption?—On the question as to whether it would injuriously affect the supply, I cannot venture an opinion. That is quite a different thing.

32682. I quite follow, but the Commission is bound to consider not only the advantage arising from such a recommendation, but whatever disadvantages might ensue, and we are conscious of the fact that if undue restrictions are placed on the men carrying on the trade, it might prevent some of them continuing, and may prevent other people who might be disposed to embark in the enterprise from doing so?—One is, of course, aware of cases where the argument is advanced that people are too poor to conform with the strict enforcement of the present regulations. Cases of this kind crop up from time to time even now, and if it is so under the present system, I think it would be more so under a system of licensing.

32683. We quite recognise the difficulty with which you are confronted at the moment, and we also hope to make a recommendation that will obviate the difficulty. My object in putting the question about licensing to you is, to know, first, if there is any similar difficulty in regard to it that we might seek to obviate by a further recommendation. We must look to the consequences of what we recommend as well as the advantages we may gain?—Yes.

32684. Lady EVERARD.—We have had a good deal of evidence from dairy owners, and none of them objected to licensing?—I don't object to it, but when you ask me for an opinion as to what the probable consequences would be on the volume of the supply, I cannot give you a decided answer to such a question.

32685. Dr. MOORHEAD.—Many of these very poor people you speak of produce milk without a profit at all. I know a great number of them in our district. They come in from the country. They have no produce except what they buy. They have to buy all the produce and everything they give to the cow, and they have to sell the milk not at a very high price, and I am perfectly satisfied that there is not a single one of them that is paying the expenses of the cow. It would be a charity to close them up. They are not making a halfpenny on the milk they sell.

Mr. O'BRIEN.—They are not drinking it.

Dr. MOORHEAD.—They sell it. I have got some of them to put down their figures—how much they pay for fodder, and I don't think that they can make any money out of the produce of that cow. They bring in that bit of rural life into the town with them, and they think they are making a splendid profit.

The CHAIRMAN.—The same argument that is often adduced in regard to the pig does not apply in that way. Has any strong representation ever been made to your Board, Mr. Smith, with regard to the unfairness of making rules and regulations to govern and control the milk supply when carried on as an industry in milk, or the manufacture of milk in factories into butter, and allowing the home butter maker to go without any restrictions or control whatever?—Yes; representations to that effect have been made to us, but at the same time I have a sort of suspicion that these representations were not always *bona fide*. I remember one instance where a rural district council said they would adopt the Dairies Order provided it was extended to all milk products. I have little doubt that they thoroughly realised that the condition could not be fulfilled without legislation, which, of course, would meet with very serious opposition, and for that reason I had a certain amount of suspicion as to the genuineness of that contention when it was put forward. I don't say that there is not something in the point, but I think that many of the representations on that ground were only used as an excuse.

32686. And were more or less selfish?—An excuse for not putting the regulations into force.

32687. One must always discriminate whether suggestions of that kind might not be inspired, if not by selfish, by worse motives, to hit some individual who is in rivalry?—Yes, such is possible.

32688. Lady EVERARD.—On the first occasion you came before us you advocated that all the by-products of milk should be placed under the same rules and regulations as new milk?—I think I limited it to buttermilk, separated milk, and cream. I don't think I went as far as to include butter.

32689. The CHAIRMAN.—I propose going into that question with you, because I think it is rather an important one. If home butter-making is to be carried on without any supervision, is it not possible that such evils as may arise through contamination of milk by infective germs, owing to illness in the family, may also communicate the disease to other individuals, although I admit the field of danger is limited, as compared with factories or creameries. Still, there is a possible source of danger, if these home industries are to pass without supervision, that carelessness may creep into the management and control of them, and that a source of danger may thereby arise to the public health?—I think there is a possibility of that, but looking at it from the point of view of urgency, it seems to me that there is no question that the supervision of the milk supply is of far greater importance than the control of the butter supply.

32690. I quite agree, but what this Commission should guard against in its Report would be anything in the nature of preferential treatment—anything that would seem to hit one branch of the industry severely and leave another branch untouched. I think that would be a very fatal defect in our Report, and it is because I desire that the Commission's Report should be perfectly impartial with regard to the interests that may be hit or injured or influenced by this Report that I think we are open to take into our purview every aspect of the question, to show that we have not viewed the question from one point of view alone, but from the public point of view, and with the object of securing and safeguarding every possible danger to public health?—The point of view from which I approach the question is that of the public health alone, and not of the commercial consequences of restrictions imposed upon one trade as compared with some allied trade. But certainly, from that point of view, it seems to me that milk is the first consideration, and that so far as the evidence goes, there is no strong case (there may be a theoretical case, but it does not, so far as my knowledge goes, go beyond a theoretical case) in favour of the control of butter on public health grounds solely. I mean we know that milk as milk is a medium of infection. We only suppose or suspect that butter may be.

32691. But it is not at all a Utopian idea?—It has not been established.

32692. Lady EVERARD.—We had a definite statement from a professional witness on that point.

Dr. MOORHEAD.—If the milk supply is properly safeguarded in every way won't the products of that milk be all right. If you have the main things all right must not the off-shoots be all right?—That was not the point.

32693. If you are protecting the milk you are protecting the products?—Yes.

32694. The CHAIRMAN.—There is another aspect of the question and it is this—that if infected milk is taken into a creamery or factory, it is there subjected to some form of pasteurisation. I don't suggest for a moment that the pasteurisation is in all cases effective. In fact, we know it is not effective, but at the same time, some attempt is made to destroy pathogenic germs, but no attempt whatever is made to eliminate them from the milk from which butter is made at home?—I agree with that. It is a question of the degree of danger to the public health, and our experience is that the distributing creamery, or milk supplied for consumption as such, represents a far greater element of danger.

32695. That proposition is perfectly incontrovertible?—Yes; and as a consequence, all our attention and time have been devoted to what we considered for the time being the most serious problem, and it seems to me that for some time to come the attention of local authorities will be fully taken up in bringing the conditions of the milk supply to a proper standard. I don't wish to disagree with the suggestion that butter requires better protection, but looking at the matter from a practical point of view, I say that the milk that is used for the purpose of human consumption is the first consideration.

32696. There can be no question of that. The milk dealt with in the factory is the widest means of disseminating the germs if they exist; but we must not in any recommendation we make seem to hit one particular interest and leave another interest go scot-free. I admit that there is an enormous difference between the two, but I don't want the Commission to be left open to the charge that they hit one branch of the industry at the expense of another. However, I don't want to press the point further. With regard to the appointment of veterinary inspectors, we have had before us a number of gentlemen appointed as such, and we have got from them the terms of their appointment, and to my mind it is perfectly certain that when the local bodies were making these appointments they were either actuated by motives of economy, or they only desired nominally to put the Order into operation in order to save themselves from the lash of the Local Government Board, and to avoid being brought into Court, as you were obliged to bring in one or two District Councils, to compel them to enforce the Order. I want to know the view of your Board, as an Administrative Body, as regards the appointment of these men; whether you think it is a reasonable assumption that you will get an efficient administration of the Dairies Order unless whole-time officers are appointed, who will be absolutely independent of local considerations and local influences?—I quite agree that whole-time officers would be enormously more efficient; but so long as the medical officer of health is a part-time officer you cannot enforce the suggestion that the veterinary inspector should be a whole-time officer.

32697. We hope to make recommendations for the improvement of the existing condition of things?—I should like to point out the inconsistency of the Local Government Board endeavouring to insist on a whole-time veterinary inspector, but permitting the existing system of part-time medical officers of health to remain.

32698. Dr. MOORHEAD.—You would approve of a whole-time medical officer of health?—I think there would be many advantages.

32699. The CHAIRMAN.—Would it be a county appointment for a whole-time medical officer?—Yes, to get a sufficient area to carry his salary.

32700. If you can convince us that it would be a desirable change to have whole-time medical officers of health appointed as well as whole-time veterinary inspectors, I think the Commission is quite open to consider the question?—I only referred to the matter incidentally arising out of the question as to a whole-time veterinary inspector.

32701. We want to avoid any inconsistency as far as possible; and it seems quite reasonable, as you suggest, that if your Board should advocate the appointment of whole-time veterinary inspectors, it would be inconsistent to have fitful administration with regard to the medical officers of health working in the same area. I am aware that it is in the minds of prominent members of the Local Government Board to advocate in the near future such appointments as these, and I think that with the new appointments that are being created, and about to be created, it would be possible to have such an officer as that without imposing any very undue strain on the taxation of the country. I have in my mind at the moment the fact that the tuberculosis officers about to be appointed, and who have been appointed, might also be constituted medical officers of health for the county if it is found that it would be possible for them to discharge the duties, and if it was consistent with the administration of their other work. That is merely a suggestion on my part, and I want to convey to you that we have no prejudice against it, and that we are quite open to consider any suggestion on the matter of whole-time medical officers?—Yes.

32702. We have really come to the conclusion—I think it has been forced on us—that the administration as carried out at the present moment in a vast number of districts is little more than administration in name. Where a veterinary surgeon has been appointed at a salary of £20 a year for the purpose of making an inspection of the cows in a district in which the dairy industry is largely carried on, I think it is perfectly obvious to any man of common sense that the local authority appointing such an officer at that salary only wanted to save themselves from reproach before the public, and to conform nominally with your administration of the Dairies and Cowsheds Order.

Dr. MOORHEAD.—The medical officers of health have the same salary?—He is in charge of a dispensary district, and the veterinary inspector has to cover a rural district. I don't wish to suggest that the salary is adequate.

32703. Dr. MOORHEAD.—Or that they are in a position of sufficient independence to carry out their duties.

Lady EVERARD.—We have had evidence not only in Ireland, but also in England, that it is essential for the carrying out of the Order to have absolutely independent medical officers and veterinary surgeons?—Yes, I think that is the feeling of every one who has studied public health matters.

32704. Is that the view of the Local Government Board?—I should not care to say it is the official view, but any official who is engaged in sanitary administration cannot fail to see that a medical officer of health, who is only partly dependent on his salary, and has to carry on private practice, obviously cannot be fearless.

32705. The CHAIRMAN.—Quite true. It was forcibly brought under the notice of the Commission in Belfast, Cork, and Dublin that it would be desirable to make the machinery for outside inspection more adequate than it is at the present moment, and that it should be possible for a public health authority to go into the district from which their milk supply is derived to make whatever inspection seemed desirable. I may say that I was under the impression that if that power were conferred on urban districts it would be enormously helpful to them in the administration of their duties under the Order. I think it is perfectly unreasonable to ask them to undertake a large expenditure of public money for the purpose of dealing with questions affecting public health, and allow a milk supply which is a source of infection to be brought into its district in any condition in which the vendor likes. Belfast had strong views. Cork also had views, though, perhaps, not so strong, and Dublin was also in favour of these outside powers of inspection. This Commission held a series of Sittings in England, and went to Manchester, where that power is enjoyed by the public health authority. We had before us witnesses familiar with the administration and the exercise of this power for some years past, and I may say that the conviction borne in on my mind by the evidence put before us by these officers—from whom we received the most cordial assistance, and who gave us every possible facility, and never sought to hide or hold back any information, whether it was to their credit or disadvantage—was that the introduction of that power has been much less helpful to them than

I was under the impression that it would be. I make that statement to you to show that I think it is the feeling of this Commission at the moment, that if ideal conditions are to be brought about in regard to the production of the milk supply, we need not rely on that power as a factor in procuring that result. I want to know from you how often the Local Government Board has been invoked to confer that power on local urban authorities?—There has been a very prolonged Inquiry held in Belfast, and the subject of that Inquiry is still under consideration. I think it will be decided in the course of a few days, but the decision has not been made public yet. The other districts that applied to us were, I think, Dublin, Cork, and Kingstown. These are the only applications I remember in addition to Belfast.

32706. With regard to these applications, have you held Inquiries in every case?—No; only in the case of Belfast. We asked for *prima facie* evidence in other cases, but they were not prepared to give it to us.

32707. In other words, the Local Government Board felt that the allegations made by the local authorities when applying for these Inquiries were not sufficient to warrant them in granting them?—I would not go so far as that.

32708. But you did not give the Inquiry?—The position taken up by us was, "If you want this power you must make out your case a *prima facie* case. The Local Government Board will not authorise intrusion into a neighbouring district for the asking." If they approached the Board with a colourable case the Inquiry would be held as in Belfast.

32709. In Belfast the case was specific, and the allegations quite definite?—Yes. In Dublin and Cork the point was raised, "how can we get evidence; we cannot go outside the district." I don't think they were in any worse position in the matter of procuring evidence outside than was Belfast, where they gave us particulars of 500 dairies.

32710. The only thing I would ask you is this—what view does the Local Government Board entertain with regard to the efficacy of this means of helping urban consumers to secure a better milk supply?—I think from the point of view of the urban authority it would be useful, but the whole doubt that was in the minds of the Local Government Board about the question was how the granting of these powers to urban authorities would react on the general administration of the Order over the whole area of supply to the urban authority. In the case of Belfast there were up to eighteen rural districts concerned. That is a big tract of country. It is possible—I don't say that it would be a necessary consequence—that by giving Belfast outside powers to control these eighteen rural districts, the rural authorities of these districts would say—"What is the use of our doing the work: let Belfast do it."

32711. I want to know whether your Board is of opinion that it would be more convenient and efficacious to have these things efficiently controlled and administered locally rather than create a state of things that would warrant outside inspection and lead to irritation amongst local authorities?—The principle of each authority doing its work within its own area has been laid down by Parliament for sanitary purposes, and unless there were grave reasons it ought not to be departed from. I think the principle of local control ought to be respected as far as possible.

32712. Lady EVERARD.—If they do it?—Yes: of course, it is subject to that condition. Both in Belfast and in all these other cases that we have dealt with we more or less suggested to urban authorities that if they could prove default on the part of the outside authorities there would be no hesitation in granting them the powers. The real alternative is between giving these powers of outside control as a matter of right, or, on the other hand, reserving them for cases where you know, or where the evidence shows, the rural authority has not made reasonable use of the powers conferred on them.

32713. In England I asked the question of one medical officer of health if the area from which the milk was drawn administered the Order would it be all right?—Yes, of course.

32714. But we know in many districts in Ireland public bodies don't even attempt to administer the Order: or in other cases they have only made appointments?—I know there are some districts, certainly.

Miss McNEILL.—I think we had evidence in some places that the local authorities did not ask a

report from their veterinary surgeon at all—that he supplied no report to his Council.

32715. Lady EVERARD.—In the South of Ireland a veterinary officer gave us evidence that he reported the existence of tuberculosis in cows to his Council, and when the Chairman asked the Council what they would do in connection with the report, the Council marked it "read"?—I can quite credit that in some cases. If they report tuberculosis in cows' udders it is optional with the local authority whether they go any further.

The CHAIRMAN.—That is exactly the undesirable state of things that we seek to remedy. We want to compel them to go further, and unless compelled they will not do so.

32716. Dr. MOORHEAD.—Would you be in favour of having all these clauses compulsory?—That clause about slaughter of milch cows affected with tuberculosis of the udder should be made compulsory.

32717. Would you not think the human being should come before the cow?—I only advocate that particular provision being made compulsory in the interest of the human being.

32718. Don't you think that if you had a department of public health, as you have a Department of Agriculture, it would strengthen your hands in the administration of that sort of thing?—Human life is more valuable than the life of a cow.

32718A. The CHAIRMAN.—Does your Board ever protest against the salary that is offered to a veterinary surgeon for the purpose of carrying out the provisions of the Order?—Yes, we have done so. They have offered £5 in some cases. We raised objections in Calereiveen and Killarney, and we protested against the small salary offered.

32719. Mr. O'BRIEN.—You have no power except to say, "you have made a fool of yourself." You have no power to say to a Council, "you must appoint a person at a reasonable salary"?—We have never tried to fix the salary. The whole introduction of the Dairies Order had to be carried out very delicately. We started from a small beginning in 1908, and we did not want to arouse a mass of opposition. You have now got the basis of organization, and once you have got the man there it is not so altogether hopeless to try to improve the quality and amount of his work; the first thing is to obtain even the germ of the organization.

32720. The CHAIRMAN.—At all events, I think the Commission can arrive at no other conclusion from the evidence placed at its disposal, that so long as the appointments are made fitful, so long as professional gentlemen are offered nominal honorariums for the discharge of their duties, and so long as District Councils are allowed to exercise their own sweet will as regards the efficiency with which this work of inspection is carried out, so long will the present unhealthy state of things exist, and so long will a public health authority like yours be unable to efficiently control the milk supply?—What I tried to point out was that if we attempted to force the pace in the early stages we should have brought ourselves up against a dead wall of opposition at once.

32721. The thin end of the wedge has been inserted and the necessity for the work has been admitted. We have four years' experience of the Order, and I have come to the conclusion that the present method of inspection is absolutely inefficient. What we are anxious to know is how the existing machinery could be so improved as to render it efficient. These are the points we are discussing with you here, and that is the reason we asked you to come, in order to know what the official mind would be on the views that have been presented to us and that have been driven into our minds by the volume of evidence that has been offered?—The remedies for default are undoubtedly very weak. In fact, unless Section 19 of the Tuberculosis Act that we have been discussing could be regarded as a remedy for default, you might say there is none. In the case of water supply, or sewers, the Local Government Board have power after inquiry to order the sanitary authority to carry out what is proved to be their duty, that is, assuming that neglect or default has been established, but there is no correlative power in regard to the Dairies Order.

32722. Mr. O'BRIEN.—I don't know if you are acquainted with the agricultural side of the Agricultural Organization Society. Have you officially come in contact with it at all?—We do to a certain extent.

32723. They are now working a system they call the "butter control." That is to say, they are trying to

get a certain number of creameries that will work up to the very highest standard, and they have very careful inspection. One of the provisions is monthly analysis, and hitherto there has been supposed to be a monthly analysis of the water supply. You would have power to go into such a creamery and say, "we want to see the analysis of your water," and suppose you were not satisfied with it, you would have power to take action on the strength of that analysis got by a private body?—Over creameries as such the Local Government Board have no power of control.

32724. You have no legal power at present to go inside creamery premises except with the good-will of the owners?—Of course, there might be nuisances, but we have no power to interfere with them in their capacity as milk-producing or milk-preparing persons.

32725. The CHAIRMAN.—Do you ever raise any question about the qualifications of veterinary inspectors?—No, if he is a registered veterinary surgeon.

32726. That is all you require?—We satisfy ourselves that he is on the register.

32727. Can you tell me from memory at the moment any place in a rural district in which a reasonable salary is paid to a veterinary inspector such as would enable him to efficiently discharge his duty. What is the maximum salary paid as far as you remember?—There is a case, I think, of a salary of £200 in one of the Belfast districts.

32728. But is that an urban district?—No; Belfast Rural. And I think Mr. Mason in Rathdown gets about £200 a year—between £150 and £200.

32729. Mr. O'BRIEN.—Do you know what the lady vet. of Galway gets? Is she not a county official?—I don't know.

32730. Do you think that you could get a whole-time officer for £200?—I believe the Belfast inspector has undertaken to devote his whole time, but that is an arrangement more or less come to since the Inquiry.

32731. The CHAIRMAN.—It is quite a modern one?—It is quite recent, but Mr. Mason has been receiving this salary for some time, but he is not a whole-time officer, I think.

32732. I know he is not a whole-time officer. He does a variety of work for the Department of Agriculture to my own knowledge. Would it be your opinion that it would be conducive to the harmonious administration of the Public Health Orders, and the supervision of the milk supply, to have these two branches of administration carried on under some central control?—I scarcely follow.

32733. What I have felt throughout is that the relations subsisting between public health questions and the milk supply question are so close that it would be extremely difficult to have the duties of the officers administering them divided—the one relating to public health alone, the other referring to the health of the dairy stock and the conditions under which they are kept—and I fear that if these were separately controlled it would lead to friction in administration and inefficiency thereby?—Well, I may say in one or two instances we had rather awkward questions as to the mutual relations of the medical officer and the veterinary inspector.

32734. As to what is the duty of one and what of the other?—Yes; we try to make a rough and ready distribution.

32735. Is it a matter of difficulty?—There are some border line cases that are hard to decide. It must be a matter of mutual co-operation. If the two men are not inclined to co-operate it is very difficult.

32736. If the officers are working under different Boards would it not render the difficulty greater and the causes of friction more numerous?—Undoubtedly, there are possibilities of friction certainly.

32737. And in order to ensure efficient administration you do think that it would be desirable that they should be controlled from a common source?—I think so. At present they are controlled centrally and locally by the same body.

32738. That is quite true, but I want you to take into your mind for a moment the fact that we propose in our Report to recommend going beyond the existing condition of things, and we think it would be necessary for some body to try and improve the milk yield of the cow. That would be a duty that would not come under your purview as a public health authority?—No.

32739. And that is one of the questions we have before our minds at the moment in which there would be a possibility of overlapping or friction between officers who should be working for a common end or purpose, but who would be controlled by different administrative bodies, and who might possibly get at cross purposes, and friction might arise. Don't you think it desirable that our recommendation ought to obviate such a danger?—It all depends on how far you are going to discriminate between what I may call the commercial function—the improvement of the volume of milk—and the public health function—the improvement of the quality of the milk.

32740. There is another aspect of the question as well—the question of tuberculosis in cattle. That is an administration that must be controlled by the veterinary branch of the Department of Agriculture?—I quite agree.

32741. And, therefore, you see we have the possibility of a conflict arising between the administration of your Board and their Board; the one saying that the administration of the Department has driven the milk suppliers in that district out of the trade, that they are unreasonable in their restrictions, and that the result is that milk becomes scarcer. If both of these questions were considered by the same authority, and considered concurrently—the effect of the administration of one branch upon the other—don't you think under these conditions there would be a more efficient control?—I don't think it is at all impossible to differentiate along reasonable lines between the public health function and the veterinary function.

32742. You think it is possible?—I don't think it is impossible.

32743. And you don't think any possibility of conflict would arise between the bodies?—Not if the lines of demarcation were laid down.

32744. I see the greatest possible difficulty in drawing a rigid line of demarcation?—Take the case of a tuberculous dairy cow; is that the point?

32745. That is one of the points. I don't suggest that it is by any means the only point, but I have suggested to you as a possibility of friction arising that it might be stated that the steps taken by the Department of Agriculture in the accomplishment of something that seemed desirable to them had had an adverse effect on the milk supply of the district, and the county medical officer of health might say "these people are running away on a fad, with the result that they have driven people out of the trade, and no milk is available in the district"?—Speaking on behalf of the central public health body, I don't think that is a matter that concerns us. If it is the function of the Department of Agriculture to do certain things, I don't think that we should raise any questions because of the consequences of their actions.

32746. Then there is the question of overlapping in duties?—The point you put to me was the consequential effect of one department on the functions of another, and if the effect was to curtail the milk supply I don't know that we should be directly concerned in that.

32747. It would not be an indictable offence, I admit?—It would not be in any way an interference with the functions of the Local Government Board.

32748. Lady EVERARD.—Under Section 4 (5) of the General Order of the Local Government Board the veterinary surgeon is bound to report to the Department of Agriculture if he observes any cow suffering from tuberculosis of the udder, or indurated udder, etc.?—I know that clause. It was introduced at the express wish of the Department. It was put in there because the Department asked to have it inserted.

32749. The CHAIRMAN.—On the other hand, I would like to point out that you at the present time recognise the appointment of veterinary surgeons in districts for the purpose of carrying out the provisions of the Order, and the control and improvement of the health of these animals as far as possible. The Department might have in their mind some other scheme for accomplishing the same result by a different method, and would it be an economical administration to have one set of inspectors, which must be under the control of the Local Government Board, and another set of inspectors sent out by the veterinary branch of the Department of Agriculture, to carry out a different treatment or a different line of policy aiming at accomplishing the same thing?—It certainly would not, but I take it that in practice that just as we have

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communications from time to time with the Department on matters affecting the milk supply, they would in the same way refer to us. The clause that Lady Everard spoke about was put in to convenience the veterinary branch, and is an instance of the co-operation of the two Departments.

32750. Lady EVERARD.—I don't think that that clause has been very much observed?—Possibly not, but at any rate there it is.

32751. The CHAIRMAN.—In the Minutes of the local governing bodies, when reports are received from veterinary inspectors, dealing with specific questions in their own area in which recommendations are made that certain things should be done by the local authority, and where no Order is made by the local Board in regard to these reports, does your Board ever send any remonstrance or protest against the local authority evading the recommendations of the veterinary inspector?—That is our regular practice. The directions on the reports are always watched to see whether the suggestions are carried out.

32752. How far have you been able to accomplish your purpose by these remonstrances?—If they are set on neglecting the recommendations of the veterinary inspector. I don't think our remonstrances carry very much weight.

32753. Do you persist in these cases, and is a further remonstrance sent on?—We follow the matter up to a certain point, but if it comes to a point when they say they won't do it, or mark our letter "read," we have no power to carry it further.

32754. Don't you think it would be well that some one should have the power to carry it further?—That was the point of the suggestion I made about further powers of dealing with default. Certainly it would.

32755. The existing powers are obviously ineffective for the purpose of securing an effective administration of the Order?—That is when the Council does not wish to do it.

32756. We have had abundant evidence that the Councils don't wish to do it. We have had it directly and indirectly. We know where they appoint a man at £20 to supervise a large area that they only want the thing done for the purpose of saving them from incurring public odium and criticism from the Local Government Board, and we know that that money is absolutely wasted, because the man can do nothing, and if he does make a recommendation they do nothing on his report?—Some form of default powers is needed.

32757. With regard to the application of the Widal test, is the right conferred on your authority to compel suspected persons to submit themselves to that test?—No.

32758. It is entirely permissive?—Yes.

32759. Have you ever known a case in which a medical officer of health was anxious to have this test applied, and where the individual refused to submit?—I think as far as my memory goes that a case of that kind arose in connection with the Clontarf outbreak. I know that we were very anxious to obtain bacteriological tests in that particular case.

32760. And you did not succeed?—No. There have been several cases in which we could not get a blood sample for examination.

32761. Does not the same rule apply with regard to obtaining swabs from the throats of those suffering from diphtheria?—Yes; there is no compulsory power.

32762. Have any representations ever been made by medical men to the Local Government Board that it would be desirable to have this power conferred on them?—I don't think we ever had a formal representation. It is a delicate matter after all, involving the question of the liberty of the subject, and particularly in a case of suspicion.

32763. The liberty of the subject is interfered with very materially when you have contacts locked up?—There is no power to insist on it.

32764. That has been done repeatedly?—There is no power to do it in the absence of consent. The medical officer of health could be sued for unlawful detention.

32765. If there is no power there ought to be power?—You cannot compulsorily isolate contacts. There is a limited power under certain circumstances to which I would like to refer here. "Where the local authority in pursuance of the aforesaid powers have provided a temporary shelter or house accommodation, they may, on the appearance of any infectious disease in a house, and on the certificate of the medical officer, cause any person who is not himself sick, and who consents to

leave the house, or whose parent or guardian (where the person is a child) consents to his leaving the house, to be removed therefrom to any such temporary shelter or house accommodation, and in the like case on the like certificate may cause any such person who does not consent to leave the house to be removed therefrom to any such temporary shelter or house accommodation, where two justices, on the application of the local authority, and on being satisfied of the necessity of the removal, make an order for the removal, subject to such conditions (if any) as are imposed by the order."

32766. Sir STEWART WOODHOUSE.—Have you any power over a known typhoid carrier?—No. You cannot interfere with his liberty. He is not a person suffering from a dangerous infectious disease.

32767. Dr. MOORHEAD.—In Australia they lock him up.

Mr. O'BRIEN.—There was also a case in America.

Dr. MOORHEAD.—Is there any authority to prevent a dairy on which suspicion has fallen as the propagator of disease to prevent them supplying milk?—There is a section of the Infectious Diseases Prevention Act of 1890 which empowers a medical officer of health, when he has grounds for believing that infectious disease is caused by milk from a certain dairy, to go and inspect it. If the dairy is in an outside district, he has to get a magistrate's certificate. He then examines the dairy, and he can examine the cows if he has a veterinary surgeon with him. The point that I would like to bring before the Commission arises here: "if, on such inspection, the medical officer of health is of opinion that infectious disease is caused from consumption of milk supplied therefrom, he is required to make a report."

32768. It is the local authority that has to issue the Order for closing the dairy?—Yes. In practice, the trouble has arisen from the phrase "on such inspection." The local authorities have been advised that these are limiting words—that the evidence on which the medical officer's report is given must be derived from facts obtained on the occasion of his inspection. Therefore, if there happened to be a typhoid carrier, you cannot ascertain that fact on the inspection, and the result is that you have got no legal power to close the dairy up, although you may have every moral conviction that the milk is contaminated.

32769. Mr. O'BRIEN.—Practically, that makes the Act a dead letter?—It is very hard to get over these words "on such inspection." They have limited the effect very much.

32770. Was that a matter that was threshed out when the Act was being passed?—I don't suppose they ever foresaw the consequences.

32771. It is a point that might be amended?—I think so. I think these words should be omitted, or made to read—"after such inspection."

32772. The CHAIRMAN.—Has any application ever been made to the Local Government Board by the local authority for permission to subsidise a milk supply, or to incur any expenditure of rates for the purpose of improving or increasing the milk supply to the poor in the district over which they preside?—I don't know whether there was a serious application. There was a case of two District Councils in Clare—one of which proposed to supply an acre for the labourer to feed his cow on, and the other proposed to provide the labourer with a cow.

32773. That is not exactly the idea I have in my mind. We did learn that in Liverpool at the present time a scheme is in existence whereby charges are made on the local rates for the purpose of cheapening the milk supply to the poor. Is it recognised that in Ireland a local authority has power to carry out such a scheme?—No. At the time of the Tuberculosis Bill it was discussed whether what was known as the Woolwich Clause should be inserted. That was a clause included in a local Woolwich Act of 1905; but it was decided that it should not be included in the Tuberculosis Bill. I don't know whether there are many English towns that have it, but there was this Woolwich precedent for these powers of establishing a municipal milk depot.

32774. I don't know that we got from the gentlemen who were before us from Liverpool whether these powers were conferred under a local Act or not. We also had evidence to show that a similar custom had prevailed in Glasgow up to a certain period. Is it your opinion that no such power exists under the Acts controlling local administration in Ireland?—I am quite

sure of that, otherwise the question would not have arisen of the inclusion of the Woolwich Clause to give such power.

32775. Mr. O'BRIEN.—You have not had the question put to you by any Council?—I think no such proposal has ever been brought before us.

32776. Do you know whether you would be able to give them that power?—Do you mean to equip places, and not supply the milk?

32777. Yes?—No; it would not come within any of their functions as a sanitary authority. It would have to be conferred, if at all, by legislation.

32778. Have you power at the present time to enable them to borrow money, or make use of the rates for the purpose of erecting sanatoria, or hospital or fever wards, or anything like that?—That is given partly under the Tuberculosis Act and partly under the Public Health Act.

32779. But you don't think that at present they could use the rates for the purpose of constructing a milk depot for the benefit of the community?—No, they could not.

32780. Would you see any serious objection to that, supposing it was taken up in small towns, or even in larger towns?—Well, I have always understood that milk is a line of business that wants to be very carefully watched, and the question is whether the local authority would be able to obtain sufficient supervision.

32781. It occurred to some of us that if you had such central depots in the different districts laid out, urban or rural, and all the dairy shops closed, you would have the milk under the direct supervision of the urban authority?—I don't know whether such a scheme as is in your mind could be brought under the powers, say, for the establishment of a market. They have power to establish a market under certain conditions.

32782. And an abattoir?—Yes. I think it would be rather stretching the definition of a market.

32783. Sir STEWART WOODHOUSE.—Did I understand you to say that if an outbreak of typhoid fever occurs in a rural district, the authorities in an urban district have the power to send out their medical officer of health to that dairy?—They have, if the Infectious Diseases Prevention Act of 1890 is in force, but subject to the condition that they must get a magistrate's warrant.

32784. They have the power of sending their veterinary inspector out?—Yes; for the purpose of examining the cattle.

32785. Without the consent of the Local Government Board?—Yes, they need not come to us. There are two conditions—that the Act is in force in the district in which the disease occurs, and that a magistrate's warrant is obtained. Supposing a case of infectious disease occurred in the City of Dublin, and the Infectious Diseases Prevention Act was not in force, say, in North Dublin Rural District, that fact would not hinder the Corporation medical officers of health going out with the magistrate's order into the North Dublin District. Of course, the Act is in force in North Dublin, and I only mention it by way of illustration. In every urban district that has the Infectious Diseases Prevention Act in force they can go out into the surrounding rural district in case the medical officer of health has reason to believe that milk from the rural district is causing infection in the urban district.

32786. Having got a magistrate's warrant?—Yes.

32787. Mr. O'BRIEN.—What power has he if he considers the dairy a source of danger?—The urban medical officer goes out with a magistrate's order. He inspects the dairy, and if he has reason to believe from the result of his inspection that his suspicions are correct, and that disease is caused by the dairy, he then reports to his own public health authority. They summon the outside dairyman to show cause why his milk supply should not be stopped, and if not satisfied with the explanation given, his supply is stopped.

32788. Sir STEWART WOODHOUSE.—That only prevents his supply going into that particular district?—I don't suppose that question has ever cropped up.

32789. Mr. O'BRIEN.—It has in England?—I don't know. If, for instance, a County Dublin dairyman's trade with the city is suspended, he has really no other outlet.

32790. The question is whether it would not be better for the urban council, or their medical officer,

to communicate with the medical officer of the district where the supply is suspected?—I think he does, as a matter of fact.

32791. And having said: "We wish this supply to be prohibited, because we have satisfied ourselves it is a danger to us"—whether then, if it were done through the local medical officer of health, that officer would not prevent the dairyman from selling any milk at all until he was satisfied that the danger had passed away?—The sanitary authority on making an Order suspending the milk supply from a dairy are required to notify the facts forthwith to the Local Government Board; we should then see that the medical officer of the district in which the dairy is situate was placed in possession of the circumstances.

32792. Dr. MOORHEAD.—It is only on the conditions that he finds on the occasion of his visit that he can act?—Yes.

32793. So if you have typhoid carriers there, you cannot tackle them?—Not on the authority of any statutory powers.

32794. Lady EVERARD.—In section 5 of the Local Government Board General Order, 1908, it is stated: "A person who carries on the trade of cowkeeper or dairyman for the purpose only of making and selling butter or cheese, or both, and who does not carry on the trade of purveyor of milk, shall not, for the purpose of registration, be deemed to be a person carrying on the trade of cowkeeper or dairyman, and need not be registered." What is the reason of that?—I never satisfied myself as to the precise intention of that clause. The history of it is that it was included in the original Order of the Privy Council in '79, and it always seemed to me that that was a declaratory or explanatory clause as to define what line of business was intended as the business of a dairyman or purveyor of milk.

32795. Lady EVERARD.—I may say that every single witness that came before us thought it very unfair that a farmer who was selling butter should not be liable to inspection?—

Mr. O'BRIEN.—He is subject to inspection if his cattle is liable to be tuberculous.

Lady EVERARD.—Not if he is not selling milk.

32796. Mr. O'BRIEN.—If you have an energetic veterinary inspector, he goes about indiscriminately?—I don't think he would have a right.

32797. Do you think there would be a practical difficulty in the registration of all cow owners, irrespective of whether they sold milk or not?—It is all a question of the limits of administration. I don't say there are any practical difficulties. The only question is what you are going to gain by it.

32798. The CHAIRMAN.—Absolute uniformity of administration, and the application of the same Order to all engaged in the milk trade?—The whole scope of the section which authorises the Dairy Order goes to show that the regulations are intended to apply to the trade in milk, that is the selling of milk.

32799. Mr. O'BRIEN.—I am giving in lieu of wages, or in part payment of wages, a pint or a quart of milk a day to my workmen; is that selling milk, and am I a purveyor of milk and liable to be registered or licensed?—I think the opinion we have expressed is that where milk was given simply as an allowance to a servant it did not involve a sale, but if there was any regular sale—an exchange of the commodity for money—then that person comes within the terms of the Order.

32800. But at the same time we have had evidence, I think, to show that in certain places where milk had been given to labourers more or less in part payment of wages, the farmers had refused to continue giving it to their labourers, because they were afraid of coming under the Order?—That is limited to a small part of the Newtownards Rural District, so far as my knowledge goes. The farmers in that locality seem to have a great dread of bringing themselves within the Order.

32801. The CHAIRMAN.—And that would furnish an argument why all producers of milk should be brought under the Order. Furthermore, I don't think it is at all right that people keeping cows, though not selling the milk, should keep them in such a condition that they would come under the lash of the local inspector if the Order applied to them.

Mr. WILSON.—There is another aspect of this question to which I would like to direct your attention. The farmer at present sending milk to the creamery comes under the Order, but the home butter maker is not inspected. Practically, the effect of that has been

in many areas to react unfavourably upon the creamery industry, and put the clock back in agricultural methods; and the suggestion to apply this Order all round is affected, I think, very largely by that situation. Now, if you apply the law impartially to all, that does not involve inconvenience or trouble for the home butter maker more than to anyone else; but it would prevent him being put in a privileged position as compared with his neighbour?—That argument was referred to by members of the Commission earlier in the day.

32802. The CHAIRMAN.—Mr. Wilson entertains views on this particular question, and I am anxious, as he had not the advantage of being present when it was discussed, that he would have an opportunity of asking you some questions on the matter himself?—Yes.

32803. The CHAIRMAN.—Mr. Wilson, don't suppose that because we have discussed the matter already you should be deprived of your right to put the question again, because I regard it as a question of extreme importance, and every member has a right to elicit all possible information in order to enable him to come to a conclusion, so I would be glad if you discussed it with Mr. Smith now?—I explained to the Commission earlier in the day that I thought the real difficulty was the question of the limits of the administration; that just at present we had a large problem in our hands, speaking as representing the central and the local authority, and one that takes up all our time and attention in this question of milk alone, and that from the evidence that came before us—the evidence of injury to public health—

32804. Mr. WILSON.—I agree that that is the explanation, but I would like to know what objection there is to applying this Order to a wider class?—The extent of the work.

32805. The CHAIRMAN.—I would like you to approach that from a different point of view. We don't contemplate in our recommendations imposing on any existing authorities duties which they have not the power or the staff to discharge. We are concerned with what would be the most efficacious means of producing a certain result, and we shall not be deterred in making recommendations that seem good to us because it is stated that the existing machinery is not sufficient to deal with them. It is not a conclusive answer to say that because we have other and larger problems to deal with and to administer we shall not be able to take up what we regard as minor and insignificant details. They are essentials, even although they should be considered details. We shall not hesitate to recommend that some machinery shall be devised for the purpose of dealing with them, even although it may entail a much larger exercise of administration than has hitherto been devoted to it, and I would invite you to approach the consideration of the question, not from the point of view of existing regulations and machinery, or of the staff available for the purpose of carrying out the necessary administration connected therewith, but from a new, improved, enlarged, and extended operation of the same Order, and the very same principle. You have directed our attention to the fact that when the Local Government Board were putting into operation the Dairies Order they did not wish to rush blindly against all local authorities, and aim at accomplishing too much immediately. Now, if I may say so, I quite sympathise with that administration, and think it was extremely thoughtful and well conceived, but we contemplate this matter from a new and improved and extended point of view. The public mind has been educated by what you have done up to a certain point, and our aim and object is to provide you or some other public authority with whatever machinery may be necessary for the purpose of perfecting the work on which you have already embarked, and carried to a certain point; beyond which, you yourself admit, you cannot go, in view of the fact that your penalties are so difficult to impose, and we want to help you, or any other authority that may be created for the purpose, to carry out the scheme we have in contemplation. If you would consider the question from that aspect, rather than from the aspect of the powers conferred and the staff available, I think it would be much more helpful to us. I admit it is going into the prospective a little bit, but I know we can rely on you to assist us in devising the machinery to carry out the work efficiently?—I am here to assist you, and I am only too glad to assist you in any way I can, and I should be sorry if anything I said should seem to belittle the suggestion you have made.

32806. It is not a question of belittling?—I cannot get away from the standpoint of public health. I approach the question purely from that aspect, and it appears to me that the question of the want of uniformity of regulations arises, not from the public health standpoint at all, but from the commercial standpoint.

32807. Mr. WILSON.—You seem to ignore the fact that there are other aspects?—Speaking as one concerned in public health administration, it does not come within my purview. You ask me whether in the interests of public health—after all that is the object I look at—it is desirable that home butter makers should be subjected to the same regulations as other milk producers, and I say I see no proved necessity for it, on public health grounds, and if I did see an ultimate necessity for it, there is a far more immediate necessity for raising the standard of milk production for human consumption to a higher level.

32808. Mr. O'BRIEN.—I think the point rather is that what you might call a commercial aspect in milk has a very serious importance with regard to the agricultural health. We have long ago come to the conclusion that you have to get a larger supply of milk in Ireland available for the people, and if by any sort of restrictions you diminish the supply you may affect the health of the people. If these restrictions, or the registration of milk suppliers, prevent people from coming into the trade, or drives anyone out of the production of milk, they are to a certain extent endangering the health of the public, in so far as you are reducing the amount of a suitable food that the public should have?—As far as my official cognizance goes, there is in the bulk no insufficiency of milk for the general population. At any rate, if the milk supply is deficient, the circumstance does not arise from the want of the production of the milk, or the enforcement of any regulations attached to the production of milk. Again, so far as I know, the enforcement of the regulations has not tended to reduce the volume of the milk supply available for human consumption, and with the exception of some isolated cases in which creamery suppliers have turned to making butter at home rather than come under the Order, I have not heard of any case where the Order has driven milk producers to the manufacture of home butter.

32809. Surely the question is whether the effect of registration has not also diminished the supply by making persons give up producing milk altogether?—So far as the general information I have been able to get, it is only in one small part of the country—the northern part of Newtownards district—that that has occurred.

32810. Mr. WILSON.—I think that is true, and that is one of the reasons why I cannot understand the objection to apply this Order all round. Admittedly the Order is not by any means a drastic one.

The CHAIRMAN.—There is the aspect of the question that does not naturally appeal to Mr. Smith, and it is this—that the Commission dealing with the question as a whole should make recommendations that should not interfere with one branch of the industry and leave another branch of the industry free to follow its own sweet will. Mr. Smith is not concerned with our Report from that point of view?—But I should be concerned if I were to accept the proposition that the central authority and the local authority ought to be responsible for the control of home butter makers. That is the reason why, perhaps, I am rather shy of making the admission. If I saw public health grounds for doing it, I should agree readily.

LADY EVERARD.—It is entirely on public health grounds that we are pointing out the necessity of extending the Order to home butter makers.

32811. Sir STEWART WOODHOUSE.—Is the notification of enteric fever compulsory in rural districts?—Yes, where the notification Act has been adopted.

32812. Is it generally adopted?—I think it is.

32813. If it is not adopted, there is no provision to prevent enteric germs finding their way into the milk?—It is not universally compulsory.

32814. Some districts have adopted it, and some have not?—Yes.

32815. Have you any idea of the proportion of the rural districts that have adopted it?—144 out of a total of 213 rural districts.

32816. And to some extent that would lessen the chance of infection by home made butter?—The districts that have not adopted it are not, in point of view of milk production, of much weight.

32817. Does the power of compulsory notification of infectious diseases lessen the chance of home made butter conveying it?—The information that I have is that there is no proved case against butter as a source of infection.

32818. There is very little known of typhoid fever being conveyed by home made butter?—Yes. A medical officer did raise the question in Enniskillen No. 2 Rural District; he asked us whether he could seize butter coming from a house where there was a known case of enteric fever. We told him that if he could prove that the butter was infected, he could do so. That is the position.

32819. Mr. O'BRIEN.—Is it not a fact that in the making of the butter—butter from a factory where the milk may be infected by typhoid germs—the mere fact of raising it to a temperature not sufficient for a complete pasteurization, but to a lower temperature than that, will destroy the typhoid germs?—I believe that the centrifugal separator is one of the things that render creamery butter less liable to carry infection.

32820. Sir STEWART WOODHOUSE.—Has any attempt been made to deal with butter coming from a house that is known to be infected?—It is a question of proof really, whether the butter itself is infected.

32821. Supposing it is proved that typhoid fever exists in the house?—You must be prepared to prove that the butter is dangerous to the public health.

32822. Mr. O'BRIEN.—I should like to know to what extent the Local Government Board has power to deal with a medical officer of health who, without exactly concealing disease, is very slack in dealing with it?—We should deal seriously with such a case.

32823. What power have you?—We can remove him from office in a bad case. He has the status of a Poor Law officer.

32824. I ask the question for this reason—in my own district a short time ago we had a case of fever in a labourer's house. It was not one of the Union cottages. The people of the house sent milk down to the creamery occasionally, and were actually sending some at the time that the disease existed. Nobody thought that there was very much in the illness of the children. There were some neighbours who went in to see how the children were getting on, and one of them, a woman, carried back the infection. Two of her children died from it. Then, of course, there was a row about it, and the doctor was noticed. The house was, however, never properly disinfected. The place, as far as we could make out, was fumigated. There was an old woman in the house and she refused to go out, and she said they were smothering her when they were disinfecting the place, and she opened all the windows. No notice of the fact that there was disease in the house was sent by the doctor to the creamery where the milk was taken in. We heard about the illness after it was found out, and sent word to the creamery not to take milk from the house. The disease had, no doubt, been brought from a farther district to this cottage, and that farther district was also sending milk to a creamery. We had more or less doubts that the doctor, who was a well-off and oldish man, did not show zeal, and we wondered whether there was power to see that things were properly carried out?—That sounds like a case of patent neglect.

32825. The CHAIRMAN.—If you had a medical officer of health, would it not be his duty in the case referred to by Mr. O'Brien to remonstrate with this officer, and if he was again guilty of dereliction of duty, to report him to your Board?—The way we would get in touch with it would be this—in every case of dangerous infectious disease the medical officer is required to furnish the Local Government Board, as well as the sanitary authority, with a report showing the date of the outbreak, and name, address, and age of the patient, the probable cause of the outbreak, and the measures taken to deal with it. It is his duty to send such a report to the Board.

32826. LADY EVERARD.—A private doctor?—We have no control over a private doctor.

32827. I know a case where a doctor refused to allow a house to be disinfected?—The sanitary officer ought to have done it.

32828. He was the sanitary officer, and he would not allow it to be done?—He refused to allow it?

32829. Yes, absolutely refused. He said he did not believe in infection. He thought tuberculosis was not

an infectious disease. He would not allow us of the Women's National Health Association to disinfect the house?—I think if we heard that, we would send an inspector to speak to him.

32830. He said that it could not be done without his certificate, and that he would not give a certificate.

Mr. O'BRIEN.—Could he prevent anyone else entering the house?—No one else would have the right of entry.

LADY EVERARD.—There were four small children in the house, which was absolutely reeking with tuberculosis. We sent the woman to the Allan-Ryan Home, and the doctor would not allow her house to be disinfected. I put all the pressure I possibly could on him.

32831. Mr. WILSON.—We have had both on the medical side, and still more on the veterinary side of the public health service over and over again, I think in every district we went to, complaints regarding the undue local influence that is brought to bear upon appointments of this kind. We have got at the present time the medical officer's work supervised, but so far as I am aware there is no nucleus of a scheme for supervising the work done locally by the district veterinary officer in connection either with cattle disease or the inspection of cowsheds?—I would not go so far as to say that. Our medical inspectors when they carry out their periodical inspections of the district will go and see the veterinary officers regularly.

32832. They are not men of his own profession?—No.

32833. It has occurred to us that if it were feasible it would be very desirable to give these veterinary officers that are appointed by these local authorities some kind of backing from a man of their own profession, and I don't know whether you have already expressed an opinion on that?—I don't think the question was put to me to-day; but on the previous occasion when I was examined before the Commission I stated that I thought the Local Government Board would be glad of a recommendation that a veterinary inspector should be added to their staff. We quite recognise that the medical inspector has his hands pretty full with other work, and, of course, there is the advantage of having a man of the same profession conferring with the local veterinary inspector.

32834. Then that brings one round to the point which we have talked over among ourselves, and we have not devised anything very definite yet—we have in this country at the present time got a service of Departmental inspectors and instructors working all over the country under the Department of Agriculture. You also have got a large service of veterinary gentlemen working under the local authority in public health work. Now, is it impossible to devise some scheme which will unify that service and put it more on the basis that the medical service is, so that the veterinary State service shall be something like the medical service as we know it? The suggestion I put before you for discussion would be—the Local Government Board should, of course, retain the executive power, but so far as the veterinary service is concerned, that their veterinary inspector that you spoke of just now might work with an advisory committee, on which the Department of Agriculture would be represented. I understood from one of our witnesses the other day that already it is the usual convention to discuss details between these two Departments when one of these veterinary questions come up?—Yes.

32835. I would suggest that that convention be made a part of the official scheme?—I really don't know sufficiently what the functions are of the Department's veterinary inspectors to say to what extent they could take over the duties that are performed by the veterinary inspectors of the sanitary authorities. I cannot say, on the whole, that there is a sufficiently large number of questions that involve the dual aspect of public health and veterinary business to justify the creation of this joint committee. It is only now and then that a question of policy arises, and it is generally settled by correspondence, or a conference without much difficulty. To bring all the details of administration under the cognizance of a committee like that would be rather cumbersome, and tend to delay.

32836. It does seem to me an unduly complicated arrangement to have two distinct veterinary services in the country—one handled by the Department of Agriculture, and the other by the Local Government Board—and both of them from the necessity of the case tending to be rather underpaid—the individual veterinary inspector in the country—and to that extent below

par in efficiency. For instance, one knows with regard to the veterinary officers appointed by the Rural District Council that in a large number of cases the appointment is a farce and is likely to remain so?—You cannot expect a high standard of efficiency in return for the small salaries that are paid.

32837. LADY EVERARD.—You cannot expect a man to prosecute his cousin or uncle from whom he derives his principal means of livelihood?—There is, of course, that trouble—the conflict between official duty and private interests.

32838-9. You don't give the man enough to live on?—No, he must depend also on private practice.

Mr. WILSON.—Here we have two sets of officials throughout the country.

32840. Sir STEWART WOODHOUSE.—I think your view, Mr. Smith, is that the most ideal arrangement would be to have a veterinary whole-time officer for each county in Ireland?—I suggested that as a substitute for the present part-time system.

32841. Supposing that that should be found undesirable by reason of expense on rates, would it be a fair working system—not an ideal system—to have two or three veterinary inspectors appointed by the Local Government Board in the same way as medical officers are appointed, to supervise the country and put pressure on all the local veterinary inspectors?—I have assented to that suggestion already, which was made by Mr. Wilson.

32842. LADY EVERARD.—We have had evidence from veterinary inspectors stating that it would help them immensely if they could say: "What can I do; the inspector requires such a thing done, and I have no power but to carry it out"?—I think it would undoubtedly strengthen his hands. That suggestion would, I am sure, be acceptable to the Local Government Board.

32843. The CHAIRMAN.—I don't think it ought to be assumed that the appointment of whole-time officers would of necessity increase the burthen on the rates. The local authority in Dublin County pay over £600 a year to men, none of whom are whole-time officers, and in my opinion if we had a whole-time officer, we would have more efficient administration; but at the same time, it would not be necessary to offer £600 to a whole-time officer.

Mr. O'BRIEN.—If you had one whole-time officer, and if it was a large district, he might be paid a bigish salary with the proviso that he had assistance.

The CHAIRMAN.—What we want is to get some independent man who will be in a financial position as to warrant the belief that he will not be actuated by any desire or any motive save and except the official discharge of his duty, and that he shall be absolutely blind to the personality of the individual whose interests may be affected or injured by any recommendation he makes; that he would simply order it to be done, and that it must be done.

32844. LADY EVERARD.—You say, Mr. Smith, there is no power to take blood from a person in the case of the Widal test, or a swab from the throat in the case of diphtheria?—No, not without consent. You cannot do it compulsorily.

32845. Mr. WILSON.—Are preservatives allowed in milk under any condition?—The English Board recently issued an Order as to the limits of preservatives in milk and cream, and we shall probably do likewise after a little time. I don't know that there is any Statutory limit.

32846. Dr. MOORHEAD.—Section 3 of the Food and Drugs Act of 1875 deals with it. It does not allow any mixing, colouring, or powdering of any article?—We want to see the working of the Order in England before we take action.

32847. Mr. O'BRIEN.—Is it not a fact that we are allowed to use a certain amount of preservatives in butter and milk?—

Dr. MOORHEAD.—What preservatives are you allowed—boracic acid?

Mr. O'BRIEN.—I thought we were not prevented by any Act from putting boracic acid into milk or cream?—I don't think it is completely prohibited.

Miss McNEILL.—There was an Act of last year in which the question of boracic acid was dealt with.

32848. Mr. WILSON.—One of the various suggestions that have been made in the course of our proceedings was that the local authority might be tentatively given power, if it has not got it already, to own a field here and there, for the express purpose of letting it out for grazing to labourers at a reasonable price.

Mr. O'BRIEN.—Do you mean by that that a local body could apply the rates to the purchase of a town park that was being sold, to be made use of as a commonage?

Mr. WILSON.—Have they the power to do that, Mr. Smith?—No; there is no existing power under the existing sanitary code.

32849. Mr. O'BRIEN.—Have they not power to make a public recreation park?—Yes; but I take it what is required is grazing ground. The rural authority has to come to us to acquire recreation grounds, and we watch it very closely. It is a kind of thing that is likely to be abused.

32850. It would not be in your power to wink at a recreation park where you knew it was to be used for dairy cows for the use of the parish or town?—I don't think that we would attempt to wink at it.

32851. Mr. WILSON.—You would seriously object to that power being given for such a purpose?—After all, is there such a great difficulty throughout the whole of Ireland in getting grazing accommodation?

32852-3. The CHAIRMAN.—We have been informed that it is impossible to get it in some places, and that the local people have gone to the Estates Commissioners to reserve portion of land for cow parks. Is there any objection to the local authority becoming responsible for the repayment of the purchase annuities that would be imposed on such an undertaking? Is there any legal difficulty in the rural authority becoming responsible for the payment of the purchase annuity on the portion of land which would be vested in them for a specific purpose?—I am not aware of their having any such powers. If they have not got the specific powers, they are not authorised to do it.

32854. Mr. WILSON.—I take it, the proposal would not differ materially from the present power to own land for a labourer's cottage, or a graveyard?—Well, of course, it is a question of policy.

32855. LADY EVERARD.—I rather thought that some District Councils had taken land where it was striped out.

Mr. WILSON.—At any rate, you give one to suppose that the difficulty at present is the lack of these specific powers?—Yes. There are no powers to my knowledge.

32856. Mr. O'BRIEN.—Can you say when you were getting out this Table if you got into your statistics the number of cases of enteric fever that were existing at the same time? In 1893 there were a number of cases in a particular district; was there at that time much enteric in districts other than that particular district?—I did not really go into that. It is definitely stated in regard to Castleisland that until this great visitation of enteric fever there had been no prevalence of enteric in the district, and in general terms that applies to the whole list. These outbreaks are exceptional, and they cannot be connected with any of the ordinary causes.

32857. Dr. MOORHEAD.—Pasteurization, as a rule, is not carried out in these creameries?—Not in the creameries found to be associated with disease; or if it has been carried out, it was only in a perfunctory way.

32858. You have marked on your Table the creameries where pasteurising plant is used?—Yes. When I saw that in the records I put it down.

32859. In some cases you have no remarks about pasteurising plant. Does that mean that there was no pasteurising plant connected with the creamery?—That would not be a safe inference. Where I saw it stated that there was a pasteurising plant I made a note of the fact. In the last two recent outbreaks there was no effective pasteurisation at the creameries. Of course, in the ordinary rural district there are comparatively few causes of epidemic outbreaks of disease, and that is what makes this class of outbreak so prominent—so unusual.

The CHAIRMAN.—We are much obliged to you, Mr. Smith, for your attendance.

32860.

Mr. J. L. SMITH.—18th December, 1912.

LIST OF OUTBREAKS OF ENTERIC FEVER ATTRIBUTED TO INFECTED SEPARATED MILK FROM CREAMERIES.

(Prepared from the Reports and Records of the Local Government Board).

Sanitary District.	Dispensary District.	Approximate Date.	Number of Cases.	Observations.
1. Bandon	Bandon	August, 1893 ..	43	See article by Dr. Welply in "Lancet" of 21st April, 1894.
2. Tralee	Castleisland ..	October, 1893 to May, 1894.	700	Includes secondary cases but Castleisland Creamery main centre of infection.
3. Killarney	Malahiffe	June, 1894, to Spring, 1895.	50	Ballinvarrig Creamery.
4. Tipperary	Bansha	September, 1894 ..	43	Rossadrolid Creamery.
5. Tipperary	Bansha	July, 1895	20	Rossadrolid Creamery; all cases with in a short radius of Creamery. None attacked except those who partook of separated milk.
6. Kilkenny	Tullaroan	October, 1895 ..	200	Early cases diagnosed as Typhus Fever or Influenza.
7. Callan	Callan		8	
8. Cork	Blarney	March, 1896	21	Mourne Abbey Creamery.
9. Kanturk	Milford	September, 1896 ..	14	Liscarroll Creamery.
10. Mallow	Buttevant	October, 1896	24	Creamery at Granagh.
11. Croom	Castletown	October, 1896	34	
12. Mitchelstown ..	Mitchelstown ..	October, 1896	60	Mitchelstown Creamery. Closed 10th November, 1896.
13. Newcastle West ..	Ardagh	December, 1896 to March, 1897.	42	Primary case was sister of employee at Ardagh Creamery.
14. Rathkeale	Rathkeale	June, 1897, to January, 1898.	28	First patient brought home from Mallow. Disease spread through Ballyhea Creamery.
15. Kilmallock	Ballyhea	September, 1897.	39	Disease imported from Newcastle. Family first attacked supplied milk to Creamery.
16. Newcastle West ..	Feenagh and Broadford.	September, 1897.	25	Disease imported from Newcastle. Family first attacked supplied milk to Creamery.
17. Kanturk	Newmarket	September, 1897, to January, 1898.	10	
18. Kanturk	Milford	December, 1897 to January, 1898.	10	Feenagh Creamery.
19. Newcastle	—	May, 1898	12	
20. Newcastle	Feenagh	May, 1898	10	Ballinful Creamery. No pasteurising plant. Temporarily closed.
21. Croom	Feenagh	November, 1898 ..	56	
22. Sligo	Castletown	June to July, 1899	30	Kinlough Creamery. Milk stored by customers in sleeping and living apartments.
23. Ballyshannon No. 3	Carney	March, 1900	30	Nohoval Creamery.
24. Millstreet	Kinlough	March, 1900	48	
25. Killarney	Cullen	August, 1900	20	Myra Creamery.
26. Mitchelstown No. 2	Coom	October, 1900	52	Lossett Creamery.
27. Cavan	Galbally	November, 1900 ..	40	Ballinahinch Creamery. Every patient had eaten bread made with separated milk.
28. Nenagh	Arva	April, 1901	25	Outbreak ceased on temporary closure of Creamery.
29. Boyle No. 2	Newport	September, 1901 ..	18	Creamery closed 5th January. No cases afterwards.
30. Gurteen	Silvermines	September, 1901 ..	16	
31. Macroom	Gurteen	December, 1901 ..	31	Newmarket Creamery.
32. Clonmoyle	Clonmoyle	March to April, 1902.	10	Knockacommer Creamery. Infection imported from preceding outbreak.
33. Kilmoganny	Kilmoganny	May to June, 1902	22	Hollyford Creamery and Branch at Annacarty.
34. Kanturk	Newmarket	March to April, 1902.	11	Tarbert Creamery. Two outbreaks.
35. Kanturk	Kanturk	May to June, 1902	42	
36. Tipperary No. 1 ..	Cappagh	June, 1902	9	Milk-carrier, first patient. Ballin-trillick Creamery temporarily closed.
37. Listowel	Tarbert	May, 1903	90	
38. Mitchelstown No. 1	Mitchelstown ..	November, 1903 ..	24	Cappamore Creamery. No pasteurising plant.
39. Sligo	Cliffoney	July, 1903	10	Ballyhea Creamery.
40. Limerick No. 1 ..	Cappamore	July, 1904	40	
41. Tipperary No. 1 ..	—	February to April, 1905.	72	Greencastle Creamery established 1904. First patient was attendant at Creamery.
42. Charleville	—	August, 1905	41	Pasteuriser not used.
43. Omagh	Gortin	November, 1905 ..	7	Dromahaire Creamery.
44. Glin	Glin	January to May, 1906.	10	
45. Tralee	Castlemaine	February, 1906 ..	50	Dromahaire Creamery.
46. Boyle No. 2	Gurteen	July, 1906	44	
47. Manorhamilton ..	Dromahaire	October, 1906 to April, 1907.	7	Dromahaire Creamery.
48. Manorhamilton ..	Manorhamilton ..	July to October, 1907.	7	

Mr. J. L. SMITH.—13th December, 1912.

Sanitary District.	Dispensary District.	Approximate Date.	Number of Cases.	Observations.
43. Manorhamilton ..	Dromahaire ..	September to December, 1907.	—	Thirty-six houses. Number of individual cases not ascertained.
44. Omagh ..	Gortin ..	October to December, 1907.	13	—
45. Listowel ..	Tarbert ..	July, 1908 ..	20	Pasteurising plant not in use.
46. Manorhamilton ..	Manorhamilton ..	November, 1908 ..	79	Mainly Mullawn Creamery.
47. Manorhamilton ..	Dromahaire ..	December, 1908 ..	36	Fifty cases for year.
48. Kanturk ..	—	March, 1909 ..	16	—
49. Thurles ..	Borrisoleigh ..	July, 1909 ..	51	Curraheha Creamery.
50. Tobercurry ..	Toomevarra ..	April to December, 1910.	60	Cursallagh Creamery suspected.
	Coolaney ..			
51. Enniskillen ..	Tobercurry ..	January, 1911 ..	26	Derrygonnelly Creamery.
52. Croom ..	Derrygonnelly ..			
53. Kilmallock ..	Croom ..	May, 1911 ..	26	Banogue Creamery. No pasteurising plant.
	Bruce ..	April, 1912 ..	16	Tubrid Creamery. No efficient pasteurisation.
	Ardfert ..			
	Tralee No. 2 ..			

TIME DISTRIBUTION OF ENTERIC FEVER OUTBREAKS RECORDED ON PREVIOUS LIST (Pages 179-180).

Approximate Date of Onset.	Rural Sanitary Districts affected.
January	Glin, Enniskillen.
February	Tipperary No. 1, Tralee.
March	Cork, Ballyshannon No. 3, Kanturk, Kanturk.
April	Nenagh, Tobercurry, Tralee.
May	Kanturk, Newcastle (Co. Limerick), Kanturk, Listowel, Croom.
June	Killarney, Kilmallock, Sligo, Tipperary No. 1.
July	Tipperary, Mitchelstown No. 1, Limerick No. 1, Boyle No. 2, Manorhamilton, Listowel, Thurles.
August	Bandon, Charleville, Millstreet.
September	Tipperary, Mallow, Newcastle (Co. Limerick), Kanturk, Boyle No. 2, Manorhamilton.
October	Tralee, Kilkenny, Croom, Mitchelstown, Manorhamilton, Omagh, Mitchelstown No. 2.
November	Sligo, Listowel, Omagh, Manorhamilton, Cavan, Newcastle (Co. Limerick).
December	Newcastle (Co. Limerick), Kanturk, Macroom, Callan No. 1, Manorhamilton.

RECENT MILK-BORNE EPIDEMICS OF ENTERIC FEVER.

Year.	District.	Date.	Approximate number of Cases.	Observations.
1906.	Clonmel Urban ..	January-May ..	27	Origin obscure, but probably infected milk.
	Banbridge Rural ..	August-September ..	13	Unreported case in milk-vendor's family.
	Belfast Co. Borough ..	August-October ..	26	Ill-defined illness in milker. Widal test positive.
1907.		Nil		
1908.	Dublin Co. Borough ..	September-December ..	140	Clontarf epidemic.
	Swinford Rural ..	October ..	49	Kiltimagh Convent School; Carrier in dairy premises.
	Enniscorthy Urban ..	November-December ..	17	Fever of a mild type, not clearly defined, probably enteric.
1909.	Londonderry Co. Borough ..	December ..	29	Origin of infection obscure.
	Castlebar Rural ..	March ..	15	Attendants of Lunatic Asylum attacked.
	Castlebar Urban ..			Unreported case in family of Asylum milk contractor.
	Carlow Urban ..	April-May ..	10	—
	Fermoy Rural ..	March-September ..	27	Typhoid Carrier.
1910.	Tralee Urban ..	November ..	13	Case of illness in milk-vendor's family.
	Ballyshannon Rural ..	July-August ..	16	Bundoran; origin of outbreak obscure; milk suspected.
	Mallow Urban ..	November ..	22	Unrecognised cases in dairyman's family.
	Moir Rural ..	December-March ..	39	Donacloney, traced to Typhoid carrier.
1911.	Ennistymon Rural ..	January ..	18	Contaminated water used for washing milk vessels.
	Cavan Urban ..	January ..	9	—
	Dublin Co. Borough ..	January-March ..	50	Two dairies involved. Origin obscure.
	Arklow Urban ..	July ..	23	Unrecognised cases in milk-vendor's household.
	Galway Urban ..	October ..	12	Unrecognised case in milk-vendor's family.
	Newry Urban ..	October ..	18	Patients supplied from one dairy, but cause of infection doubtful.
	Dublin Co. Borough ..	October-January ..	9	Source of infection doubtful.

The Commission then adjourned till the following morning.

SIXTY-FIRST DAY.—SATURDAY, 14TH DECEMBER, 1912.

The Commission met at No. 5, Upper Castle Yard, Dublin.

Present:—P. J. O'NEILL, Esq. (Chairman); LADY EVERARD; MISS MARGARET MCNEILL; Sir STEWART WOODHOUSE, M.D.; G. A. MOORHEAD, Esq., F.R.C.S.I.; ALEC WILSON, Esq.; and DERMOD O'BRIEN, Esq.

S. W. STRANGE, Esq., *Secretary*.

Mr. JOHN T. DRENNAN, B.L., Registrar and Assistant Secretary to the Estates Commissioners, examined.

32861. The CHAIRMAN.—You are Registrar and Assistant Secretary to the Estates Commissioners, I understand, Mr. Drennan?—I am.

32862. As you may have heard, this Commission has been appointed for the purpose of inquiring into an alleged scarcity of milk in certain urban and rural districts in Ireland, and the causes responsible for the shortage. Amongst other causes that have been suggested to the Commission by various witnesses throughout the country, is the difficulty of procuring land for the grazing of cows in certain rural districts. We have had evidence before us that the Estates Commissioners do, when dividing land amongst small landowners, reserve certain portions of an estate in different parts of the country for the purpose of grazing the cows of labourers or small farmers in these districts; and it is mainly with regard to that particular branch of your work that the Commission would like a little further information. Have the Estates Commissioners ever been obliged to refuse applications for an allotment of land for this purpose?—I am not aware of any occasions on which the Commissioners have had to refuse such applications.

32863. Have numerous applications been made so far as you know?—I don't think so. Applications as they are received are placed with the papers relating to the estate, and they are referred to the inspector, whose business it is to prepare a scheme for the allotment of the untenanted lands, if any, on the estate for the approval of the Commissioners. Whether or not these papers contain an application for a cow plot, if the Inspector considers that a cow plot should be provided, he recommends the Commissioners to provide one, and he suggests the area and the annuity that should be payable by the trustees. He also suggests the names of the trustees.

32864. There is no rule or order of your Commissioners to the Inspectors commanding them to refuse to consider such applications?—None.

32865. Mr. O'BRIEN.—There have been some such applications?—Yes. I should be rather inclined to say that the refusals come from the tenants and not from the Commissioners.

32866. The CHAIRMAN.—Local difficulties have sometimes been raised, and where lands have been distributed people look more to their own personal interests than to the public interests, and protests have sometimes been made against an allocation of land for this purpose?—Yes.

32867. You have no information at your disposal which would enable you to say in what number of cases these protests have been made?—No.

32868. These protests would have been locally made to your inspectors when they were on the estate?—Yes, and also by letters addressed to the Commissioners.

32869. With regard to the question of security, do your Commissioners favour the security of individuals or the security of a public body for the payment of the annuity?—The Commissioners place an annuity on the land for which they consider the lands to be security in themselves.

32870. Yes. I was only curious to know whether you preferred having local representatives as registered owners of these plots, or whether you would prefer having them vested in a local authority, in view of the fact that we all know that from time to time human beings pass away and difficulties arise sometimes as to the nomination of successors, and whether a representative body having a continuous existence would be a more substantial security than private individuals?—Undoubtedly what you have pointed out weighs with the Commissioners; the local authorities are a continuing body, whereas private trustees pass away, or

sometimes decline to act. Again, the rural authorities have the collateral security of the rates. On the other hand, of course, private trustees, where you get, as we have been fortunate in getting in a number of cases, men living in the district who know the wants of the people there, they are no doubt in some cases more desirable trustees than a rural council, the majority of whose members do not live in the immediate neighbourhood of the lands.

32871. At all events, no difficulty has ever arisen about the allocation of these plots in regard to the person or authority in whom they are to be vested?—I am not aware of any.

32872. And the Estates Commissioners have got no fixed policy in regard to having the plots vested in local authorities or individuals. They consider the circumstances in each case, and if they are satisfied that they have got hold of the right individuals, they are quite content to vest in them?—Yes.

32873. And they are also prepared to take the local authority as trustees?—Yes.

32874. Lady EVERARD.—Do you find the local authorities are keen to undertake such work?—Well, it is only since the passing of the Act of 1909, which came into operation in December, 1909, that the Commissioners have had power to give any allotment to District Councils at all, and I don't really think anyone can lay down any general opinion from the limited number of cases we have had before us. I have prepared a list here of cases in which allotments have been made.

32875. The CHAIRMAN.—I am pleased to see that a good number has already been allotted, because we had only knowledge of two or three instances in which it has been done—I mean that it had only been brought to the knowledge of the Commission in a couple of cases—in Athenry, Oldcastle, and Croom?—Yes. At Athenry we did not make an allotment to trustees.

32876. No. I understand what you did there did not meet with the co-operation that the local people desired; at least it was represented to us that, although the land was nominally given by the Estates Commissioners for the purpose of enabling the inhabitants of Athenry town to keep cows, there was not a single extra cow on the land. I am not making any point against your Commissioners in that; I only point it out to show that the selfishness of individuals will sometimes defeat the most benevolent policy of a board or department?—Well, with regard to Athenry, I think I am entitled to say that the Commissioners consider that the allotment which was made of the land was a suitable allotment, and that it was made in accordance with the wishes of the inhabitants of Athenry.

32877. That was not disputed in the very least by the witness who was examined before us. He quite admitted that the allotment had been made in accordance with the wishes of the local people, but the allegation made was this—whereas it was claimed that the land should be allotted in order to enable the inhabitants of the town to keep cows, not a single one of them kept cows on the land?—Of course, it is open to them to keep the cows on it.

32878. I agree, but it happened they did not?—I should, perhaps, explain that the town tenants were most anxious to purchase their holdings in town, and that to do this under the Land Purchase Acts it was necessary to link with their town holdings an allotment of land. The Commissioners did that, and the combined holding, subject to a combined annuity, was vested in the tenant. Each owner of the allotment can utilise his lands for vegetables and for the pasture of cattle, or he can meadow portions of the land, so that in the winter he could feed the cattle.

32879. I am not in the least reflecting on the advantages of the scheme. The only point I wanted to make was this—that if the Commissioners were anxious to co-operate with the idea of helping this Commission to secure additional pasturage for stock that would be milk-producing stock, it would seem to the Commission to be more desirable that cow-plots where possible should be allocated, to enable people to keep cows that would be milk-producers?—In allotting land the Estates Commissioners have regard to the fact that the primary object of the Land Purchase Acts which they administer is the transference of the ownership of the land to the occupying tenant, and I should, perhaps, call your attention to the fact that Parliament itself has specified the classes of people to whom land is to be given. I have here a short statement with reference to the procedure as regards the sale of estates under the Irish Land Acts, so far as the Estates Commissioners are concerned.

32880. Of course, I quite recognise that the Estates Commissioners have got to administer certain Acts of Parliament which have been entrusted to them, and I don't suggest for a moment that our policy should in any way interfere with the policy of the Estates Commissioners from that point of view; but what I was pointing out was this, that when the Estates Commissioners would be considering these individual questions, if they were desirous in assisting the purpose for which this Commission has been appointed, it would, in our opinion, be more desirable that the land should be reserved in that way if possible. Beyond that, of course, we don't go?—In the circumstances that you mention, I may say that the Commissioners are prepared to make allotments for the grazing of cows.

32881. Thank you very much. That is all, I think, that we could expect the Commissioners to do, and I was only anxious to let the Commissioners know what our experience was as to the efficacy of the different schemes of allotment which they had adopted, and we were told that the Oldcastle scheme has been most successful. The Athenry scheme, on the contrary, has not been so successful from that point of view, but I don't suggest for a moment that the Athenry scheme has been a failure from the Commissioners' point of view, only that it has not succeeded in dealing with the question in which we are interested for the moment?—I understand the position of the Commission. Perhaps it would be well if I stated shortly the procedure as regards sales of estates under the Irish Land Purchase Acts, so far as the Estates Commissioners are concerned. These sales may be divided into two classes—(1) Direct sales by landlords to tenants, and (2) sales of estates to the Estates Commissioners for the purpose of resale. (1) Direct sales constitute about 7/8ths of the sales. In these sales the owner of the estate, before he comes to the Estates Commissioners at all, enters into agreements with the tenants for the sale to them of their holdings, at prices agreed on between the parties, and, provided that the Estates Commissioners consider that the lands are fit to be declared an "estate" for the purposes of sale, and that the holdings are security for the advances applied for, and title is shown, the advances are made by the Estates Commissioners, and the holdings are vested in the purchasing tenants as owners in fee-simple. The Estates Commissioners have no power to acquire any portion of a tenant's holding to provide a "cow-plot."

As regards the second class of sales, sales of estates to the Estates Commissioners, these estates in a number of cases include, in addition to tenanted land, areas of untenanted land, and it is only in these estates comprising untenanted land that the question of the Estates Commissioners providing "cow-plots" can arise. Section 17 (1) of the Act of 1909 provides as follows:—

In the case of the sale of an estate to the Land Commission, advances under the Land Purchase Acts may be made for the purchase of parcels thereof by the following persons:—

- (a) A person being the tenant or proprietor of a holding not exceeding ten pounds in rateable value;
- (b) A person who has surrendered his holding for the purpose of relieving congestion;
- (c) A person who, within twenty-five years before the passing of the Act of 1903, was the tenant of a holding to which the Land Acts apply, and who is not at the date of the purchase the tenant or proprietor of that holding, or, in case such person is dead, a person nominated by the Land Commission as his personal representative.

These are popularly known as evicted tenants.

32882. Mr. O'BRIEN.—It is not the Evicted Tenants Act?—No. The Evicted Tenants Act is an Act giving the Estates Commissioners compulsory powers to acquire land for the reinstatement of evicted tenants. The remaining clause of Section 17 (1) of the Act of 1909 is—

- (d) Any person to whom in the opinion of the Land Commission, after adequate provision has been made to satisfy the requirements of the persons mentioned in the preceding paragraphs of this sub-section, an advance ought to be made.

It will thus be seen that, in the distribution of untenanted land, the Estates Commissioners have, in the first instance, to consider the requirements of the persons mentioned in classes (a), (b), (c). The provisions which enable the Estates Commissioners to provide "cow plots" are those comprised in Section 4 of the Act of 1903 and Section 18 of the Act of 1909. These Sections provide that advances may be made to trustees (i.e.) (a) private individuals approved by the Estates Commissioners, or (b) the Department of Agriculture, and County and Rural District Councils, for the purposes, *inter alia*, of pasturage, and such trustees hold the land subject to a scheme for the user thereof. The scheme in the case of private trustees is settled or approved of by the Lord Lieutenant under Section 20 of the Act of 1903, and, in the case of the Agricultural Department and County and Rural Districts, it is settled or approved of by that Department under Section 18 of the Act of 1909. I am not aware of any other statutory provision enabling local authorities or other bodies to acquire lands compulsorily or by agreement for "cow-plots."

32883. Lady EVERARD.—Here is the list of allotments made by the Estates Commissioners to Trustees under Section 4 of the Irish Land Act, 1903, of parcels of untenanted land for the purposes of pasturage of cows of agricultural labourers and others:—

County.	Townland.	Area.	Purchase Money.
Galway	Ringeelaun	43a. 2r. 35p.	£ 288
Limerick	Grange	48a. 0r. 25p.	1,147
	Loughgur	14a. 2r. 37p.	422
	Patrickswell	8a. 0r. 11p.	54
	Do.	5a. 2r. 36p.	54
	Carnane	54a. 1r. 24p.	1,066
	Moorestown	31a. 0r. 0p.	800
	Leckanagoneehy	24a. 3r. 35p.	116
	*Carrigeen	20a. 0r. 0p.	425

* In these cases the Rural District Council are the Trustees (Section 18 of the Irish Land Act, 1909).

County.	Townland.	Area.	Purchase Money.
Meath	Thomastown	18a. 0r. 33p.	£ 406
	Galmoystown	18a. 2r. 30p.	377
	Johnstown	18a. 1r. 0p.	415
	*Deerpark	38a. 1r. 10p.	1,005
	Bellany	21a. 0r. 30p.	303
Roscommon	*Termon	49a. 0r. 35p.	2,800
	Clonskert	73a. 0r. 4p.	} 360
	Cloncah	13a. 2r. 0p.	
Westmeath	Ardillon	22a. 0r. 10p.	505
	Macestown	48a. 0r. 16p.	520
	Battstown	7a. 0r. 24p.	264
	Killulagh	11a. 3r. 20p.	388
	*Knockdomney	28a. 2r. 12p.	} 861
	*Killeenboylegan	8a. 1r. 24p.	
	*Ballyvade	13a. 3r. 0p.	339

* In these cases the Rural District Council are the Trustees (Section 18 of Irish Land Act, 1909).

I see in this list that there are only five plots that the Rural District Councils have taken advantage of. I take it the others are all private plots?—That is so.

32884. I see there is one in Deerpark in Meath?—Yes.

32885. It seems to me high as regards price compared with the rest of them. Is that the Kells Rural District Council?—Yes. Mr. Campbell, the inspector who dealt with the scheme, is in the room, and, perhaps, if you addressed your inquiries as regards this particular plot to him he would be able to give you more direct information.

32886. Mr. WILSON.—You made it quite clear to us that the Estates Commissioners have no power in Class 1, mentioned in your statement, to come in and interfere—that the scheme is cut and dry before it is submitted to you at all?—That is so.

32887. Do you see any practical difficulty when an estate is broken up in giving you power to get these cow-plots?—I do. First of all, there would be the difficulty of compensation to be paid to the tenant for his interest in the plot proposed to be taken. Secondly, there would be the question of title. Before you can hand over to the trustees the cow-plots on a tenanted holding you would have to investigate the tenant's title, and in many cases the tenant's title is as difficult to investigate as the landlord's.

32888. Mr. WILSON.—Would not the fact that the land was being vested in the occupying tenant be *ipso facto* sufficient to qualify a man in the ownership in order to get compensation if a section of his land was taken for cow-plots?—Tenanted land is subject to two interests—the landlord's interest, that is the fee-simple, and the tenant's interest. It is the fee-simple interest that is sold and transferred under the Land Purchase Acts to the tenant, and that interest when vested in the tenant becomes a graft on to his tenant's interest, and before the Estates Commissioners could sell to another body any portion of that holding they would have to investigate the tenant's title, which in the course of the Land Purchase proceedings is never investigated. When a tenant purchases he gets the land vested in him in fee-simple, and he is registered as owner, but he is registered subject to any rights or equities that may affect the tenant's interest at the date of the advance.

32889. Mr. O'BRIEN.—That is the iniquitous thing. It is producing a lot of trouble?—The Statute of Limitations, of course, comes in, and under the recent rules of the Land Registry it is provided that, where twelve years have elapsed since a transfer for valuable consideration has taken place, the note on the Register, to the effect that the registration is "subject to rights and equities," is automatically discharged, the presumption, I assume, being that the person who paid over his money took care to see that the title was good, and who were encumbrancers.

32890. Is it not a fact that the Land Commission when settling rents go into the question of the tenant's interest?—Not as to title.

32891. No, but as to the money value of it?—I don't think that affects the landlord's interest.

32892. Mr. WILSON.—If you are able to vest the fee-simple of the land, which is a valuable consideration, in an individual tenant, I am not quite clear why you should not be able to give him the other valuable consideration, namely, compensation money for a cow-plot if a cow-plot was considered desirable?—The Commissioners can only place an annuity on the land for which they consider the land to be security. The advance they make to the landlord is for his interest. If they were to pay the exorbitant sums that are paid in some parts of Ireland for the tenant's interest, they could not possibly put an annuity on the land to repay that. It would not be security for such an annuity. The question of security comes in.

32893. The CHAIRMAN.—I think the position is quite obvious. The money for land purchase was provided only for the purchase of the fee-simple interest?—That is so.

32894. Mr. O'BRIEN.—When does the tenant become real owner—as soon as all the annuities are paid off and no sooner?—He is owner in fee-simple from the date of vesting the land in him, but it is vested in him subject to an annuity which runs for 68½ years, which annuity is similar to an ordinary charge, except, perhaps, that the Commissioners have more stringent methods for realising it if it is not paid.

32895. And if there is a plan of campaign throughout the country?—The annuities have been remarkably well paid by the purchasing tenants.

32896. What do the Commissioners mean by "untenanted land"?—Land that is not subject to any tenancy.

32897. Lady EVERARD.—Grazing ranches?—Yes.

32898. The CHAIRMAN.—Lands which are not in the occupation of an occupying tenant at the moment?—Yes.

32899. Mr. O'BRIEN.—Would you consider land untenanted that is held, say, by a village publican or grocer who owns a farm outside his village, and owns another one three or four miles away, on which he just puts cattle to graze, knowing nothing at all about it?—That would not be untenanted land.

32900. Why is that not untenanted land, because the herd cannot be said to be occupying it. The herd is not occupying the land, and the man himself has not a house on the land at all?—Untenanted land, for the purposes of the Land Purchase Acts, means land in the occupation of an owner which is not subject to any tenancy, or which had not already been sold under the Land Purchase Acts. In the case you mention the man might not be in physical occupation, but he is in legal occupation.

32901. So far as I can make out, if, for instance, I hold land which is not demesne, and which I farm, that is considered untenanted land; but if the village gombeen man owns a farm in that sort of way, it is not considered untenanted land.

The CHAIRMAN.—It is not necessary that you should own a publichouse in a village to obtain a tenancy in the land.

Mr. O'BRIEN.—I know that there is a whole district from my place at Ardagh to Askeaton where

there are hundreds of acres of land owned by different people. There is a doctor living down in Newcastle, or somewhere beyond there, and a brother of his has a farm near me. He does not farm the land at all. These are a few samples—farms that have come in through marriage and that sort of thing, and the majority of them have belonged to the people for a considerable time, but for all intents and purposes they are untenanted land. The Estates Commissioners cannot acquire these?—They can be acquired voluntarily, and in some cases compulsorily.

32902. For the purpose of acquiring them compulsorily you would have to get somebody to represent that he or his grandfather had been evicted from a particular portion of the farm?—In addition to acquiring land compulsorily for evicted tenants, it is possible to acquire lands compulsorily for the relief of congestion.

32903. The CHAIRMAN.—Would the necessity of a cow-plot be a purpose for which the Commissioners would feel justified in acquiring land compulsorily?—That question has not arisen.

32904. If there was a scheme adumbrated for dealing with the milk difficulty in that district to which Mr. O'Brien has referred, and if these lands are in the occupation he describes, not subject to any occupation interest, and in the fee-simple ownership of their present occupants, would the Commissioners think it one of the purposes for which land should be acquired compulsorily to provide cow-plots in that district?—Well, that case has not been considered.

32905. I quite believe it has not, but it arises out of what we have been discussing?—Yes.

32906. I quite recognise that it is unfair to ask you to give an opinion in a case of that kind, where there is no precedent governing it. So far as you see, it is not absolutely outside the range of possibility?—No.

32907. That is quite as far as we can go?—Yes.

32908. Mr. O'BRIEN.—You have the power of migrating people to relieve congestion?—Yes.

32909. Is that your business or the business of the Congested Districts Board?—The Estates Commissioners do a great deal of migration. Migration is a term that is sometimes not quite understood. People think it is taking a man from one county to another. That we do, but we also carry on a system of migration which is most beneficial to people on an estate. Take an estate where portions of the tenanted land is congested, in that case we take out one of the tenants and give him a new holding on untenanted land, and his previous holding is divided up into enlargements for the small holders in the district.

32910. Does the farmer who gives up his holding get compensation for disturbance?—We give him compensation in this way—we give him a good holding and build him a house.

32911. Can you migrate people from another part of the county on to that so-called untenanted land I have been speaking of?—Yes.

32912. And you could acquire it compulsorily for that purpose?—The two purposes for which the Commissioners can acquire land compulsorily are, the reinstatement of evicted tenants, and to migrate tenants or enlarge their existing holdings.

32913. Lady EVERARD.—For the relief of congestion?—Yes.

32914. Mr. O'BRIEN.—The whole object is to try to get each tenant on what is called an economic holding?—Yes.

32915. And, therefore, if you find up in the hills towards Kerry, or somewhere there between Limerick and Kerry, a number of small holders, you can take them down and put them on to this untenanted land?—We can. What we do, where possible, is to take a strong farmer—a man not in the occupation of an uneconomic holding at all, but of a good big holding. We give him as good a holding as he had, if not a better one than he had, and we distribute his old farm amongst the smaller men.

32916. Sir STEWART WOODHOUSE.—That is a voluntary agreement. The strong man cannot be put out compulsorily?—The Commissioners have no power to do that.

32917. Mr. O'BRIEN.—Further on in your précis of evidence you say, "The provisions which enable the Estates Commissioners to provide 'cow-plots' are those comprised in Section 4 of the Act of 1909, and Section 18 of the Act of 1909. These Sections provide that advances may be made to trustees, i.e., (a) private

individuals approved by the Estates Commissioners, or (b) the Department of Agriculture and County and Rural District Councils, for the purpose *inter alia* of pasturage, and such trustees shall hold the land subject to a scheme for the users thereof." And the Estates Commissioners lay down conditions about the use to which such land is to be put and the penalties?—These conditions are embodied in a scheme—the scheme relating to the lands at Oldeastle, of which Father Barry is one of the trustees, has been referred to, and I hand in a copy of the scheme under which he acts.*

32918. The CHAIRMAN.—We heard all the details of this scheme from Father Barry himself, and we are very glad to have an actual copy of the scheme under which these lands have been vested in him.

32919. Mr. O'BRIEN.—In the case of Athenry, would it have been possible for the Commissioners, when giving the land to the fifty or sixty people, to state that they should keep on each allotment a minimum of one or two milch cows, or whatever the number might be, for the purpose of the sale of milk to the inhabitants of the town?—No; where land is, as in the case of Athenry, sold in fee-simple to the allottee, the Commissioners have no power to direct how the land is to be used.

32920. That land was thrown in by the goodwill of the Estates Commissioners to enable the town tenants to purchase their town holdings?—Yes.

32921. You have no power under your existing Acts to sell villages only in exceptional cases?—The Commissioners can make advances on the security of the sites, but as the site occupied by a house is very small, the amount of their advance is generally lower than the amount that the owner of the house requires, and the difference would have to be lodged in cash, and that is a stumbling-block as regards the sale of holdings in towns or villages, unless the occupier is also in occupation of an agricultural holding. We have had a number of cases where a resident in a town or village has a farm outside, and by consolidating both for the purposes of security it has been possible to include the holding in the town in the estate for sale.

32922. You have no power to see that they must use the land for certain purposes?—No; we have no power to interfere with the user of the land, save that, if he sub-lets or sub-divides it, the Commissioners have statutory powers to put the holding up for sale.

32923. You say, "I am not aware of any other statutory provisions enabling the local authority or other bodies to acquire land compulsorily or by agreement for cow-plots." Would they not have the power under the Labourers Acts?—Well, under the Labourers Acts they can acquire a plot of ground not exceeding an acre, and that is to be used for the purposes of the Labourers Acts, namely, as an appurtenance to the cottage, and, of course, it could be used as a cow-plot. I should imagine, though, the acre would be too small.

32924-5. Is there not some provision that these plots are to be tilled?

The CHAIRMAN.—That is a condition imposed by the local authority. There is nothing statutory in it?—You are a better authority than I am on the Labourers Acts, Mr. Chairman.

32926. Mr. O'BRIEN.—If there was a demand for labourers' cottages in a certain district, and you thought it well, instead of scattering these cottages, to place, say, ten of them together, you would have a plot of ten acres?—Yes, that is so.

32927. And ten acres would carry enough cows to supply more milk than the labourers at present can do?—That is so. Of course, the Land Commission do not administer the Labourers Acts. That is a matter for the Local Government Board.

32928. When you say, "I am not aware of any other statutory provision enabling the local authority or other bodies to acquire land compulsorily or by agreement for 'cow-plots,'" does that mean that you have not got anything to do with the Labourers Acts?—I meant that to be a general statement.

32929. What I suggest is that it would be possible under the Labourers Acts to acquire land compulsorily and group the cottages together?—I don't know, perhaps, enough about the Labourers Acts to definitely answer that question, but I always understood that each plot was to be separate.

32930. The CHAIRMAN.—They don't hold them in common or rundale.

Mr. O'BRIEN.—Can you acquire land as a commonage for these ten cottages?

The CHAIRMAN.—It is not at all possible. There is no such statutory power.—Before I made the statement which Mr. O'Brien has quoted, I made inquiries as to whether there were any other enactments under the Public Health Act or otherwise that would enable a local authority to acquire land, so that I might make a suggestion to your Commission, but I have been unable to ascertain any enactment but the one I have quoted.

32931. I think your statement is quite correct. So far as I know, there is no power conferred on any authority for the purpose of vesting land or dividing land except what is conferred on your Commissioners and on the Congested Districts Board?—Yes.

32932. Lady EVERARD.—I have seen in that scheme of Father Barry's that there is no right to till the land. It must be kept in pasture?—The Act of Parliament says it is for the purpose of pasturage.

32933. Pasturage would include hay?—I don't think it would include mowing.

32934. I thought in County Limerick we heard of one plot which had been got there, and they were not able to get sufficient cows to put on it?—I am aware of one allotment in County Limerick where the local authority has not submitted a scheme, and the Estates Commissioners have asked them to name a day on which it would be convenient for them to hand back the land to the Commissioners.

32935. This one I am referring to is in working order, but they could not get enough of the right class.

The CHAIRMAN.—The trustee was the gentleman who was before us, and he told us that as they did not receive applications from residents in the district for the purpose of pasturing cows, he and his co-trustees had put cattle on the land in order to pay the purchase annuity. They did this to prevent the land going derelict and to raise money to discharge the annuity?—That is what happened in that case.

32936. There was nothing to suggest that there was a misuse of the plot. This gentleman who was examined before us was most anxious to utilise the land for the purpose for which it was given?—My recollection is that the scheme to which you refer provided, that in the event of the labourers not making applications or not having cows, the trustees should let the land to other parties at the prevailing rate for grazing, and that any surplus that would accrue to the trustees, over and above the annuity payable to the Land Commission, should go to a fund for improving the land or indemnifying themselves from loss.

32937. So far as I know, in that particular instance every effort was made for the purpose of devoting the land to the purpose for which it was reserved, and one can well understand that while for a year or two it might not be possible to get people with sufficient capital to purchase cows to graze on that land, circumstances may arise that would alter the

financial position of people, and the trustees may be afterwards enabled to find sufficient co-operation to have the original intentions literally carried out?—That is so.

32938. Mr. WILSON.—From your knowledge of the work of the Estates Commissioners in practice, is there anything that you would suggest to us as a recommendation that we might put in our Report to facilitate the development of these cow-plots?—Well, I don't think I have any suggestion to make.

32939. You think the existing powers are as wide as they should be?—They might be enlarged to enable the parties to mow the land and to till portions if they should find it necessary.

32940. The CHAIRMAN.—That is a very dangerous suggestion to make?—Perhaps so.

32941. I don't think we could aim at securing a sufficient quantity of land that would grow roots and other crops to keep up a winter supply. I think we should be gratified indeed if we were able to secure that the labourers in certain districts, who may be able to purchase cows, might find land whereon to pasture them. For my part, I am quite satisfied that you have made it perfectly clear to this Commission that your Commissioners have nothing but the kindest intentions with regard to this particular work, and where local desire is manifested to have land reserved for this particular purpose you offer every facility for that being carried out?—Yes, of course, having regard to our obligations.

32942. You must have regard to the other obligations that you are bound to discharge?—Yes.

32943. I have practical knowledge that within the past week in my own county (Dublin), where an estate has been divided, your inspector asked the local people whether they wanted portion of the land reserved for this purpose. The gentleman who was making local representations told me of this fact, and I said, "Did you reserve the land?" and he said "No." I said "Why?" and he replied, "Because there was no necessity for it." He then satisfied me that there was no immediate necessity for it. I only mention that as a practical instance to show that your inspectors are co-operating with local opinion, and that wherever a desire is shown that the land should be reserved for the particular purpose we are discussing, the Estates Commissioners offer no objection?—That is so.

32944. So far as I am concerned, I think you have made the position of your Commissioners absolutely clear. You are good enough to bring with you one of the Commissioners' Inspectors to give us any further information that may be desired; but I think you have made the position perfectly plain, so far as I am concerned, and I don't think we need trouble him. I feel we have got a clear and explicit exposition from you as to what is the policy of the Estates Commissioners as regards this particular work?—Thank you, Mr. Chairman.

Mr. DAVID PRENTICE, M.R.C.V.S., examined.

32945. The CHAIRMAN.—We know, Mr. Prentice, that you are a practising veterinary surgeon, and that you are at present engaged in one of the leading positions in connection with the Veterinary Branch of the Department of Agriculture?—Yes.

32946. I am aware that your responsibilities as Superintending Transit Inspector in the Veterinary Branch of the Department are very wide and very large?—Yes.

32947. You know that the main purpose for which this Commission has been appointed is to inquire into an alleged shortage of milk in certain districts and the causes responsible therefor. With that branch of our inquiry we need not trouble you, but there is the other question which comes within our sphere, and that is the health of the live stock, and what are the best means of ridding the country of the diseases to which the live stock are subject. One of these is tuberculosis. If you have any views on that particular question that you think would be helpful to this Commission in preparing its Report we should be very grateful if you gave them to us?—Might I say that some time ago the Irish Department of Agriculture, in consultation with the English Board of Agriculture, were about to issue an Order dealing with the question of tuberculosis, in so far as it referred to cattle which were emaciated from tuberculosis, or which showed indications of what

may be regarded as tuberculosis of the udder. The English Board had their Order drafted; so had the Irish Department. The Order would have cast a responsibility on the local authorities to slaughter animals which the veterinary inspectors of the local authority under the Diseases of Animals Acts considered were affected with tuberculosis of the udder or with general emaciation as a result of tuberculosis. I cannot go into the question of what has delayed that Order, but still it is quite apparent that it is not defunct. Then the Local Government Board, as, doubtless, you are aware, have a provision in the Tuberculosis Prevention Act, 1908, which authorises them to appoint veterinary surgeons, which, I may say, are practically independent of the local inspectors under the Diseases of Animals Acts. The Local Government Board consulted with my Department when these gentlemen were being appointed to this office—that is the position of veterinary inspector under the Public Health Acts, and at that time an arrangement was, I may say, in progress with regard to giving the Department's own inspectors a kind of supervision over the work of the Local Government Board inspectors. They are known as veterinary inspectors under the Sanitary Veterinary Officers' Order, I think. That arrangement with the Local Government Board never came to very much, and I don't think it would work very well in the absence of proper authority

to the Department's inspectors from the Local Government Board. It would not, after all, be a satisfactory arrangement to have the officers of my Department attempting to control the work of officers over whom they had no control. The Local Government Board have inspectors appointed under the Sanitary Veterinary Officers' Order, and the Department does not interfere with them.

32948. Do you think, Mr. Prentice, that it is humanly possible to have efficacious administration and absolute uniformity and co-ordination of the work if one veterinary officer is under the control of the Local Government Board and if another is under the control of the Department of Agriculture?—Might I say, first, that the Local Government Board and my Department work most amicably together. There is not a scintilla of friction between the two bodies, but at the same time I don't think that any proper or satisfactory arrangement with regard to diseases of animals can be hoped for where you have a scheme of dual control—where you cannot say that Board is responsible or this Board is not responsible. You must, to my mind, have an arrangement by which one Board will be responsible for diseases in animals.

32949. Lady EVERARD.—By the veterinary inspectors you speak of you mean the officers appointed by the County Councils or the District Councils?—Under the Tuberculosis Prevention Act of 1908, as, doubtless, you know, the officers appointed in that case are appointed by the District Councils. They are appointed under the Public Health Acts.

32950. Where they are appointed?—Yes, but in the case of veterinary inspectors under the Diseases of Animals Act, they are appointed by the County Council or the Borough Councils as the case may be. That is the distinction between them so far as their governing bodies are concerned.

32951. The CHAIRMAN.—One knows quite well from a knowledge of local administration in this country that many of the local bodies have only appointed officers at nominal salaries, and that it is perfectly unreasonable to suppose that the duties entrusted by the various Acts to these officers for administration can be efficiently carried out on the salaries they receive?—That is so.

32951A. And may I also direct your attention to this, that at the present time there is a certain amount of overlapping in the work of the officers appointed under the different Acts to which you have referred, and what I would like to get from you would be an expression of opinion as to whether there should not be a co-ordination of the work under the different Acts, and whether officers should not be appointed as whole-time officers at a salary which would secure their independence, and enable them to discharge efficiently the duties which would be entrusted to them?—Well, I would not like to throw any reflection on the existing officers of local authorities; in fact, there is nothing further from my mind, but I do feel that a man who is responsible to local masters has not the independence of a man who has no such responsibility.

32952. Of course, it is also absurd to suggest that the appointment of a professional man at a retainer of £20 a year to carry out the supervision of a large rural district in which dairy farming is carried on, means that that work cannot be efficiently done?—As long you mean, as he has, so to speak, a local consideration.

32953. I am talking of the remuneration he receives?—It is unreasonable and difficult to understand.

32954. We need not go into that, but we can bring our common sense to bear on the fact that if a man receives £20 a year for work which, if properly carried out, would occupy the greater portion of his time, he has no great incentive to discharge his duties efficiently?—I don't see how you can expect the inspectors to do the work in the circumstances. Perhaps I may mention in this connection that the Department, for the purpose of getting an idea more than anything else of the amount of tuberculosis of the udders and of general emaciation in cattle on account of tuberculosis, issued a Notification Order in the early part of 1910. The effect of that Order was to require any person having or owning an animal, if he thought it was suffering from tuberculosis in the udder, or was emaciated owing to tuberculosis, to report such a case to the police. The veterinary officers appointed under the Public Health Act are required to deal with cattle of this kind. A goodly number of cows were reported when the Order

first came out, but they have gradually fallen off. I cannot think that the number of tuberculous cows reported to us under that Order at all approaches the total of those cases that exist. The Order required nothing but notification. The owners of animals who had reported these cows at first seemed to have thought they would be compensated if the animals were destroyed, and they reported far more frequently than they do now. I am not prepared to say in how many cases compensation was given, but very probably half a dozen would cover it. The Order came into force on the 14th February, 1910, and up to date the total number of cows reported have amounted to 592. I cannot think that this number at all approaches the total of these cows in existence.

32955. Mr. WILSON.—I think we would be all inclined to agree with you there?—Yes.

32956. Lady EVERARD.—Under the Local Government Board General Order, paragraph 4 (5), it is stated that the veterinary surgeon is required to report cases of tuberculosis of the udder, or indurated udders, etc., to the Department of Agriculture. In every case where I brought that paragraph under the notice of veterinary surgeons who were examined before us, they had never heard of it?—Might I say that the clause was put into that Order at the suggestion of my own Department, with a view of giving the Department an idea of where this disease existed, and also for statistical purposes.

32957. The CHAIRMAN.—And then you have the disadvantage of dual control, because the veterinary officer knows that his appointment, which he holds under the local body, is subject to revision and control by the Local Government Board rather than by the Department of Agriculture, and says, "I don't recognise any outside authority"?—Yes. I cannot see how it would work with satisfaction. How could you control any man that you had no control over.

32958. Mr. WILSON.—One of the suggestions we have been discussing with a view of getting over that was a proposition that the veterinary service should be controlled by an *ad hoc* committee or council, or call it what you will, on which the veterinary authorities of both the Department of Agriculture and the Local Government Board would be represented, and, perhaps, also the Royal Veterinary College—that there should be a veterinary committee as it were with the executive left no doubt in the hands of the Local Government Board as the executive authority of the country, but that the veterinary services of both the Departments should be to a certain extent unified?—I think you would have a clash of authority which would be very detrimental.

32959. Mr. O'BRIEN.—What would your suggestion be. If you were King of Ireland how would you arrange it?—I don't know. I am afraid you are giving me a big order.

32960. The CHAIRMAN.—I take it there is one point on which we have a definite expression of opinion from you, and it is this, that it is certainly not conducive to efficient administration, nor to the beneficial discharge of the duties imposed upon veterinary officers and others who may hold positions under the various Acts, that one set of officials should be responsible to one authority, and another set of officials be independent of them and responsible to and governed by another authority?—I agree.

32961. Co-ordination of some kind is necessary in order to secure efficient administration?—I believe so.

32962. You have experience of one side of the administration. I only wanted to know whether you, from your knowledge of the side of the administration that comes under your purview, entertain the feeling that it would be desirable to procure co-ordination?—I certainly do.

32963-4. Lady EVERARD.—We have had evidence in some parts of Ireland that fifty per cent. of the cows were suffering from tuberculosis. We have had the most startling evidence all over Ireland on that point?—I daresay, but it is very hard to come down to an absolute figure.

32965. The CHAIRMAN.—Do you believe that the tuberculin test is a fairly reliable one?—It is certainly the best test we have.

32966. And speaking generally, the number of cases in which it would give unsatisfactory or delusive results would be comparatively small?—Yes, and I

may remark, even where you have reaction from tuberculin, you might destroy the animal, and make an examination afterwards and find no traces of tuberculosis, but the disease may all the time be in some gland which you did not examine. The test has been condemned because, on post-mortem examination, tuberculosis is not found; this is possibly due to the fact that a sufficiently minute examination of the carcass is not made.

32967. Mr. WILSON.—You have clearly stated your opinion that co-ordination of work as between the various veterinary officers throughout the country is wanted, and you made it equally plain that you agreed that local officers at the present time under the Public Health Acts could not carry out their work properly at the present rate of payment and under present conditions. Failing your approval of the suggestion I made a while ago, of the veterinary service being managed by a combined committee, what alternative is there. Would you approve of an independent Veterinary Board, and make it, as it were, a State Veterinary Service?—No. I hold the question of tuberculosis as a disease is a matter to be dealt with by the Department.

32968. Lady EVERARD.—Would you recommend that tuberculosis be made a notifiable disease?—It is a notifiable disease at the moment, but no further action is taken. As I mentioned at the start, the Department had an Order drafted, and so had the English Board. The English Board controls the question of animals in Great Britain, and the Department in Ireland.

32969. The CHAIRMAN.—And the English Board very largely in Ireland also?—Our Order was the same as the English Order. At present there is a Bill again going before Parliament. In its memorandum it has this provision: "The Board of Agriculture and Fisheries propose to issue an Order under the Diseases of Animals Act, 1894, dealing with tuberculous cows, and providing for the payment of compensation in case of slaughter by the local authority. The Treasury are prepared, subject to the assent of Parliament, to sanction the payment from the Exchequer of half of the net amount paid by way of compensation for a period of five years." Personally, I don't think any crusade against tuberculosis in animals will at all meet with success unless there is some inducement to owners to report animals, and until they know that they will not sustain a loss by doing so.

32970. That is the view that has been driven home to the minds of most members of the Commission by the expressions of opinion given before us, and unless some means is devised of inducing the owners to give notification at the earliest possible moment, no matter how strict the supervision may be, it will be impossible to determine accurately where the danger arises until it is too late?—I believe that to be the case.

32971. Lady EVERARD.—It has also been pointed out to us that it would be a great assistance to the inspector, even under the present conditions, if he were in a position to say, "I cannot help reporting you, because the inspector will come down, and he will be down on me if I don't do my work properly"?—There is no question that supervision over a man is a great advantage.

32972. The CHAIRMAN.—You have already dealt with that question, because you have pointed out that unless the veterinary inspector is made independent he cannot do effective work?—Yes.

32973. Lady EVERARD.—The Bill from which you read the Clause has not got the first reading?—This is Mr. Burn's Bill, and it only refers to England. The original draft of the Order, which was prepared by the English Board ten years ago, had reference to compensation solely out of the local rates.

32974. The CHAIRMAN.—And no contribution from the Treasury?—At that time, none; but we found in dealing with pleuro-pneumonia, that local authorities are unwilling to slaughter, simply because they are unwilling to pay.

32975. And unless the State makes a contribution you cannot hope to have the matter dealt with from a national point of view?—No.

32976. Mr. O'BRIEN.—You think the fact of the State paying half would be a sufficient contribution?—The old question of half a loaf comes in. Our experience in dealing with diseases in animals is this,

if you want success you must give a man the proper market value for his animal if you destroy it, and our experience also is, where that compensation to any large extent has to be collected locally—as it were, from the ratepayers—you find one body acting one way and another body taking quite an opposite point of view.

32977. No uniformity?—No. Take the case again of pleuro-pneumonia. I don't believe if we had been working under the old plan of compensation by local bodies we would have been done with it now.

32978. Mr. WILSON.—Here, for example, in the Milk and Dairies Bill—Clause 2, Section 1, it is stated—"The Medical Officer of Health for any Sanitary district shall have power at all reasonable hours to enter any dairy situate within the district and inspect the dairy and the person employed therein, and, if accompanied by a veterinary inspector or some other properly qualified veterinary surgeon, to inspect the cattle therein"?—Might I ask why the medical officer is at all referred to in that connection?

32979. I have not the least idea. It is not only an indignity upon the veterinary profession, but in Ireland it mixes up the ordinary "vet." with two sets of veterinary service, and the whole thing appears to be anomalous in the last degree. The veterinary surgeon goes to inspect sheds, and at the same time he is not entitled to advise or even examine the whole of the cattle. That has to be done by the other Department.

The CHAIRMAN.—It is perfectly absurd. It is neither economy nor efficiency?—I don't think it is efficiency.

32980. Mr. WILSON.—You have not thought out a scheme?—No, I don't suggest a scheme.

32981. With regard to these 592 cows that you told us of, I think you stated that in only five or six cases was compensation paid?—Only in a very small number of cases, and these, I think, were dealt with in the beginning.

32982. So that at any rate one knows from what you have told us that these animals were in the country, they were visibly and clinically wrong; they were dangerous to the public health and to the animals next to them in the cow-sheds, and they went on contributing their share of disease?—Yes; some of them were slaughtered by the owners themselves, in the expectation that they were going to get paid for them. They got a rude awakening, and they did not do it the next time.

32983. Sir STEWART WOODHOUSE.—They were all slaughtered—these 592 cows?—Oh, no.

32984. Mr. WILSON.—So that these dangerous animals that you were able to discover by a simple method of notification were not eliminated from the milk supply, by reason of the fact that your authority were not in a position to offer proper compensation?—So far as we were concerned; they were only notified for statistical purposes.

32985. If tuberculosis were made a scheduled disease under the Contagious Diseases Act would it come under your purview?—Yes.

32986. The CHAIRMAN.—In your opinion the State must come in with some contribution if the work is to be efficiently carried on?—Yes. It has been our experience that where the State did not come in it was a failure.

32987. Lady EVERARD.—You can understand that it is hard for a small farmer who has five or six cows to be compelled to notify the public authorities when his animals have tuberculosis?—Under the present conditions really it casts a ban on a man if he reports he has a cow affected with tuberculosis. Let us suppose he is a dairyman. Nowadays his customers would fall off, and not only is he punished so for reporting the disease, but at the same time he is no better off. The animal reported is left there.

Mr. WILSON.—A premium is put on his remaining in a state of blissful ignorance.

32988. Sir STEWART WOODHOUSE.—Supposing there was no veterinary service in Ireland at all, what would you consider the best form of veterinary service to institute—I mean as to the appointment of veterinary inspectors by a central board, or by County Councils for the county as they are at present?—Well, I believe in central control. That is if you want uniformity. Of course, in many countries where they have a veterinary service, and where there are large pro-

Mr. DAVID PRENTICE.—14th December, 1912.

vinces to deal with, yet there is central control when you bring it down to bed-rock. Although the various provinces of France have their veterinary services, you have them under State control.

32989. Therefore, you are inclined to favour the idea of veterinary inspectors appointed as at present, but with their present salaries increased?—Yes.

32990. And controlled and uniformity of procedure secured by a central body?—Yes, in the case of the Diseases of Animals Acts.

32991. Lady EVERARD.—If tuberculosis were a scheduled disease, the veterinary inspectors would come under the Department. They would be appointed by the Department to carry out the Diseases of Animals Act?—In our proposed Order the work was to be done by the local authorities' inspectors—that is to say, the inspectors appointed by the Local Authorities under the Diseases of Animals Act, and whose tenure of office may be determined by the Department. That control would be over any officer appointed under the Diseases of Animals Act. The Local Government Board have that same control over their veterinary inspectors, I assume.

32992. The CHAIRMAN.—But one knows quite well that any central authority controlling a service under which a man is paid £20 for doing work which represents certainly hundreds rather than tens, could not expect, and ought not to expect, full and efficient discharge of duties for a salary of that kind?—It is unreasonable to expect it.

32993. It could not be done. No public Department would be supported in enforcing rigid attention to duties for such a miserable stipend as that.

Mr. WILSON.—Here is another Clause in the Bill to which we have already referred. "The Local Government Board may by Order require the Council of any County, Borough, or Urban District to appoint, or combine with another such Council in appointing, for the purposes of this Act, one or more veterinary inspectors, or to employ for this purpose any inspector or officer appointed by the Council under the Diseases of Animals Act, 1895." That suggests that the Bill appears to contemplate the idea at the back of your mind.

The CHAIRMAN.—I don't think any sane person could contemplate anything else.

The Commission then adjourned till the 23rd December.

SIXTY-SECOND DAY.—MONDAY, 23RD DECEMBER, 1912.

The Commissioners met at No. 5, Upper Castle Yard, Dublin, to consider some leading questions of the Draft Report.

SIXTY-THIRD TO SEVENTY-SIXTH DAYS.

The Commission sat in Dublin on 12th, 17th, and 18th February; 15th, 16th, 17th, 23rd, 24th, and 31st May; 6th, 20th, and 30th June; 1st September and 3rd October, 1913, to consider their Draft Report.

SEVENTY-SEVENTH DAY.—THURSDAY, 23RD OCTOBER, 1913.

The Commissioners met at No. 5, Upper Castle Yard, Dublin, and signed their Report.

APPENDIX A.

EXTRACT from an ARTICLE on the TALBOT MILK INSTITUTE by DR. A. JEFFREYS WOOD, in the *Australian Medical Journal* of 8rd February, 1912.

(Referred to in par. 12 of the Final Report of the Commission.)

One of the most important features of the Institute's work is undoubtedly the house-to-house visits of the Talbot nurses. These nurses are most emphatic in stating that the general cleanliness of the homes that have been visited in previous seasons is very marked, and that instructions given to one mother are nearly always passed on to neighbours, so that this educational campaign at the homes of the poorer mothers is already beginning to bear good fruit.

Nurse Calvert in reviewing her experiences as a Talbot nurse, says:—*Room*.—The baby is often in a small, close back room with all the windows shut in case the child should have any cold air blowing on it. The mother is afraid to put the child out in the fresh air lest it should catch cold; but if by any chance it is put outside, its face and body are covered up to such an extent that it gets very little air.

Clothing.—The baby is usually dressed in long clothes, the feet tied up in a flannel, and the body tightly bound up in a stiff binder. If the child is fortunate enough to be short-coated it usually has far too many clothes on it.

Bottles.—The bottles are usually seen half-full of milk lying on the kitchen table with flies walking on the teat. In many cases this milk is reheated for a second feeding. The long tube bottles are not as common as they were, but many mothers prefer them. (The Commonwealth authorities should prohibit their importation.)

Cases are not uncommon where the milk is heated at bed-time, wrapped in flannel and kept warm in bed for the baby to drink during the night, the mother being too lazy to get up and heat it.

Separate Cot.—It is the usual custom for the mother to take the baby to bed with her to keep it warm. Great difficulty is experienced by the nurse in getting the mother to put the child in a separate cot, basket or box during the night.

Comforters.—The mother usually puts the comforter into her own mouth before putting it into the baby's mouth. It is picked straight off the floor and put into the baby's mouth. These comforters are usually dipped in honey or malt, flies frequently come

to rest on them, dirt and fluff are frequently seen on them, and before the nurse's advent they are hardly ever boiled.

Feeding.—The custom is for the mother to feed the child every time it cries; the milk is heated and the tap water is run into the bottle to cool down the milk. The milk is often kept in the hottest part of the house with the meat and butter. Here the flies also seem to congregate. Mothers feed their babies with other things than milk; Kola beer and grapes in the case of one baby were followed by convulsions.

Bathing.—Many mothers are afraid that a daily bath will give baby cold. It is common for the bath to be deferred to 3 p.m. or later on this account.

The babies' soiled napkins are very often never washed, but dried before the fire. This is all pure ignorance, and once the error of such practices is pointed out to them the majority of mothers say, "I might have known that, but I never heard it before." There are a few who will never do as they are told. Many of the homes visited by the Talbot nurse are clean from the beginning, and have none of the faults previously mentioned. Many of these poor overworked women have no means of doing things as they should—no garden or verandah. Many of them live with their husband and family in one back room rented from a friend, and they live and eat and sleep in this room without any means of boiling the bottles. They are afraid of boiling these bottles lest they should break them, often saying, "If I break this bottle where am I to get another?"

One of the most gratifying things to a Talbot nurse after a few visits is to go to one of these homes and find the baby on the verandah or coolest spot available, clad in cool loose clothes, the bottle and teat lying in boiled water, and the milk in a sterilised bottle standing in the Talbot ice chest, and to hear that the baby is sleeping in a perambulator, box or dress basket instead of in its mother's bed.

The work done by the Talbot nurse is simply invaluable in educating mothers in their own homes, spreading everywhere lessons in cleanliness and the value of fresh air.

APPENDIX B.

INFANTS' MILK DEPOT, BATTERSEA BOROUGH COUNCIL.

(See par. 15 of the Final Report of the Commission.)

Information supplied by Dr. G. Quin Lennane, F.R.C.S., L.R.C.P., D.P.H., Medical Officer of Health, Battersea

BATTERSEA BOROUGH COUNCIL.

INFANTS' MILK DEPOT.

(1). Establishment.

The Depot was established in June, 1902, as the outcome of an inquiry by the Health Committee of the Council into the question of Infantile Mortality, the rate of which had been for the past six years as follows:—

1896	.....	176	1899	.....	161
1897	.....	161	1900	.....	159
1898	.....	165	1901	.....	163

A shop in a main thoroughfare in one of the poorest parts of the borough was taken and fitted up with machinery and appliances for the modification and sterilisation of milk at an initial cost of about £660.

† With rooms, coals, gas and electric light.

(2). Apparatus.

The machinery consists of a steriliser with a capacity for 650 bottles, a boiler, cooling tank, an electro-motor bottle cleansing apparatus, automatic bottle fillers, strainers, etc. Fuller details of the apparatus are given in the annexed list.

(3). Staff employed at Depot.

		£	s.	d.	
† Manageress	...	1	10	0	per week.
1 Assistant	...	1	3	0	do.
3 Assistants	...	1	1	0	do.
† Caretaker	...	0	12	6	do.

(4). Preparation of Milk.

The milk is supplied under contract as regards purity and quality, and on being received daily is stored in

an ice safe until ready for modification. It is modified into three mixtures, suitable to the requirements of the various ages of the children:—

- (a) Two parts water, one part milk, with a little cream, sugar and salt in suitable proportions. Lactose is used for very young children.
- (b) Equal parts milk and water, with cream, sugar and salt.
- (c) Two parts milk, one part water, with cream, sugar and salt.

The procedure in preparing the milk is as follows:—The milk is strained, then modified, and the bottles are filled from the patent fillers to prevent handling. Each bottle receives sufficient for one feed only. The bottles are then stoppered down, placed in the steriliser, and subjected to steam sterilisation for twenty minutes. After this, they are placed in the cooling tank until delivered to the distributing stations, of which there are two in addition to the central depot. These three stations bring the milk within comparatively easy reach of the inhabitants of each of the three registration sub-districts into which the borough is divided. A sufficient supply is handed to each customer to last 24 hours, the requisite number of bottles—each containing one meal—being placed in a wire basket.

(5). Charges.

	Per Week.
Up to six months	1/6
Six to twelve months	2/-
Over twelve months	2/6

(6). Management.

The primary object of the institution is to supply milk to weakly children whose mothers, from some physical defect or other satisfactory cause, are unable to nurse their children. Precautions are adopted to secure this object, the milk being supplied to applicants only on the recommendation of a medical practitioner. A card containing instructions as to the use

of the milk is handed to each applicant at the time of registration. After the applicant is registered, a visit is paid to the home by the Lady Health Visitor, and instruction is given as to the proper feeding, clothing and tending of the child, attention also being directed to the remedying of any insanitary conditions which may be found to exist in the house. The family history of the child is ascertained, and the mother is invited to bring the child regularly every week or fortnight to the weighing-room, which thus enables a more satisfactory supervision to be exercised over the children and their progress to be noted.

(7). Statistics.

Cost of Maintenance: 1904-5, £587; 1905-6, £509; 1906-7, £462. Average number of children fed:—per year, 800; per day, 200.

DEATH RATES.

Year.	General. per 1,000 pop.	Infantile. per 1,000 births.	Depot. per 1,000.
1901 ...	16.3	163	—
1902 ...	15.0	136	—
1903 ...	14.2	185	—
1904 ...	14.4	147	—
1905 ...	14.4	131	105.7
1906 ...	13.2	126	77.4

(8). Results.

As regards the results of this attempt to lower the rate of infantile mortality in the borough, the above figures will be found interesting. The statistics for the children fed on the Council's milk are the more striking when it is remembered that they do not constitute a normal population, many of them being more or less seriously ill commencing the milk. Since the year in which the Depot was established the rate of infantile mortality has steadily declined, with the exception of the year 1904, when, owing to unfavourable meteorological conditions, there was a high incidence of infantile diarrhoea. It is only reasonable to assume that part of this decline must be attributed to the Milk Depot.

APPARATUS.

			£	s.	d.
Steriliser (capacity 650 bottles) ...	Dairy Supply Co., Museum Street, W.C. ...	...	65	0	0
Bottle washing machine ...	Verity and Co., London ...	...	6	10	0
Bottle filler ...	Copin et fils, Havre ...	...	2	0	0
Bottle filler ...	Vipan and Headly, Leicester ...	...	4	10	0
Bottles ...	Barrow and Co., Mexborough (per gross) ...	...	0	11	0
Stoppers ...	Duke, Waring and Co., Wardour Street, W. (per gross) ...	...	0	8	6
Washers ...	Dunlop Rubber Co., Clerkenwell, E.C. (per lb.) ...	...	0	6	6
Baskets (9 bottles) ...	Duke, Waring and Co., Wardour Street, W. (per doz.) ...	...	0	18	0
Baskets (6 bottles) ...	Duke, Waring and Co., Wardour Street, W. (per doz.) ...	...	0	10	0
Bottle washing brushes ...	Jackson and Co., Liverpool (per doz.) ...	...	0	5	0
Refrigerator ...	Thomas Hall ...	...	42	0	0
Boiler ...	L. de Wyttenbach, 38 Torrington Square, W. ...	...	28	0	0
Cooling Tank ...	Gappe and Co., Southwark, S.E. ...	...	9	8	0
Thermometers (6) ...	T. A. Reynolds and Co., 180 Clerkenwell Road, E.C. (each) ...	...	1	1	0
Teats ...	Ingram and Sons, Hackney Wick (per gross) ...	...	1	2	6
Churns, etc. ...	Vipan and Headly, Leicester ...	...	4	0	0
Strainer (Ulux) ...	Vipan and Headly, Leicester ...	...	1	7	6
Filtering medium ...	L. Lumley and Co., Minorities, E.C. (per box) ...	...	0	3	6
Lactose ...	Evans, Sons, Lescher and Webb, Bartholomew Close (per cwt.) ...	...	2	15	0
Castor Sugar ...	Glebe Sugar Refining Co., Eastcheap, E.C. (per cwt.) ...	...	0	19	6
Ice ...	United Carlo Gatti, Stephenson and Slaters, Limited (per ton) ...	...	1	6	8
Milk ...	Contract (per gallon) ...	...	0	0	11
Cream ...	Contract (per pint) ...	...	0	1	3

APPENDIX C.

CREAMERIES AND INFECTIOUS DISEASE.

Statement handed in by Mr. J. L. Smith, Principal Clerk, Local Government Board, Dublin. (See Vol 3 of Evidence, page 169, Question 32672.)

CREAMERIES AND INFECTIOUS DISEASE.

One phase of the danger arising to public health from milk supply is deserving of special notice, as the attendant conditions, if not peculiar to Ireland, are of particular importance in this country. Allusion is made to outbreaks of enteric fever attributable to infected separated milk distributed from a creamery. The characteristic feature of these outbreaks consists in the contemporaneous occurrence of a series of cases of enteric fever spread over a wide area of rural district, in which the sole correlating circumstance is the connection of the patients with some creamery either in the relation of milk suppliers or through the consumption of separated milk.

There is, of course, nothing in the mechanical operations of a creamery which *per se* would tend to the propagation of infective germs. The creamery, by reason of the return of separated milk to its customers, merely serves as the vehicle for disseminating infection, when once the infective material has been introduced into the supply of milk. This latter result may come about in many ways, through the handling of

milk by an infected person (milker, carrier, or creamery employee), through storage of milk in an infected atmosphere (e.g., in a sick-room), or through the use of infected water for cleansing milk-vessels. Such specific infection might occur on the premises of an individual milk supplier, or in course of collection or distribution or at the creamery itself. But given the introduction of infection into a creamery milk supply, the germs pass into circulation (through the returned separated milk) over the entire area served by the creamery, and when the infected separated milk is used for dietetic purposes, then some inmates of households of creamery suppliers are liable to develop the disease with cumulative effects upon the volume of infection contained in the milk going to the creamery, unless, indeed, the patients happen to be immediately recognised and effectively isolated. In this way, a single case of enteric fever in the household of a creamery supplier is capable of originating a widespread epidemic, and therein, from a public health point of view, lies the great danger of creamery institutions.

LIST OF OUTBREAKS OF ENTERIC FEVER ATTRIBUTED TO INFECTED SEPARATED MILK FROM CREAMERIES.

(Prepared from the Reports and Records of the Local Government Board).

Sanitary District.	Dispensary District.	Approximate Date.	Number of Cases.	Observations.
1. Bandon	Bandon	August, 1893 ..	43	See article by Dr. Welply in "Lancet" of 21st April, 1894.
2. Tralee	Castleisland ..	October, 1893 to May, 1894.	700	Includes secondary cases, but Castleisland Creamery main centre of infection.
3. Killarney	Molahiffe	June, 1894, to Spring, 1895.	50	Ballinvarrig Creamery.
4. Tipperary	Bansha	September, 1894 ..	43	Rossadrohid Creamery.
5. Tipperary	Bansha	July, 1895 ..	20	Rossadrohid Creamery; all cases within a short radius of Creamery. None attacked except those who partook of separated milk.
6. Kilkenny	Tullaroan	October, 1895 ..	200	Early cases diagnosed as Typhus Fever or Influenza.
7. Callan	Callan			
8. Cork	Blarney	March, 1896 ..	8	Mourne Abbey Creamery.
9. Kanturk	Milford	September, 1896 ..	21	Liscarroll Creamery.
10. Mallow	Buttevant			
11. Croom	Castletown ..	October, 1896 ..	24	Creamery at Granagh. Mitchelstown Creamery. Closed 10th November, 1896.
12. Mitchelstown ..	Mitchelstown ..	October, 1896 ..	34	
13. Newcastle West ..	Ardagh	December, 1896 to March, 1897.	60	Primary case was sister of employee at Ardagh Creamery.
14. Rathkeale	Rathkeale			
15. Kilmallock	Ballyhea	June, 1897, to January, 1898.	42	First patient brought home from Mallow. Disease spread through Ballyhea Creamery.
16. Newcastle West ..	Feenagh and Broadford.	September, 1897.	28	—
17. Kanturk	Newmarket ..	September, 1897, to January, 1898.	39	Disease imported from Newcastle. Family first attacked supplied milk to Creamery.
18. Kanturk	Milford	December, 1897 to January, 1898.	25	—
19. Kanturk	—	May, 1898 ..	10	—
20. Newcastle	Feenagh	May, 1898 ..	10	—
21. Newcastle	Feenagh	November, 1898 ..	12	Feenagh Creamery.
22. Croom	Castletown ..			
23. Sligo	Carney	June to July, 1899	56	Ballinful Creamery. No pasteurising plant. Temporarily closed.
24. Ballyshannon No. 3	Kinlough	March, 1900 ..	30	Kinlough Creamery. Milk stored by customers in sleeping and living apartments.
25. Millstreet	Cullen	August, 1900 ..	30	Nohoval Creamery.
26. Killarney	Coom			
27. Mitchelstown No. 2	Galbally	October, 1900 ..	20	Myra Creamery.
28. Cavan	Arva	November, 1900 ..	52	Lossett Creamery.

Sanitary District.	Dispensary District.	Approximate Date.	Number of Cases.	Observations.
24. Nenagh ..	{ Newport Silvermines }	April, 1901 ..	40	Ballinahinch Creamery. Every patient had eaten bread made with separated milk.
25. Boyle No. 2 ..	Gurteen ..	September, 1901 ..	25	Outbreak ceased on temporary closure of Creamery.
26. Macroom ..	Clonmoyle ..	December, 1901 ..	18	
27. Callan No. 1 ..	Kilmogauney ..	December, 1901, to January, 1902.	16	Creamery closed 5th January. No cases afterwards.
28. Kanturk ..	{ Newmarket Kanturk }	March to April, 1902.	31	Newmarket Creamery.
29. Kanturk ..	Newmarket ..	May to June, 1902	10	Knockacommer Creamery. Infection imported from preceding outbreak.
30. Tipperary No. 1 ..	Cappagh ..	June, 1902 ..	22	Hollyford Creamery and Branch at Annacarty.
31. Listowel ..	Tarbert ..	{ May, 1903 .. November, 1903 ..	{ 11 42 }	Tarbert Creamery. Two outbreaks.
32. Mitchelstown No. 1 ..	Mitchelstown ..	July, 1903 ..	9	
33. Sligo ..	Cliffoney ..	November, 1903 ..	90	Milk-carrier, first patient. Ballin-trillick Creamery temporarily closed.
34. Limerick No. 1 ..	Cappamore ..	July, 1904 ..	24	Cappamore Creamery. No pasteurising plant.
35. Tipperary No. 1 ..	—	February to April, 1905.	10	
36. Charleville ..	—	August, 1905 ..	40	Ballyhea Creamery.
37. Omagh ..	Gortin ..	November, 1905 ..	72	Greencastle Creamery established 1904. First patient was attendant at Creamery.
38. Glin ..	Glin ..	January to May, 1906.	41	Pasteuriser not used.
39. Tralee ..	Castlemaine ..	February, 1906 ..	7	
40. Boyle No. 2 ..	Gurteen ..	July, 1906 ..	10	
41. Manorhamilton ..	Dromahaire ..	October, 1906 to April, 1907.	50	Dromahaire Creamery.
42. Manorhamilton ..	Manorhamilton ..	July to October, 1907.	44	
43. Manorhamilton ..	Dromahaire ..	September to December, 1907.	—	Thirty-six houses. Number of individual cases not ascertained.
44. Omagh ..	Gortin ..	October to December, 1907.	13	
45. Listowel ..	Tarbert ..	July, 1908 ..	—	Pasteurising plant not in use.
46. Manorhamilton ..	Manorhamilton ..	November, 1908 ..	79	Mainly Mullawn Creamery.
47. Manorhamilton ..	Dromahaire ..	December, 1908 ..	36	Fifty cases for year.
48. Kanturk ..	—	March, 1909 ..	16	
49. Thurles ..	Borrisoleigh ..	July, 1909 ..	51	Curraheha Creamery.
50. Nenagh ..	Toomevarra ..			
50. Tobercurry ..	{ Coolaney Tobercurry }	April to December, 1910.	60	Cursallagh Creamery suspected.
51. Enniskillen ..	Derrygonnelly ..	January, 1911 ..	26	Derrygonnelly Creamery.
52. Croom ..	Croom ..	May, 1911 ..	26	Banogue Creamery. No pasteurising plant.
53. Kilmallock ..	Bruree ..			
53. Tralee ..	{ Ardferd .. Tralee No. 2 }	April, 1912 ..	16	Tubrid Creamery. No efficient pasteurisation.

Place Distribution.

It is significant that in the earlier years these outbreaks were confined to a small number of districts in the Counties of Cork, Kerry and Limerick.

No such occurrence was noted in any district North of the centre line of Ireland until 1899. Thenceforward until 1905 the higher incidence in southern districts continued to be marked, although Boyle No. 2 and Sligo Rural Districts furnished creamery outbreaks in 1901 and 1903 respectively.

Since 1905, the larger proportion of these outbreaks has occurred in northern districts.

No doubt these features of distribution correspond with the growth and development of the creamery system, which had its origin in the South of Ireland, and thence spread to certain counties of the North.

The first authenticated creamery outbreak occurred in Bandon Union in 1893. This outbreak was a typical case, and is thoroughly representative of the class. Moreover, in this instance, it was found possible to indicate the precise mode in which infection was introduced into the milk supply going to the creamery.

It is, indeed, probable that outbreaks of the same kind had occurred prior to the Bandon case, but that in the absence of the explanatory idea their significance had not been appreciated. The Bandon outbreak was quickly followed by an extensive epidemic in the Castleisland Dispensary District of Tralee Union. This outbreak, if secondary cases be included, lasted practically a year, and, involving as many as 700 patients, constitutes a record in creamery outbreaks, which is never likely to be equalled in this country.

In Castleisland there co-existed all the circumstances which are calculated to foster the free operation of the infective agency of contaminated separated milk. The instrumentality of a creamery in connection with enteric fever outbreaks was a new idea in epidemiology, and was not at the time generally appreciated, the initial cases of the outbreak escaped observation, or, where medically attended, were regarded as influenza, patients were treated at home and in the houses of creamery suppliers without due precautions of isolation, etc., the inhabitants were poor, and freely used separated milk as an article of diet, the milk was produced and handled under the most unhygienic conditions; moreover, even when the disease came to be diagnosed as enteric fever, its source was ascribed to polluted water supply. The epidemic had been in progress for four months, before the facts were brought to the notice of the Local Government Board, but in March, 1894, the Board's Medical Inspector, Dr. Browne, after visiting the district, pronounced the disease as enteric fever, and pointed to the Castleisland creamery as the medium of infection. Steps were at once taken to suspend the operations of the creamery, and successful prosecutions were instituted against persons supplying milk from infected houses. These measures were quickly followed by a marked reduction in the number of new cases, and although occasional cases of a secondary character kept cropping up for some months, the epidemic incidence of the outbreak rapidly subsided.

The entire history of the Castleisland epidemic was subsequently reviewed in an exhaustive report by the

present Medical Commissioner of the Local Government Board, then a Medical Inspector, and his summary of conclusions may here be quoted:—

(1). "Between the 24th October, 1893, and the 30th of May, 1894, over seven hundred cases of enteric fever broke out in a rural district, where enteric fever had never before been epidemic.

(2). "The area of the milk supply to the Castleisland creamery and the area of the disease are almost co-terminous.

(3). "The creamery milk is the only food or liquid common to the whole diseased area, the water supply being numerous and from many different sources, and separate water sheds.

(4). "Within a very short time after the (primary) cases at K—, fever broke out almost simultaneously at different points supplied by the creamery milk, many of the cases being in no way connected with each other.

(5). "There are many instances in the earlier history of the disease, before the poison became so abundant that the tracing of its ramifications was impossible, showing that where persons used the separated milk from the creamery, they were attacked, while those not using it escaped.

(6). "The people of the town of Castleisland, who are not farmers, and who, as a rule, had few dealings with the creamery, escaped in a remarkable manner from the disease: this was especially noticeable in the poorer and most insanitary parts of the town."

The appearance of these outbreaks in recent years in the North of Ireland is, no doubt, an accompaniment of the extension of the creamery system. This fact was definitely noted in the case of the Greencastle creamery (1905), which had only been opened in the preceding year. On the other hand, the practical disappearance of creamery outbreaks from the great dairying districts in County Limerick goes to show that with increasing experience on the part both of creamery managers and of their customers in the working of the creamery system, the danger of fever outbreaks spread through separated milk may be greatly diminished, if not altogether eliminated.

It will be noticed that the districts in which creamery outbreaks have occurred in recent years have, in the main, been poor and backward districts. In these districts, there is risk of careless handling of milk, its storage in living-rooms, the dietetic use of separated milk, and the non-recognition or concealment of cases of disease. It is readily to be understood that poverty and consequent lack of knowledge offer exceptional facilities for the spread of infection.

TIME DISTRIBUTION OF ENTERIC FEVER OUTBREAKS RECORDED ON PREVIOUS LIST (Pages 191–192).

Approximate Date of Onset.	Rural Sanitary Districts affected
January	Glin, Enniskillen.
February	Tipperary No. 1, Tralee.
March	Cork, Ballyshannon No. 3, Kanturk, Kanturk.
April	Nenagh, Tobercurry, Tralee.
May	Kanturk, Newcastle (Co. Limerick), Kanturk, Listowel, Croom.
June	Killarney, Kilmallock, Sligo, Tipperary No. 1.
July	Tipperary, Mitchelstown No. 1, Boyle No. 2, Manorhamilton, Listowel, Thurles.
August	Bandon, Charleville, Millstreet.
September	Tipperary, Mallow, Newcastle (Co. Limerick), Kanturk, Boyle No. 2, Manorhamilton.
October	Tralee, Kilkenny, Croom, Mitchelstown, Manorhamilton, Omagh, Mitchelstown No. 2.
November	Sligo, Listowel, Omagh, Manorhamilton, Cavan, Newcastle (Co. Limerick).
December	Newcastle (Co. Limerick), Kanturk, Macroom, Callan No. 1, Manorhamilton.

The foregoing table goes to show that no period of the year has been entirely free from such outbreaks. Their frequency, however, has been decidedly less during the four opening months of the year, when creamery operations are curtailed on account of the restricted output of milk.

The sudden increase recorded for the month of May, coupled with the high figures for the two succeeding months, is a feature of considerable significance, seeing that it coincides with the spring expansion of the supply of milk and extends over the full working season of the creameries. The increase in May is especially noteworthy, as that period of the year is not one which is usually associated with any marked incidence of enteric fever, and the fact of such increase points to the operation of some exceptional influence.

The customary autumnal prevalence of enteric fever is reflected in the record for September and October, while the high figures for November and December may, with reasonable probability, be attributed to the holding over of milk and its storage in possibly contaminated surroundings consequent upon a failing supply in the early winter.

It may be added that no epidemics of either scarlatina or diphtheria have been found to be associated with separated milk from creameries, although both these diseases are known to be disseminated through the medium of whole milk.

The precautionary and preventive measures which the Local Government Board have from time to time recommended in dealing with local epidemics of enteric fever connected with creameries have been:—

(1). The adoption of the Infectious Disease (Notification) Act, 1889, and the Infectious Disease (Prevention) Act, 1890.

(2). The enforcement of the Dairies, Cowsheds and Milkshops Orders and the appointment of Inspectors thereunder.

(3). The prevention of the supply of milk to creameries from infected households.

(4). The issue of notices warning the inhabitants of the affected area against the use of separated milk for food purposes.

(5). The temporary closure of the creamery involved (in cases where the epidemic is extensive and protracted).

(6). The introduction and effective use of pasteurising plant at creameries.

The last-mentioned subject was specially investigated by the Board's bacteriologist, Professor E. J. McWeeney, and his report was circulated in May, 1903, to all sanitary authorities in Ireland. The principal recommendations were that all new milk received at creameries should be pasteurised, and that the temperature observed in the process should be 195 degrees Fahrenheit.

Butter.

Although perhaps not strictly relevant to the present inquiry, it may not be out of place to add a few remarks on the subject of butter.

The possibility of the spread of infection by means of butter from an infected source cannot be definitely denied, and such a contingency was viewed by the Local Government Board with some misgiving during the later 'nineties, when outbreaks of enteric fever connected with creameries were of such frequent occurrence in the South of Ireland. At that time, a suggestion was addressed to the Irish Government that a scientific investigation should be instituted with the

express object of elucidating the problem, whether butter could serve as a medium of infection, but this was not followed up.

No case has come to the knowledge of the Local Government Board in which creamery butter has been ascertained to be the vehicle of infection of enteric fever. This is the more surprising in face of the numerous instances in which creameries are known to have been associated with extensive outbreaks arising from the consumption of separated milk. These creameries were, no doubt, at the same time, disposing of their butter products, and although in the wide distribution of butter, there is doubtless greater difficulty in tracing out the relation of cause and effect, it is difficult to believe that, assuming that enteric fever is transmitted by butter, no positive instance should have come on record in this country. In the early part of last year, a case was brought under the Board's notice in which there were *prima facie* grounds for supposing that the consumption of creamery butter was accountable for a group of enteric fever cases in the North of Ireland. On inquiry, however, it was ascertained that the patients in the creamery area, from whom infection was believed to have spread, contracted and, in fact, developed the disease while absent at a holiday resort, and that the supply of milk from their residence to the local creamery had been discontinued two days before their return to the creamery area.

CONCLUSION.

The foregoing summary of the experience of the past nineteen years shows that the creamery system is

capable of acting, and continues to act, as a source of danger to the public health which cannot be disregarded.

That danger primarily has its origin at the premises of individual creamery suppliers through concealment of disease or non-observance of essential principles of cleanliness and hygiene.

Secondarily, the danger arises at the creamery premises through the failure to provide or make effective use of a pasteurising plant for the destruction of pathogenic germs in milk received for butter-making.

The remedies and preventive measures which should be generally adopted are :—

(1). Careful and systematic inspection of the premises of creamery suppliers in accordance with the terms of the Dairies, Cowsheds and Milkshops (Ireland) Order of 1908.

(2). Exclusion from the creamery supply of all milk from infected households, unless and until proper precautions are observed.

(3). The compulsory provision and use of pasteurising plant at all creameries.

(4). Power to close a creamery when found to be associated with an epidemic outbreak of disease.

Local Government Board, Dublin,
December, 1912.

Supplemental statement handed in by Mr. J. L. Smith.

MILK SUPPLY AND INFECTIOUS DISEASE.

Appended is a list of recent outbreaks of enteric fever which have with more or less certainty been attributed to an infected milk supply.

The following points may be noted :—

Frequency.—The rate of occurrence is about three per annum.

Incidence.—Greater in urban districts.

Causation.—Unreported or unrecognised cases

on dairy premises	...	...	7
Typhoid carriers	...	...	3
Polluted water supply	...	...	1
Obscure,	...	...	10

This summary indicates the great importance of notification in the prevention of milk-borne epidemics of enteric fever.

Notification is enjoined under the Infectious Disease Notification Act, but this is an adoptive Act, and does not apply universally to every sanitary district.

The obligation to notify infectious disease is specifically imposed on purveyors of milk by Article 14 of the Dairies, Cowsheds and Milkshops Order.

A similar duty is prescribed by Section 54 of the Public Health Act Amendment Act, 1907, but with wider scope, as it extends to every dairyman supplying milk within the district of the sanitary authority, and requires the notice to be given to the Medical Officer

of Health of the district in which milk is supplied from the dairy. The Act, however, is an adoptive one.

The main obstacle to the enforcement of the above-mentioned provisions lies in the circumstance that knowledge of the existence of infectious disease on the part of the dairyman, &c., is necessary to impose liability. There must therefore be wilful concealment in order to involve a penalty, and guilty knowledge is not easily proved in evidence.

Typhoid carriers present a problem of considerable difficulty. Under the existing law they are not subject to any disability, although they no doubt constitute a serious source of danger to public health, especially when engaged in the milk trade or the handling or preparation of food.

The number of outbreaks in which the primary source of infection cannot be satisfactorily traced illustrates the limited effectual operation of Section 4 of the Infectious Disease Prevention Act. That Section presupposes, as a condition of the prohibition of the milk supply from a dairy, the possession of evidence of infection obtained on an inspection of the dairy, but it will be seen that even after all practicable investigation the original cause cannot, in many instances, be positively determined.

It might be a solution of this difficulty if in any amending legislation power were given to a sanitary authority to suspend the milk supply from a dairy upon reasonable circumstantial evidence of infection arising therefrom.

Occasionally outbreaks of scarlatina and diphtheria, traceable to the milk supply, come under notice; they would average not more than two in the year.

[TABLE.

RECENT MILK-BORNE EPIDEMICS OF ENTERIC FEVER.

Year.	District.	Date.	Approximate number of Cases.	Observations.
1906.	Clonmel Urban ..	January-May ..	27	Origin obscure, but probably infected milk.
	Banbridge Rural ..	August-September ..	13	Unreported case in milk-vendor's family.
	Belfast Co. Borough	August-October ..	26	Ill-defined illness in milker. Widal test positive.
	Lisburn Rural; ..			
1907.		Nil.	—	
1908.	Dublin Co. Borough ..	September-December ..	140	Clontarf epidemic.
	Swinford Rural ..	October ..	49	Kiltimagh Convent School; Carrier in dairy premises.
	Enniscorthy Urban ..	November-December ..	17	Fever of a mild type, not clearly defined, probably enteric.
1909.	Londonderry Co. Borough	December ..	29	Origin of infection obscure.
	Castlebar Rural ..	March ..	15	Attendants of Lunatic Asylum attacked. Unreported case in family of Asylum milk contractor.
	Castlebar Urban ..			
	Carlow Urban ..	April-May ..	10	
	Fermoy Rural ..	March-September ..	27	Typhoid Carrier.
	Tralee Urban ..	November ..	13	Case of illness in milk-vendor's family.
1910.	Ballyshannon Rural ..	July-August ..	16	Bundoran; origin of outbreak obscure; milk suspected.
	Mallow Urban ..	November ..	22	Unrecognised cases in dairyman's family.
	Moirs Rural ..	December-March ..	39	Donaclooney, traced to Typhoid carrier.
1911.	Ennistymon Rural ..	January ..	18	Contaminated water used for washing milk vessels.
	Cavan Urban ..	January ..	9	
	Dublin Co. Borough ..	January-March ..	50	Two dairies involved. Origin obscure.
	Arklow Urban ..	July ..	23	Unrecognised cases in milk-vendor's household.
	Galway Urban ..	October ..	12	Unrecognised case in milk-vendor's family.
	Newry Urban ..	October ..	18	Patients supplied from one dairy, but cause of infection doubtful.
	Dublin Co. Borough ..	October-January ..	9	Source of infection doubtful.

APPENDIX D.

EXTRACTS from "REPORT on an INVESTIGATION as to the CONTAMINATION of MILK." Carried out on behalf of the Councils of the County Boroughs of Bradford, Hull, Leeds, Rotherham and Sheffield, and the Administrative Counties of the East and West Ridings of Yorkshire. (Pages 3, 4, and 78.)

(This Report was handed in by Dr. Harold Scurfield, Medical Officer of Health for Sheffield. Qn. 32618.)

1. The investigation clearly shows that serious contamination does take place, and to a great extent of a preventable character.

2. Cows' milk freshly drawn from the udder by ordinary methods contains bacteria. Such bacteria are more numerous in the "fore-milk" than in the milk given at a later stage of the milking process.

3. A very great increase in the number of bacteria in milk takes place whilst the milk is being drawn from the udder, and the milk continues to receive additions at every stage of its journey to the consumer, and even after it has reached him. The degree of contamination, however, at the different stages varies enormously.

4. In general the greatest amount of contamination occurs at the cow-shed, and is largely attributable to—

(a) The dirty condition of the cows' udders.

(b) The imperfect cleansing of the cans or other receptacles in which the milk is placed.

The contamination in the latter case (b) is especially pronounced in the warmer months of the year.

5. The contamination occurring at the cowshed can be almost entirely prevented by the adoption of the following measures:—

(a) Washing of the udder and flanks of the cow with soap and pure water—preferably water that has been boiled—before milking. Obviously the milker must give similar attention to his hands.

(b) Efficient sterilisation of all vessels by steam if possible, or, failing that, by an abundance of boiling water. The vessels before being sterilised should, of course, as is generally recognised, be first well washed out with clean cold water. In this respect the task of the farmer would be greatly facilitated if the cans were efficiently cleaned by the retailer before he returned them to the farmer.

(c) Rejection of the first draw of milk from each teat.

(d) Avoidance of any work raising dust immediately before or during milking.

(e) Removal of the milk of each cow, immediately after it has been obtained, to the large can set aside for the reception of the whole of the milk of the cows. Care should be taken that this can, which usually holds the strainer, is protected from dust or any other cause of contamination. This object, of course, can be better attained if the receiving-can is not allowed to stand in the cowshed at all, but in a clean store conveniently near.

6. Ventilation of the cowshed, although of great importance as regards the general health of the cows, has apparently, from the results of the present investigation, no very direct bearing upon the degree of contamination suffered by the milk in the cowshed. A well-lighted cowshed is most desirable in the interests of cleanliness.

7. The extent to which bacteria, present in the milk as it leaves the cowshed, multiply before the milk is consumed, is mainly a question of the temperature at which the milk is kept and the time that elapses before consumption. The lower the temperature and the shorter the interval of time the less do the bacteria multiply.

8. The valuable effects of cooling cannot be fully attained unless the cooler itself during storage and use is effectively protected from contamination.

9. Contamination during railway transit is practically avoidable, if the milk cans are locked and provided with dust-proof lids of such a type as will protect the lip of the can from dust or other contamination, and render it impossible for any milk shaken out of the can to drain back into it.

10. The dust-laden atmosphere of the railway station renders it undesirable that the milk should be poured from one can into another on the platform or other open parts of the station.

11. Additional contamination arises from—

(a) Exposure to dust—for example, in retail shop, during street delivery, or in consumer's house.

(b) Imperfectly cleansed milk receptacles, such as retailers' cans or consumers' vessels.

CHIEF SOURCES OF CONTAMINATION.

A.—AT THE COWSHED.

Improperly cleaned milk vessels and the dirty udders of the cows are the source of by far the greatest amount of contamination by organisms and especially by glucose-fermenters and streptococci. The dirty milk vessels contribute much more than the dirty udders in summer, but in winter the opposite is the case.

Milkers with dirty hands and dirty clothes, and especially wet milkers, contribute their share of pollution.

The air and dust in the cowshed add to the contamination, and coolers, as often used, contribute a certain amount.

B.—AT THE RAILWAY STATION.

Contamination while the cans are in the hands of the railway authorities occurs mainly as a result of

placing them in dusty vans, storing them in improper or dusty parts of the station, and of improper or rough handling, causing the milk to splash over the lid.

The railway porters, and others, who sit upon the churns are responsible for a certain amount of contamination also. The risk is increased in all cases when the cans are provided with lids which are badly fitting or of faulty construction.

C.—ON THE RETAILER'S PREMISES OR STREET.

Badly cleaned cans are a source of contamination here also, although not so great as at the cowshed, owing to the retailer paying greater attention to the cleaning process.

Pollution will take place in retailers' premises owing to the milk receptacles being uncovered, especially where the keeping-place is dusty, or the clothes of the retailer dirty. Organisms may be added by carelessness in handling, e.g., by the use of a dipper which has been kept on a dusty counter.

D.—AT THE CONSUMER'S HOUSE.

Pollution takes place here as a result of keeping the milk in a dusty place and leaving it uncovered. Only a small amount of contamination occurs from the receptacles of the consumer.

Flies are a source of contamination at all stages of transit, but especially at the consumer's house, where they are usually more abundant.

APPENDIX E.

Reservation of Cow-plot by the Estates Commissioners for grazing labourers' cows.

SCHEME under Sections 4 and 20 of the Irish Land Act, 1903.

(Handed in by Mr. J. T. Drennan, B.L., Qn. 32917.)

ESTATE OF J. P. KEARNEY.

COUNTY OF MEATH.

Record No. L. J. 81, Section VII.

I. In these presents:—

(a) The "Trust Estate" shall mean all that and those the lands of 3 Galmoystown containing seventeen acres, two roods and thirty perches statute measure or thereabouts, situate in the barony of Fore and County of Meath, as delineated in the map annexed to these presents, and comprised in a certain Vesting Order dated day of One thousand nine hundred and , and subject as in said Vesting Order mentioned. The "Trustees" shall mean Reverend R. Barry, P.P., of Parochial House, Oldcastle; Patrick Sheridan, J.P., of The Bolies, Oldcastle, and Matthew Hand, Chairman, Oldcastle P.L.G., of Millbrook, Oldcastle, or the survivors of them or other the Trustees for the time being of these presents.

(a) To permit agricultural labourers residing in the neighbourhood of the Trust Estate or such other persons as to the Trustees may seem fit as the Trustees may select in manner hereinafter provided to depasture cattle upon the Trust Estate at such times and places and subject to such conditions as to payment or otherwise as the Trustees may from time to time direct or prescribe.

(b) To plant the Trust Estate or such part or parts thereof as may, in the opinion of the Trustees, be suitable for that purpose with timber or other trees, and to preserve the timber or trees so planted (or any woods or plantations that may now be growing on the Trust Estate or any part or parts thereof), thinning out the same in a proper manner when necessary, and if any such trees (woods or plantations) should at any time hereinafter fall, decay or become ripe for cutting to cut down and remove the same or any of them,

and to sell the timber or trees so cut or removed for the benefit of the Trust Estate, and to replant the place from which such trees shall have been removed, or any part thereof, or to plant any other part or parts of the Trust Estate at their own sole discretion.

(c) To preserve all game and fish upon the Trust Estate or any part thereof, and to take such proceedings as may from time to time be necessary for the prosecution of persons wrongfully taking or injuring the same, and to let the rights of shooting or fishing upon or over the Trust Estate to such persons and for such periods and on such terms as to payment or otherwise as may to the Trustees from time to time seem fit.

(d) For all purposes connected with or subsidiary to the building of labourers' cottages, or of the laying out of allotments under the provisions of the Labourers (Ireland) Acts, as amended by the Irish Land Acts, 1903, or by any subsequent Act or Acts.

3. The Trustees shall each year, or at such time as shall seem to them expedient, declare by advertisement or otherwise what portions of the Trust Estate are available for pasturage for that year, and shall in like manner invite applications for such pasturage from the agricultural labourers residing in the neighbourhood of the Trust Estate, and from among the applications so received by them, or should there not be a sufficient number of suitable applications, then from such other persons also as to the Trustees may seem fit, shall determine the persons who shall have the right of pasturage on the said portions of the Trust Estate for that year.

4. Without prejudice to any other powers and authorities vested in the Trustees under these presents, the Trustees shall have the special powers following:—

(a) Power to define and fix the portions of the Trust Estate which may from time to time be used for each of the several purposes hereby contemplated.

(b) Power to employ and remunerate any solicitor, land agent, engineer, surveyor (gamekeeper), bailiff, or caretaker, or any other agent or servant they may think fit from time to time to employ in connection with the execution of the trusts of these presents.

(c) Power to fix according to a uniform scale the annual or other contribution to be made by each of the persons enjoying the right of pasturage towards the payment of the annuity payable in respect of the advance made by the Irish Land Commission to enable the Trustees to purchase the Trust Estate, and towards the costs and expenses of, or incidental to, the purchase of the Trust Estate, and the conveyance of the same to the Trustees, and of, or incidental to, the preparation and execution of these presents and the carrying out of the Trusts thereof, including the remuneration of any agent or servant employed by the Trustees in connection therewith, and the payment of all rates, taxes, assessments, impositions and outgoings charged upon the Trust Estate or properly payable in respect thereof.

(d) Power to make, do and execute all such deeds, acts and things as they may deem necessary or proper for giving effect to these presents.

5. (a) The power of appointing new Trustees of these presents shall be vested in the Lord Lieutenant, but no other person shall so appoint a Trustee whose name shall not have been previously approved of by the Irish Land Commission.

(b) The Lord Lieutenant shall have power to remove at any time, by writing under his hand all or any of the Trustees, and (subject to such approval as last aforesaid) to appoint a new Trustee or Trustees in place of the person or persons so removed.

6. The Trustees shall meet at such times and places as they may arrange, and shall enter in a book to be kept for that purpose a record of all proceedings at their meetings, and a full account of all monies received or paid by them in the execution of the Trusts of these presents.

7. All monies received by the Trustees that may not be required for the payment of the said annuity payable in respect of the Trust Estate, and for the payment of necessary expenses of the management thereof, shall be laid out by the Trustees in the improvement and development of such estate with a view to the several purposes contemplated by these presents or otherwise applied by them as the Lord Lieutenant may from time to time direct.

8. The Trustees shall have full power to determine all questions and matters arising in the execution of the trusts of these presents, and every such determination whether, made upon a question actually raised or implied in the acts and proceedings of the Trustees, shall (subject to the right of appeal next hereinafter provided for) be conclusive and binding on the persons enjoying the right of pasturage, and each of them and all other persons interested in the Trust Estate by virtue of these presents.

9. Any person enjoying the right of pasturage or other person aggrieved by any action or omission of the Trustees in carrying these presents into effect may present a memorial in writing signed by such person or other person to the Lord Lieutenant, stating:—

(a) The locality of the Trust Estate and the interest of the memorialist therein.

(b) The names and postal addresses of the Trustees for the time being of these presents.

(c) The precise action or omission by the Trustees of which the memorialist complains, and the Lord Lieutenant may, on investigation into the matters so complained of, make in writing under his hand such orders in the premises as may appear to him just (including an order for the removal from office of all or any of the Trustees, and the substitution of new Trustees or a new Trustee, as the case may require, whose name or names shall have been previously approved of by the Irish Land Commission), and any orders so made shall thenceforth be binding on the Trustees and on all other parties interested in the Trust Estate.

10. The powers (other than the power of appointing new Trustees of these presents) and authorities and discretions hereinbefore vested in the Trustees may be exercised by the majority of them for the time being.

11. If the Trust Estate, or any part or parts thereof, shall be no longer required for any of the purposes contemplated by these presents, the same may be sold or otherwise disposed of for such public purposes as the Lord Lieutenant may approve, and the net proceeds (if any) of any such sale shall be applied as the Lord Lieutenant shall direct.

12. No agricultural labourer or other person shall be entitled to take any benefit under these presents until he shall have signed an agreement in writing undertaking for himself and his assigns to pay all annual or other contributions, and to observe any and perform all regulations that may be from time to time lawfully fixed or made by the Trustees in respect of the Trust Estate, or in default thereof to forfeit all his rights hereunder, and any person whom the Trustees shall declare in writing to be in such default shall, as from the date of such declaration (but subject to the right of appeal hereinbefore provided for), cease to have any right of pasturage within the meaning of these presents.

13. Save as herein mentioned the persons enjoying the right of pasturage or any of them shall have no rights or interests over or in respect of the Trust Estate, or the rents or profits thereof, or the proceeds of the sale thereof, or for or in respect of any part of the same respectively.

Dated this twenty-first day of April, One thousand nine hundred and eleven.

Signed by the said Robert Barry, Patrick Sheridan and Matthew Hand, in the presence of (the last clause, No. 14, having been first struck out).

James Lynam, C.C., Oldcastle.

John F. Tallan, C.C., Oldcastle.

ROBERT BARRY.

PATRICK SHERIDAN.

MATTHEW HAND.

(Seal of Irish Land Commission.)

APPENDIX F.

THE UNITED IRISHWOMEN

RE

DOMESTIC MILK SUPPLY.

During the past year a special inquiry has been made in several rural districts in Ireland with regard to the domestic milk supply, which, without exception, has been ascertained to be insufficient.

From May to August farmers have a plentiful supply of milk, and consequently it can be obtained in larger quantities by the ordinary milk vendors; the

shopkeepers in the small towns and villages who keep a couple of cows, have surplus milk to dispose of at this season, and the poor man has his goat.

When August comes, however, the supply from all these sources diminishes, and the greater proportion of the people throughout the countryside are left without milk or with only such an inadequate supply as to preclude the idea of its being a necessary part of food altogether, unless for very young infants. Condensed milk is constantly substituted for fresh milk, and well authenticated cases have been noted when stout, and even black tea, have been given to the very

young. Some attempts have been made to combat this state of things, disastrous as it is to the health and well-being of the people.

In five centres a domestic milk supply has been organised. This may seem a small result from the time expended, but the difficulties to be surmounted are probably not generally understood.

It is extremely hard to gain accurate information and to find people willing and able to take the responsibility of looking after the depots; also in many districts it is almost impossible to secure a constant supply. The greatest difficulty of all is to induce the people to work together for the common good, rather than for individual interests. Opposition too has often to be encountered, chiefly from the small shopkeepers who sell milk, and though unable to supply their customers adequately all the year round, are anxious to retain them as a sure means of disposing profitably of the surplus when they have it. If a steady milk supply were organised, the shopkeepers naturally think that they might lose a considerable amount of custom from people who, coming to buy milk, become customers for other commodities as well. In general the shopkeepers are strongly opposed to any combination or co-operation among the people where the passing of money is concerned.

The benefit of the domestic milk supply, as organised by the United Irishwomen, is fourfold:—

1. It aims at securing for the people an adequate supply of milk all the year round, at a low rate—2d. or 2½d. a quart.
2. It directs the attention of the people to the necessity and value of sweet milk as food.
3. It tends to raise the standard of the conditions under which milk is sold.
4. The system of cash payment, and its dependency on the intelligent loyalty and support of the people themselves, helps to instil a spirit of self-reliance.

The work, being at present in its initial stage, shows many imperfections, the most serious being an inadequate conception of the absolute need of loyalty to the co-operative ideal. The people are easily tempted away from the milk depot during the plentiful season, which causes the sale of milk to fall so low as to endanger the depot's existence on a self-supporting basis.

As will be seen below, in the Borris Depot this summer superfluity of milk is being made into butter, and well attended classes are held in connection with it. It may also be noted that the Kilmallock Depot has taken on the sale of Kilmallock Creamery cheese. Both these departures point to future developments in the work.

We trust that time will demonstrate the great advantage of a reliable all the year round supply of pure milk; in which case steady support of the milk depots would become assured.

The task of bringing milk as an article of food within reach of all classes of the people is one of the most important that can be undertaken for the physical well-being of the race. The United Irishwomen, who have undertaken to make this attempt, hope to show a far greater result as time goes on; not alone in the opening of new centres of supply, but in the more satisfactory working of a system still in its infancy which with increase of knowledge and fuller realization of the practical benefits it insures will surely come to pass.

They appeal for the support of landowners and the larger farmers in these milkless districts. As will be seen by the few statistics herewith appended, such support is already generously forthcoming and they do not doubt many others would come forward did they but realize it is owing to the scarcity of milk that the physique and morale of the people shows such deterioration in some districts.

The following statistics will give some idea of work already accomplished:—

Borris, Co. Carlow.—The milk depot was opened on October 6th, 1912, by Mr. Walter Kavanagh

building a cottage and presenting it to the Branch at the nominal rent of 1/- per annum. The necessary capital was raised by a Jumble Sale and other entertainments, and £21 was collected. The initial outlay on plant and furniture amounted to £8 15s., and between October 6th and May 31st 2,000 gallons of milk were sold, the milk being bought at 7d. and retailed at 8d. per gallon.

It was impossible to meet the demand during February and March, but later on the keeping of goats by cottagers and of cows by small shopkeepers told upon the sales. The agreement with the farmer being for a regular supply all the year round, leaves some on hand each day during the summer months. To meet this difficulty the depot procured the loan of a churn, and butter classes were formed which are well attended by the wives and daughters of farmers. The depot has now ordered a churn for itself. It is paying its way, and has in hand a balance of £12 16s.

(Signed), M. DOYLE, *Hon. Sec.*

Kilmallock, Co. Limerick.—The milk depot was opened on August 17th, 1912. In winter 18 to 20 gallons of milk are sold daily, but during the summer months 7 gallons supply the demand. Our contract with the farmer is for a minimum of 10 gallons, and the surplus we return to the creamery at a slight loss. Our working expenses and rent come to 7/6 per week—so the summer sales barely cover this outlay. The milk is bought from the farmer at 6d. a gallon and retailed at 8d. We have recently taken up the sale of cheese made at the co-operative creamery, Kilmallock, and up to the present have done fairly well.

(Signed), K. GAFFNEY, *Hon. Sec.*

Omagh, Co. Tyrone.—This depot was started at Omagh as being a central point for the surrounding country districts, and during the winter months there was a large demand—women walking as far as three miles daily to secure milk. In the six months from December to May 5,483 gallons were sold. There has been considerable falling off in the sales lately owing to milk being more plentiful.

(Signed), E. McADAM, *Hon. Sec.*

Bruff, Co. Limerick.—The milk depot which was opened at Bruff in February, 1913, continues to fill a much needed want. In winter months it was almost impossible to secure milk of any kind, as so few farmers go in for winter dairying. In summer it does not do so well. People who live in labourers' cottages nearly all keep goats. The depot, which through the kindness of our President—Hon. Mrs. Baring—and other members of the Committee, we were able to start fully equipped, free of debt, is a nicely got up little place, most attractive with its clean milk utensils, strainer, all of which the attendant keeps in good order. When well established I am sure it will be a flourishing concern. The ladies of Committee take it in turn to see that all is in order. The amount of milk sold at the depot since opening is 926½ gallons. The milk was bought at 6½d. per gallon at first and later at 7d. per gallon and retailed at 8d.

(Signed), A. F. HUNT, *Hon. Sec.*

Ballinahaglish, Co. Kerry.—As this is a purely rural district, it was decided that if the people were to have milk, a cart must take it from house to house. A farmer was found who undertook to supply the milk at 6d. per gallon, which is sold at 8d., the 2d. per gallon being found sufficient to cover cost of cartage. The amount of milk sold since July, 1912, when the distribution was started, is 3,609 gallons.

(Signed), M. WALLACE, *Hon. Sec.*

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Work done by Dr. Niven and Professor Delépine, showing the necessity for securing control over milk supplies coming into Manchester from outside, 30668-70.

The result of Manchester's action was the framing of the Model Milk Clauses by the Local Government Board, which all authorities may apply to adopt, 30670.

Cowsheds and farms supplying milk to Manchester are inspected and brought up to standard, 30670.

Great improvements in cowsheds effected, 30721-2, 30739.

Requirements as to light, ventilation, drainage, etc., of cow byres, 30671-3, 30723-45.

Need of healthy byres and food for calves in order to rear healthy stock, 30745.

The custom of keeping old cows in the city has been done away with, 30674; tending to the freedom of milk from disease, 30674.

Few cows with tuberculous udders have been found in the city in last ten years, 30674.

There are no tuberculin-tested herds in the city, 30674-8.

Proposed disposal of reacting cows, 30679-84.

BRITTLEBANK, J. W.—*continued.*

Difficulty of controlling milk which comes from the same farm partly from tuberculin-tested and partly from non-tuberculin-tested herds, 30686-8.
Mode of dealing with cowkeepers who do not keep their cattle and byres clean, 30688-90.

Suggested amendments of the English Dairies, Cowsheds and Milkshops Order, 30692.

The landlord, not the occupier, should be required to make necessary structural alterations of cowsheds, 30693-6.

Cowkeepers should be licensed, not registered, 30697.

Persons selling milk to their labourers or neighbours should come under the Order, 30697.

The Dairies Order should be compulsory, not permissive, 30697.

The administration of the Order should vest in County Councils, not in the smaller Boards, 30697.

Procedure in Manchester of tracing tuberculous milk received from country districts, 30701-5; mode of tracking down the cow giving tuberculous milk, 30706, 30816-21.

Co-operation of outside local authorities, 30810-11.

As to prosecution of offenders outside the city area, 30831-2, 30864-7.

Danger of healthy cattle being infected by tuberculous cattle, 30708, 30749-52.

Areas from which the Manchester milk supply is drawn, 30711.

Cowkeepers in these areas were notified of the Milk Clauses, 30711.

Practical impossibility of convicting a farmer of knowingly selling tuberculous milk, 30711; but prosecutions have been instituted for not notifying cows with tuberculous udders, 30711; the effect of the Milk Clauses has been to secure for Manchester a milk supply from healthy cows, 30711-2; but diseased and suspicious cows have been sold to persons supplying other towns whose milk supply was less rigorously safeguarded, 30713-5, 30739.

High milking capacity of Cheshire cows and susceptibility to tuberculosis, 30716-8.

Percentage of cows in Derbyshire and Staffordshire suffering from tuberculosis of the udder, 30719-20.

See tabular statements, pp. 105-106.

Special milk supply for city hospitals, 30745, 30791-5.

The producer placed himself in the hands of the Corporation officials, who have eradicated tuberculosis from his herds, 30745-52.

The incidence of disease other than tuberculosis has also been enormously reduced, 30752-9.

Abortion in cattle is reduced by cleanliness, 30767-70.

Price of milk in Manchester, 30779-81, 30771-3.

Reliability of the tuberculin test, 30800-4.

Question whether a cowkeeper should be allowed to sell, untreated, the milk of reacting cows, 30835-60.

Power to prevent tuberculous milk coming into the city, 30864-7.

BROWN, WILLIAM JAMES, J.P. (Member of the Enniskillen Rural District Council).

Goats are generally kept in the district, 26716-21.

There is no scarcity of milk, 26722-5.

The Dairies Order is not enforced, 26728-9; its enforcement would not inflict any hardship, 26730-4.

Description of the old Irish cow, 26741-7.

The farmer gives the use of a cow to the man working for him, 26724, 26768, 26780.

A labourer could have the grass for a cow if he had one, 26790.

BROWNE, J. G. (Farmer, Strabane).

There is no scarcity of milk in North Tyrone, 29841-3, 29864.

The dairying industry does not pay, 29844-9; the calves and store cattle pay, 29850.

Creameries do not object to retail milk in the district, 29855-63.

Owing to the lack of efficient labour for milking, cows deteriorate as milk-producers, 29866-90.

BROWNE, J. G.—*continued.*

Cows' milk is sometimes below the legal standard, 29899-906.

The average yearly yield per cow is about 400 gallons, 29845, 29911-3; by good treatment it might be raised to 600 or 700 gallons, 29914; it does not pay to increase the yield for creamery prices, 29852, 29915-6.

Milkers get milk for nothing, 29917-20.

Winter dairying does not pay, except that the calves are better, 29924-7.

BULLS.

PREMIUM BULLS.

Have injured the milk-producing qualities of cows, 27037-42, 27098-121, 29306.

GENERAL.

The Angus breed predominates in Co. Mayo; there are some Galloways, 27539-48, 27562.

The Galloway breed has not been good for the milk supply, 27551, 27566-7.

They deteriorate in value after the first cross, 27563-5, 27608-11.

Suggestion that no bull be used unless approved by the Department of Agriculture, 27569-74.

The introduction of the Aberdeen Angus bull by the Congested Districts Board has been inimical to the milk supply, 27910-5, 28090-4, 28244-5, 28260-2.

BUTTER.

Butter Control Scheme of the Irish Agricultural Organisation Society described, 28963-5, 29098-102.
Butter trade is injured by absence of winter milk, 26874, 29118-9.

Winter milk necessary for the maintenance of the Irish butter trade, 30075-81.

Home consumption of, is increasing, 29095-7, 30023-5, 30035-6.

Home butter-making common in Strabane district, 29933, 29987-9.

Proposed application of Dairies Order to home butter-makers. See "*Dairies Order: proposed amendments.*"

Experiments showing that cream cannot be sterilised for butter-making, 31736-9.

Effects on butter of heating cream to various temperatures, 31742.

Butter made from milk containing tubercle bacilli, and the buttermilk, remain infectious, 31759, 32068.

Foreign butter may contain tubercle bacilli, even if the Dairies Order were made to apply to home-made butter, 32065-8.

Butter must be proved to be infected before it is treated as dangerous to the public health, 32820-1.

BUTTERMILK.

Prosecutions for adulteration of, 28306-10.

Standard of purity, 28364-8.

Staple food of the poor (Derry and district), 28311-6, 28666.

Scarcity of, 29550-4.

Where farmers churn Sunday's milk, there is a sufficient supply of, 29964, 29975.

Separated milk used as a substitute for, 29973.

Creamery buttermilk is not the same as that from the old dash churn, 30292-5.

Effect on, from cream heated to various temperatures, 31742.

C.

CALVES.

Advisability of feeding, on boiled milk, 32439-46.

CAMERON, DR. J. SPOTTISWOODE, M.D., B.Sc. (Medical Officer of Health, Leeds).

The city authorities inspect cows inside and outside the city which supply milk to Leeds, 31062-4.

Procedure for tracing tuberculous milk, 31114-21.

Proportion of tuberculous milk sent into Leeds, 31065-6.

CAMERON, DR. J. S.—*continued.*

To justify inspection of an outside farm there must be ground for suspecting there is disease, 31067-9, 31144.

Powers to act where milk is suspected of spreading infectious disease, 31070-3, 31141-5.

Action taken when a cow suspected to be tuberculous is discovered, 31074-6, 31120.

There is not a municipal milk depot for infants in Leeds, because the expenditure was ruled *ultra vires*, 31079, 31162.

So a depot was opened on philanthropic lines, 31079-81.

Infant mortality reduced; method of computation, 31079.

Boiling the milk injures its nutritive properties, 31085-8.

The ideal method of handling milk, 31089-92.

Bottled milk is dearer than ordinary milk, 31093-5.

5/- fine imposed on a man convicted of having a cow with tuberculosis of the udder, which he had not reported, 31100, 31103-4.

Would place the administration of the Dairies Order in the hands of county and borough authorities, 31111-2.

Obscure causes of typhoid-infected milk, 31125.

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CARRIERS.

There is no right to apply the Widal test compulsorily to a suspected typhoid carrier, 32757-64; nor to interfere with the liberty of a known typhoid carrier, 32766.

There is limited power to isolate contacts, 32765.

CATCH-CROPS.

Not grown, Co. Sligo, 27413-7; Co. Donegal, 28020-1, 28233, 28250-1.

Experiment a failure (Co. Donegal), 28076-83.

Successfully tried, 28866-77.

CENTRAL AUTHORITY—proposed—to supervise the working of the Dairies Order; see *Dairies Order*.

CERTIFICATE OF ANALYSIS of milk for prosecution purposes. Forms of, 31333-5, 31647-55.

CHALMERS, DR. A. K., D.P.H. (Camb.). (Medical Officer of Health, Glasgow).

Powers to safeguard Glasgow's milk supply, 30871-4.

Tuberculous milk coming into the city, 30875-7, 30884-6.

Special milk supply for hospitals, 30878-81.

Gradual reduction or disappearance of tubercle in milk, 30931-4.

Nutritive properties of milk are injured by heat, 30882, 30897-9, 30926-7.

Cooling preferable to boiling, 30882.

No opposition has been experienced from outside local authorities or persons to Glasgow officials making inspections, 30888-90.

Objections to inspection of country cowsheds and cattle by city authorities, 30959-61; the remedy is to make enforcement of the Dairies Order compulsory everywhere, 30962.

The municipal Infants' Dairy has been abandoned, 30896-905.

Annual loss on the undertaking, 30948-53.

Milk sterilised by peroxide of hydrogen: alleged as a cause of scurvy rickets, 30906.

Sterilised milk should be labelled as such, 30955.

Infectious disease traced to the milk supply, 30910.

Co-operation from milk vendors, 30911.

Difficulty of tracing disease owing to the mixing of milk, 30911, 30956.

Action taken by public authorities, 30912-23.

Power to deal with tuberculous cows, 30925.

Milk is reduced to the minimum standard set up by the Milk Commission, 30935-8; number of prosecutions for adulteration, 30940.

Separated milk is used for reducing the quality of milk, 30941-3.

CHALMERS, DR. A. K.—*continued.*

The dairyman and his premises should be licensed, 30957-9, 30963.

So should persons selling milk from carts, 30969-73.

Objection to a uniform standard of administration of the Dairies Order, because it would be that of the poorest and most rural authorities, 30964-5.

Advantages of bottled milk, 30966-7.

Milk suspected of causing infectious disease; for power to suspend the supply at once, 30973-4.

Cattle insurance as a means of getting rid of tuberculosis among cattle, 30974-81.

CHEESE made from milk containing tubercle bacilli may be infected, 31759.

CHOLERA, Infantile.

Traceable to the way milk is fed to children, 26909-10.

CLEMENTS, R. S., J.P. (Representing the Omagh Rural District Council).

The Council have appointed officers, but have not enforced the Dairies Order, 29397-416, 29473-7.

There is no scarcity of milk, 29419-30, 29543.

Tuberculosis among cattle is on the increase latterly; causes, 29452-61, 29522-31.

Home dairying is fairly common, 29489-90.

Calves get fresh milk for six weeks, 29497-9; if stock are fed on separated milk, oil cake, etc., must be added, 29491-3.

Winter dairying is not profitable, 29544-9.

There is a shortage of buttermilk, 29550-4.

COLLIS, JAMES. (Manager of the Collooney Co-operative Creamery).

Attributes improvement in condition of milk sent to the creamery to inspection by the Department, 27284, 27351-3.

Has never had to reject milk because it was dirty, 27286-95.

Surplus separated milk is sold, 27296-302.

Price of summer and winter milk at the creamery, 27308-9.

The creamery could retail milk without inconvenience, 27331-5.

In heating the milk for separation the temperature varies and pasteurisation is not the object, 27370-86.

COMMONAGES for grazing cows. See "*Cowplot*."

COMPENSATION FOR COWS COMPULSORILY SLAUGHTERED.

The Birmingham Public Health Authority gives as compensation half the value of tuberculous cows slaughtered up to £4, 32023-30, 32041-6.

But general measures are necessary if tuberculosis is to be eradicated, 32031-4.

Compensation for slaughter of tuberculous cattle must be part of a complete scheme for eradication of tuberculosis, 32529.

Compensation is necessary to induce farmers to report diseased cows, 32325-32, 32409-17, 32969-70.

The State should pay part of the compensation, 32973-7.

CONGESTED DISTRICTS BOARD.

Give assistance to provide dairies and byres, 27822-32.

Make loans to buy nets and boats, 28046-51.

CONSUMPTION. See "*Tuberculosis*."

CONTAGIOUS ABORTION AMONG CATTLE.

Is reduced by cleanliness, 30767-70.

CONTAMINATION OF MILK.

Contamination in the homes, 30526, 30578, 31591.

To forbid sale of milk in huxters' shops might cause hardship, 32260-5, 32664-71.

CONTAMINATION OF MILK—*continued*.

- Power to act where milk is suspected of spreading infectious disease,, 31070-3, 31141-5.
 Milk suspected of causing infectious disease; for power to suspend the supply at once, 30973-4.
 Obscure cases of typhoid-infected milk, 31125.
 There is power to deal with a milk supply which causes an outbreak of infectious disease, 32159-61, 32213-9, 32266-73.
 It would be a benefit if an outbreak of typhoid, etc., in a milk producer's family were notified by the local Medical Officer of Health to the public health authority of the town receiving the milk, 32162-70.
 Danger of typhoid from use of impure water for washing cans or cattle standing in foul water, 32173-9.
 There should be power to forbid milk to come into the city from dirty sheds or where the water supply is bad, 32232-4.
 The existing (slow) method of detecting tuberculous milk is reliable, and therefore preferable to others, 32180-5.

COUNTY OFFICERS OF HEALTH, medical and veterinary; appointment of, advocated, 26280-91, 27272-4, 28755-7, 29769-73.

It would be inconsistent to have whole-time veterinary inspectors under the Dairies Order if the Medical Officer of Health remained a part-time officer, 32696-701.

Need of these officers being in an independent position, 32702-4, 32836-9, 32843.

COW-PARKS or grazing fields. Loans for purchase of, not admissible, 32848-55.

COWPLOT, or common grazing plot for labourers' cows.

No application for an allotment has been refused by the Estates Commissioners, 32862.

Applications for allotments have not been numerous, 32863-8; but in any case the inspector considers if a cowplot is necessary, 32863.

The advantages of appointing individuals or the District Council as trustees discussed, 32870-4.

The plot must be kept in pasture, 32932-3; and for the purposes for which it is reserved, 32934-7.

List of allotments made by the Estates Commissioners, 32883.

The Estates Commissioners will assist as far as possible in reserving cowplots, 32880, 32941-4.

Statement of the law as to sale of lands through the Estates Commissioners, 32881-2, 32921-2.

Only in the case of untenanted land can cowplots be reserved, 32881.

What constitutes "untenanted land," 32896-907.

The scheme for trustees of a cowplot: by whom made and approved, 32882.

Difficulty of amending the law to enable plots to be reserved in a case of direct sale by landlord to tenant, 32886-95.

Power to acquire land compulsorily for "migration," 32908-16.

Athenry: circumstances under which the land was divided among the tenants, 32875-9.

The Commissioners cannot prescribe that cows shall be kept on the divided lands, 32919.

Feasibility of joining the acre plots of labourers in Union cottages to make a common grazing ground, 32923-31.

See Appendix E., page 196, for copy of an approved Scheme, Oldcastle, Co. Meath.

COWS.

Cows have deteriorated as milk-yielders in recent years, 29306. *Contra*, 26352-8, 26625.

Cows deteriorate as milk-producers owing to lack of efficient labour, 29866-90.

The yield of cows has increased as the result of tests made for farmers by the creamery, 26359-61, 26626-34.

Complaint that in improving the live stock the milk-ing quality of cows has been neglected, 28231.

The old Irish cow: description of, 26741-7, 27916-23, 28132-8, 28084-6, 28808-16.

Is not extinct, 28172-4, 28181-7.

Good as a milker, 28013-6.

COWS—*continued*.

Trade in old cows, 27598-608.

Because a cow gives a light milk yield the percentage of butter-fat is not necessarily high, 26631, 27325-6.

Average yearly milk yield of cows in small holdings (Co. Donegal) is from 100 to 150 gallons, 27817-9, 28817-8.

In Co. Donegal generally, the average yield is 250 gallons per cow, 28226; the breed and feeding are against a large yield, 28233-4, 28284, 28819.

Average yearly yield per cow in Co. Tyrone, 29845, 29911-4.

Registration of, proposed, 31040-1.

COWSHEDS.

Cowsheds in the city area (Manchester) which are not a nuisance are encouraged, 30663.

Supplying milk to Manchester, are inspected and brought up to standard, 30670.

Great improvements effected, 30721-2, 30739.

Requirements as to light, ventilation, drainage, etc., 30671-3, 30723-45.

Mode of dealing with cowkeepers who do not keep their byres clean, 30688-90.

Need of healthy byres in order to rear healthy stock, 30745.

The veterinary inspector of large English cities does not report on the condition of country cowsheds when making outside inspections, 31198-222, 31961-3, 32124-5.

Defective cowsheds in the country are reported to the county authorities, 31683-8, 32309-20.

COW-TESTING ASSOCIATIONS.

Have been established in Enniskillen district, 26437-41.

Are of benefit to farmers, 27029-36, 27055-68, 27152-9.

Cows are not sold at fairs with a guaranteed milk pedigree, 27429-32.

CRAIG, PROFESSOR JAMES FERGUSON, M.R.C.V.S.

Mode of treating cattle and milk on a dairy farm at Haslev, Denmark, which supplies milk to the Trifolium Butter and Cheese Factory, 30460-94.

Mode of feeding the cattle, 30496-9.

Detection and eradication of tuberculosis among cattle, 30500-13.

The secret of the Danish farmers' success is industry and co-operation, 30517-20.

CREAMERIES.

Inspection and Supervision.

Creamery (Enniskillen) is inspected by the Department, 26322-3.

The inspection is most helpful, 26324-5.

Improved condition of milk sent to creamery attributed to Department's inspection, 27284, 27361-3.

Inspection of, should be made by expert inspectors acting under a central authority, 29019-36.

The Local Government Board have no power over creameries, 32723-4.

Management.

Relation of auxiliaries to the central creamery, 30171-8.

Milk is rejected if not clean and sweet, 26311-3, 26425, 27140-6, 27192-3, 28918-21.

Sour milk is received sometimes; treatment, 26615-9.

Creameries in the Enniskillen district have agreed not to take milk refused by one of them, 26314-21; Co. Monaghan, 26607-12.

Good effect on suppliers, 26613-4.

Method of separating and cooling milk, 26326-43, 26450-6.

In heating the milk for separation, the temperature varies and pasteurisation is not the object, 27370-86.

Separated milk should be cooled to make it keep better, 26457-65.

Creameries in the North do not work on Sundays, 26349-51.

CREAMERIES—continued.

Work three days a week in winter, 28994-6, 29263, 29754.
 Price of winter milk, 26362-70, 26386, 26588-9, 28992-3, 29071-6, 29137.
 Average summer and winter price of milk, 26739, 27043-54, 27308-9, 29070, 30065-70.
 Precautions taken against receiving milk from houses in which there is infectious disease, 26426-33, 27200.
 Separating and pasteurising temperatures, 26620-4.
 Farmers are required to cleanse their cans at the creamery, 26704-7.
 Not required, 26468-72, 27285, 30156-64.
 Creamery sells seeds and manures, 26686; and meal, 26714.
 Creamery has no guarantee that the milk supplied is from healthy cows, 26447, 26696-7, 27164-8, 27194-9, 29077-80.
 Cream pasteurised, 28952-65, 29313-7, 30185-96, 30225.
 Cloths are not used under the lids of tankards, 30153-5.

Creameries in relation to the domestic milk supply.

Creameries as a cause of scarcity of milk for domestic use, affirmative, 26174, 26517-8, 26821-4, 26840, 26969, 29650-66, 30282-90.
 Creamery which absorbs nearly all the milk in the district (Collooney), 26979-82, 27148-51; but there is no scarcity in the district, 26983-93.
 Do not sell milk, 26299-302.
 Are not asked to sell, 26597, 28914-6.
 Would do so if it would pay, 26598, 29090-3.
 Would not do so if asked, 26303-10; not even to meet a bulked order, 26486-95.
 Some creameries are willing to retail milk, 26825-7, 29288-92, 29855-63.
 Some are not willing, 26994-8.
 Reasons why creameries should not be required to sell milk, 27131-9.
 Creameries should be compelled to retail milk, 30279-81, 30291.
 It would not be a hardship to require creameries to sell milk, 26599-601, 27331-5, 30103-6, 30221-4, 30252.
 Separated milk sold at creamery, 26592-6, 26999-701, 27296-302, 29658, 29676-82.
 The auxiliaries do not sell milk, 29293-5.
 It would be possible to retail milk at the auxiliaries, 29323-8.
 The existence of creameries has not caused a shortage of milk for labourers, because farmers supply them, 29964, 29980-4.

General.

Creameries suffer by absence of winter dairying, 26374, 29118-9.
 It does not pay to increase the milk yield of cows for creamery prices, 29852, 29915-6.
 Winter supply of milk is necessary for the maintenance of the Irish butter trade, 30075-81.
 Outbreaks of enteric fever attributed to infected separated milk from creameries, 32672, 32856.
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 Pasteurising plant noted in table when referred to in reports, 32857-9.

CUNNINGHAM, JOHN (Member of the Dungannon Urban District Council, Co. Tyrone).

To remedy the difficulty of getting milk and butter-milk recommends the keeping of goats, 30037-53.

D.

DAIRIES, COWSHEDS, AND MILKSHOPS ORDER, 1908.

Veterinary Inspector.

No veterinary inspector appointed, Killala R.D., 27634-8; Glenties R.D. (because there is no veterinary surgeon resident in the Union), 27674-7; Londonderry and Inishowen Unions, 28438-49.

DAIRIES, COWSHEDS, AND MILKSHOPS ORDER, 1908—continued.

In rural districts adjoining Londonderry the Medical Officers of Health supervise the byres, 28430, 28520-2; but not the cattle, 28641-7.
 Medical Officer acted as inspector of cowsheds for Cookstown R.D. till replaced by veterinary inspector, 29687-706.
 Duties of chief veterinary inspector, Manchester, *re* milk, 30658a.
 Power of Local Government Board to compel a local authority to offer an adequate salary to a veterinary inspector, 32718a-21.
 Cases of well-paid inspectors, 32727-31.

Enforcement of Order by local authorities.

Co. Fermanagh. Enniskillen U.D., 26007-19, 26025, 26048-50. Enniskillen R.D. (not enforced), 26726-9, 26051-3.
Co. Sligo. Sligo No. 1 R.D. (not enforced), 26802-4, 27122-30, 27465-9, 27481, 27217.
Co. Donegal. Glenties R.D., 27666, 27756-73.
Co. Londonderry. Derry, 28288-96, 28325-31, 28336-41, 28383; Coleraine R.D., 28895-906, 28924-6.
Co. Tyrone. Omagh R.D. (not enforced), 29397-416, 29473-7; Omagh U.D., 29559-78, 29600-16; Cookstown R.D. (not anxious to enforce Order), 29697; Strabane No. 1 R.D., 29939-47.

Effect of Order in restricting milk supply.

The Order does not reduce the number of suppliers to creamery, 26648.
 People who gave up selling milk because of the Order have resumed selling, 27798-804.
 A number of milk sellers became home butter-makers, 28005-6; but this righted itself subsequently, 28007-8.
 The Order has not put anyone out of business, 29761-5.
 The Order has seriously reduced the milk supply to creameries in the North, 30381.

Proposed amendments of the Order.

The Order should apply to the by-products of milk, *e.g.*, separated, skimmed, and butter-milk (also butter and cheese), 26083-6, 26914, 27275, 27959, 28351, 28493, 28670, 28763, 29252, 29774, 30387, 30808, 31760-2, 32065-7.
 Strong legislation *re* by-products of milk is not justified; the proper action is to reduce tuberculosis in cattle, 32651-5.
 The Order should apply to all cowkeepers, 26687-95, 26698.
 The Order should apply to home butter-makers, 26858, 29110, 29282-4, 29296, 30138-9, 30375-80.
 The space specified for each cow is too much, 29208-11.

Representations have been made to the Local Government Board as to the unfairness of not making the Dairies Order applicable to home butter-makers, 32685-8.

Considered as a public health question, the supervision of the milk supply is of far greater importance than that of the butter supply, 32669, 32806-10; the danger from butter is slight, 32690-3, 32817-21; the danger from milk is serious, 32694-6.

The objection to extending the Order to home butter-makers is the additional work that would be involved, 32802-5.

Licensing instead of registration of cowkeepers and milk vendors. See "*Licensing.*"

The section of the Act which authorises the Dairies Order limits its application to persons selling milk, 32797-8.

Difference between milk sold and given as an allowance, 32799-801.

Loans.

Small loans by the Board of Works for improvement of byres would be useful, 30382-6.

Administration of the Order. See also "Inspection."

Absence of effective administration, notwithstanding appointment of officers, 29397-416, 29473-7, 32951-4.

DAIRIES, COWSHEDS, AND MILKSHOPS ORDER, 1908—continued.

Supervision by central authority required to ensure uniformity and efficiency, 20062-6, 29766-8, 32988-93.

The Order should be worked by officers responsible to a central authority to ensure independent inspection, 28648-51.

Two sets of veterinary officers appointed:

(1) By local authorities under the Public Health Acts, 32949.

(2) By County or Borough Councils under the Diseases of Animals Act, 32950.

Local bodies appoint inspectors at nominal salaries, making the efficient performance of duty impossible, 32951-4.

Locally appointed officers who are not independent, 32951A.

Power of Local Government Board to require local authorities to act on the reports of their officers under the Dairies Order, 32751-6.

The appointment of whole-time medical officers and veterinary inspectors by a central or county authority desirable, 26280-91, 27272-4, 28755-7, 29769-73.

It would be inconsistent to have whole-time veterinary inspectors under the Dairies Order if the Medical Officer of Health remained a part-time officer, 32696-701; need of these officers being in an independent position, 32702-4, 32836-9, 32843.

The Local Government Board would be glad if a veterinary inspector were added to their staff to supervise local inspectors, 32831-3, 32841.

There should be no difficulty in administering regulations *re* public health and the health of cattle by the Local Government Board and the Department of Agriculture acting separately, but harmoniously, 32732-50.

The two Departments do act in consultation, 32748-9, 32834-5.

The Department's veterinary inspectors cannot well exercise control over the locally-appointed veterinary inspectors, 32947, 32957.

Harmonious working between the Department of Agriculture and Local Government Board where there are points of contact, 32948.

But one Board—the Department—must be responsible for diseases of animals, 32948, 32967.

A Committee representing the Department, the Local Government Board, and the Veterinary College not a suitable body to control the veterinary service, 32958.

But the present system of having two sets of inspectors responsible to different departments is not economical or efficient, 32960-2.

DAIRIES, COWSHEDS, AND MILKSHOPS ORDER, ENGLAND.

Suggested amendments of, 30692.

The landlord, not the occupier, should be required to make necessary structural alterations of cowsheds, 30693-6.

Cowkeepers should be licensed, not registered, 30697.

Persons selling milk to their labourers or neighbours should come under the Order, 30697.

The Dairies Order should be compulsory, not permissive, 30697.

To secure uniform administration central supervision is necessary, 32015-21.

Balance of advantage in making the Board of Agriculture the central authority, 32022.

Objection to a uniform standard of administration of the Dairies Order, because it would be that of the poorest rural authorities, 30964-5.

The Dairies Order should be administered by the County Councils, 30679, 31111-2, 32191-4, 32397-9, 32640-8; if administered by a central body it weakens the interest and initiative of the local body, 32195.

And the standard of uniformity would have to be the minimum standard, 32196-8.

The appointment of a county veterinary inspector would be good, 32207-12.

DAIRYING, WINTER. See "*Winter Dairying*."

Dairying is more profitable than stock-breeding, 28891.

Contra, 29844-50.

DAIRY TRADE.

Scarcity of labour, 26405-16.

Lack of efficient labour for milking, and cows deteriorate as milk-producers, 29865-90.

DELEPINE, PROFESSOR A. SHERIDAN, M.B., C.M., M.Sc. (Director of the Public Health Laboratory connected with the Manchester University).

To boil milk interferes with its food value, 31731.

But boiled milk is a much safer food for infants than ordinary unboiled milk, 31731-2.

Milk should be first raised to the boiling point and then used, 31733-4.

Ordinary pasteurisation diminishes, but does not remove the danger of infection, 31736.

Results of experiments at various temperatures for different periods, 31736; showing the cream cannot thereby be sterilised for butter-making, 31737-9.

Commercial pasteurisation would be less efficient, 31740-1.

Effects on butter of heating cream to various temperatures, 31742.

Separated milk which has been pasteurised sometimes undergoes putrefaction more easily than milk which has not been so treated, 31742-6.

Recommends sterilisation rather than the introduction of lactic acid bacilli, 31747-52.

Buttermilk; effect on, from cream heated to various temperatures, 31742.

Lactic acid bacilli retard putrefaction in milk or milk products, 31743.

Knows of no facts to support the statement that the use of sterilised milk by babies causes rickets and scurvy, 31753.

Babies and cows have thrived well on boiled milk, 31753-8.

Butter made from milk containing tubercle bacilli, remains infectious; also the buttermilk, 31759.

Cheese also may be infected, 31759.

All the by-products of milk should be under the same regulations as new milk, 31760-2; also foreign products, 31763.

Microscopical examination of milk is not sufficient, 31764-7, 31802-5.

Direct inspection of farms, plus bacteriological testing of milk of suspected cows, is better, 31772.

Filtration of milk removes dirt, but not dangerous bacteria, 31768-70.

Bacteria multiply rapidly in milk at summer's temperature, 31771.

Tuberculin test: absolutely reliable for cows under 7 or 8 years old, 31773-6, 31799-801.

For cows over 8 years old the error is easily corrected by a competent veterinary surgeon by observation, 31774.

The test should only be applied by qualified persons, 31776, 31792-3.

Advantage of applying the test to all cattle at an early age, 31779.

Effects of repeated applications of the test, 31786-91.

Elimination of tuberculosis from one herd by use of the test, 31794-8.

Cows may recover from tuberculosis, 31782-8.

Pedigree stock should be treated specially, 31785.

Cows may pass tubercle bacilli in their milk without having tuberculosis of the udder, but this is unusual, 31806-10.

Infection of children by tuberculous milk, 31811-4.

The theory of immunisation against tuberculosis is not borne out by facts, 31814-8.

For human protection it is necessary to destroy all cows with tuberculous udders and which yield tuberculous milk, 31821-2.

For the agricultural interest it is well to stamp out tuberculosis in cattle, 31822.

Suggests dividing Ireland into large administrative areas, each with a veterinary staff under central control, 31823.

The Boroughs should have power of outside inspection, 31823-7.

DENMARK.

Mode of treating cattle and milk on a dairy farm at Haslev, Denmark, which supplies milk to the Trifolium Butter and Cheese Factory, 30460-94.
 Mode of feeding the cattle, 30496-9.
 Detection and eradication of tuberculosis among cattle, 30500-13.
 The secret of the Danish farmers' success is industry and co-operation, 30517-20.

DEPARTMENT OF AGRICULTURE, IRELAND.

The Dairy Bull Scheme will be helpful, 27101-4.
 The scheme has not been taken up, Co. Sligo, 27407-12.
 The Department has allowed shorthorn cattle of good milking strain to be lost to the district (Kil-lala), 27555-61, 27628-31, 27641-55.
 Suggestion that no bulls be used except those approved by the Department, 27569-74.
 Complaint that in improving the live stock the milking quality of cows has been neglected, 28231.

DIARRHOEA. Summer diarrhoea; causes of, 31319.

DISEASE Outbreaks of, caused by Infected Milk.

Co. Sligo, 27214-5, 27244-5.
 Co. Donegal, 27834-40.
 Derry, 28333-5.
 Omagh, 29588-98.
 Glasgow, 30910.
 Leeds; diphtheria traced to persons having the bacilli of sore throat, 31145; obscure cases of typhoid-infected milk, 31125.
 Outbreaks of enteric fever attributed to infected separated milk from creameries, 32672, 32856-9.
 See also pp. 179 and 180, and Appendix C.
 Power of Local Government Board to deal with a M.O.H. who does not report case of infectious disease, 32822-5.

DISEASE PREVENTION ACT, 1890; INFECTIOUS.

Power to deal with milk suspected of causing infectious disease; limiting power of the Infectious Disease (Prevention) Act, 1890, 32767-70, 32783-93.
 Proposed amendment of the Act, 32771.
 The Act is adoptive, 32811-6.
 There is power to deal with a milk supply which caused an outbreak of infectious disease, 32159-61, 32213-9, 32266-73.
 It would be a benefit if an outbreak of typhoid, etc., in a milk producer's family were notified by the local Medical Officer of Health to the public health authority of the town receiving the milk, 32162-70.

DISEASES OF COWS.

Contagious abortion. See "*Contagious abortion*."
 White Scour. See "*White Scour*."
 Blackleg common in Co. Sligo, 27075-83.

DIXON, JAMES A., M.R.C.V.S. (Chief Veterinary Inspector, Leeds).

Has found the tuberculin test reliable, 31174-81.
 Cowkeepers are not willing to report tuberculous cows, 31183-5.
 Outside dairy-keepers do not show hostility to the city inspector, 31189-96.
 The veterinary inspector does not report on the condition of outside cowsheds, 31198-222.
 Inside the city the Dairies Order re cowsheds is strictly enforced, 31223, 31227-34.

DRENNAN, JOHN T., B.L. (Registrar and Assistant Secretary to the Estates Commissioners, Ireland).

Reservation of cowplots for grazing labourers' cows.

No application for an allotment has been refused, 32862.
 Applications for allotments have not been numerous, 32863-8; but in any case the inspector considers if a cowplot is necessary, 32868.
 The advantages of appointing individuals or the District Council as trustees discussed, 32870-4.

DRENNAN, JOHN T.—continued.

The plot must be kept in pasture, 32932-3; and for the purposes for which it is reserved, 32934-7.
 List of allotments made by the Commissioners, 32883.
 The Commissioners will assist as far as possible in reserving cowplots, 32880, 32941-4.
 Statement of the law as to sale of lands through the Estates Commissioners, 32881-2, 32921-2.
 Only in the case of untenanted land can cowplots be reserved, 32881.
 What constitutes "untenanted land," 32896-907.
 The scheme for trustees of a cowplot; by whom made and approved, 32882.
 Difficulty of amending the law to enable plots to be reserved in a case of direct sale by landlord to tenant, 32886-95.
 Power to acquire land compulsorily for "migration," 32908-16.
 Athenry; circumstances under which the land was divided among the tenants, 32875-9.
 The Commissioners cannot prescribe that cows shall be kept on the divided lands, 32919.
 Feasibility of joining the acre plots of labourers in Union cottages to make a common grazing ground, 32923-31.

DRIED MILK.

Shows good results in the feeding of children, 31312-7.
 Depot for infants in Sheffield, 32392-6. (Further, see "*Sheffield*.")

F.

FARMER AND LABOURER. Relations between. See "*Labourer*."

FINES.

For adulteration of milk.

Magistrates impose adequate fines for (Enniskillen), 26041-2; (Liverpool), 31644-6; (Birmingham), 32252.
 Small fines imposed (Omagh), 29617-23, 30274-8.
 Fines and public opinion have greatly reduced adulteration in Australia, 30537-9.

For adulteration of buttermilk.

Substantial penalties imposed (Derry), 28306-10.

General.

5/- fine imposed on a man convicted of having a cow with tuberculosis of the udder which he had not reported, 31100, 31103-4.
 Ridiculous penalties in prosecutions for failing to notify animals suspected of disease, 32333-5.
 The harm caused by inadequate fines, 32336-8.

FLETCHER, D. (Executive Sanitary Officer, Derry).

The Dairies Order is enforced in Derry, 28288-96, 28325-31, 28336-41, 28383.
 A large proportion of the milk consumed in Derry is brought in from outside, 28297-301.
 The Corporation officers cannot inquire into the conditions under which that milk is produced, 28302-5, 28397-401.
 The city authority should have power to inspect outside dairies, 28349-50, 28404.
 Prosecutions for adulteration of buttermilk; substantial penalties imposed, 28306-10.
 Standard of purity, 28364-8.
 Buttermilk in Derry is the staple food of the poor, 28311-6.
 There is no scarcity of milk, 28319-20.
 Infectious disease traced to milk; action taken, 28333-5.
 Price of milk, Derry, 28352-3.
 Milk is sold in the streets from carts which come from outside the city, 28300, 28371-80.
 Milk is kept separate in shops where other articles are sold, 28390-6.

G.

GALBRAITH J. (Dairy Farmer and Milk Vendor, Derry).

The value of milk as a food is appreciated, 29146-52.
Keeps a proportion of his cows for second milking, 29161, 29224-5.
Winter feeding for cows, 29165-86.
Difference between morning and evening milk, 29192-3.
Thinks the space specified for each cow under the Dairies Order is too much, 29208-11.
The average yield per cow of his herd is from 300 to 400 gallons, 29226-34.
The Ayrshire and shorthorn cross is good for milk, but not for beef, 29235-43.

GALLAGHER, BERNARD (Vice-Chairman, Board of Guardians, Glenties Union, Co. Donegal).

There is a scarcity of milk along the Glenties seaboard and the backward parts of Co. Donegal, 27887-99, 27908.
Milk is an essential, and its provision should be the concern of the Government, 27944, 27953-5.
Migratory labourers from the Rosses have small holdings of poor land, 27900-7.
The introduction of the Aberdeen Angus bull by the Congested Districts Board has been inimical to the milk supply, 27910-5.
Description of the old Irish cow, 27916-23.
Goats would be useful to labourers, 27960-3.

GALLAGHER, DENIS (Manager of the Lough Eagish Co-operative Creamery, Co. Monaghan).

There has been an increase in the production of winter milk during the last six years, 26577; causes, 26578-87.
Price of winter milk, 26588-9.
Separated milk is sold at the creamery, 26592-6.
Has never been asked to sell whole milk, 26597.
There would be no objection to sell, 26598.
It would not involve hardship to require creameries to sell milk retail, 26599-601.
There is an agreement among creamery managers in the district not to take dirty milk rejected by one of them, 26607-12; and this has had a good effect on suppliers, 26613-4.
Sour milk is received sometimes; treatment, 26615-9.
Separating and pasteurising temperatures, 26620-4.
The milk yield of cows has improved, 26625; the creamery makes tests of individual cow's milk, 26626-34.
There is no cow-testing association in the district, 26635-40.
Disposal of creamery sludge, 26641-3.
The Dairies Order does not reduce the number of milk suppliers, 26648.
Not all the suppliers of the creamery are members, 26681-5.
The creamery sells seeds and manures, 26686.
The Order should apply to all cowkeepers, 26687-95, 26698.
Farmers are required to cleanse their cans at the creamery, 26704-7.

GALLAGHER, MICHAEL (Farmer, Collooney, Co. Sligo, and Member of the Committee of the Collooney Co-operative Creamery).

Milk raised in Collooney is almost all sent to the creamery, 26979-82.
The creamery's receiving area, 27148-51.
No scarcity of milk in the district, 26983-93.
The Collooney creamery would object to sell milk, 26994-8.
But separated milk is sold, 26999-27001.
Reasons why creameries should not be required to sell milk, 27181-9.
Separated milk; uses of, 27002-4, 27018-20.
Is not palatable, 27005-7; but does not go bad quickly, 27008-12.
Is not injurious as a food for calves with the addition of other foods, 27021-8.
Cow-testing associations are of benefit to farmers, 27029-36, 27055-68, 27152-9.
Premium bulls have injured the milk-producing qualities of cows, 27087-42, 27098-121.
The Department's dairy bull scheme will be helpful, 27101-4.

GALLAGHER, MICHAEL—continued.

Average summer and winter price of milk at the creamery, 27043-54.
Farmers think winter dairying does not pay, 27047.
There is not much calf mortality in the district, 27069-75; nor loss from tuberculosis, 27084-96.
Blackleg is the commonest form of disease, 27075-88.
The Sligo Rural District Council were forced to adopt the Dairies Order, 27122-30.
The creamery has no guarantee that the milk supplied is from healthy cows, 27164-8, 27194-9; the creamery will not take dirty milk, 27140-6, 27192-3.
The local Medical Officer of Health notifies the creamery of infectious disease in the house of a supplier, 27200.
Goats are largely kept in the district, 27176-88; farmers believe they prevent disease among cattle, 27182.

GALLOWAY BULLS.

There are some Galloways in Co. Mayo, 27539-48, 27562; in Co. Donegal, 27706-11.
The Galloway is not good for the milk supply, 27551, 27566-7.
Contra, 28835-7.
They deteriorate in value after the first cross, 27563-5, 27608-11.
No complaint made of Galloways as poor milkers (Co. Donegal), 27849-51.
Difficulty of deciding whether to use Galloway bulls; good as stores, bad for milk supply, 28244-5, 28260-2.
Good as stores, 28190-5.

GLASGOW.

Powers to safeguard Glasgow's milk supply, 30871-4.
Tuberculous milk coming into the city, 30875-7, 30884-6.
Special milk supply for hospitals, 30878-81.
Gradual reduction or disappearance of tubercle in milk, 30931-4.
No opposition has been experienced from outside local authorities or persons to Glasgow officials making inspections, 30888-90.
Objections to inspection of country cowsheds and cattle by city authorities, 30959-61; the remedy is to make enforcement of the Dairies Order compulsory everywhere, 30962.
The Municipal Infants' Dairy has been abandoned, 30896-905.
Annual loss on the undertaking, 30948-53.
Infectious disease traced to the milk supply, 30910.
Co-operation from milk vendors, 30911.
Difficulty of tracing disease owing to the mixing of milk, 30911, 30956.
Action taken by public authorities, 30912-23.
Power to deal with tuberculous cows, 30925.
From 70 to 80 per cent. of cows react, 30933-96.
Power to compel removal of tuberculous cows inside or outside the city, 31000-7.
The control over the city milk supply is exercised by visitation, 31027-31.
Incidence of tuberculosis of the udder among cows, 31043.
Milk is reduced to the minimum standard set up by the Milk Commission, 30935-8; number of prosecutions for adulteration, 30940; separated milk is used for reducing the quality of milk, 30941-3.

GOATS.

Tethering, 32450, 32452-4.
Housing, 32450, 32481, 32496-7.
Exercise, 32450, 32481.
Feeding, 32450, 32482.
Milk yield, 32463-76, 32479-80.
Price, 32468.
Use of milk of, for domestic purposes, 32519-22.
State assistance given to goat-keeping in Holland, 32450, 32523.
In favour of encouragement of goat-keeping in Ireland, suggested means of, 32454.
Good milking strains to be preferred to good-looking animals, 32455-8, 32461-2, 32477-8.
Difficulty of importing new goats, 32462, 32488-9, 32493-5.

GOATS—continued.

Foreign goats kid at all times of the year, thus ensuring a continuous milk supply, 32490-3.
 Recommended as a source of supply for a scattered rural population, 26515-6, 26537-9, 26840, 26938-46, 30087-53.
 Objected to, because of destructive habits, 26513, 29088-9, 29249, 29976-9.
 Are kept in the Enniskillen rural district, 26716-21; Collooney, 27176-88; Derry R.D., 28627-8.
 As a preventive of disease among cattle, 27182.
 Not used for milking purposes, 27584-9, 27784-6.
 Would be useful to labourers, 27873-4, 27960-3, 28121-8.
 A good milking breed is required, 28052-7, 28266-7, 29737-42, 29808-10.
 Prejudice against keeping, because it is a sign of poverty, 28254-6.

GOSSELIN, MAJOR SIR NICHOLAS (Member of the County Monaghan Agricultural Committee).

Undertook dairying at Burtonport, Co. Donegal, 28791-6.
 The people sell their best produce, 28797.
 The Aberdeen Angus is not ordinarily a good milking cow, 28802-7.
 Re the old Irish cow, 28808-16.
 The average milk yield per cow in Co. Donegal is about 160-170 gallons, 28817-8; attributable to the poor feeding, 28819.
 Thinks the Kerry bull is most suitable for Co. Donegal, 28825-34.
 Does not agree that persistent use of the Galloway bull has diminished the milk supply, 28835-7.
 Keeping milk records is useful, 28856-61.
 Has grown catch-crops successfully, 28866-77.
 Cabbage is good feeding for milk production, 28881-5, 28892.
 Dairying is more profitable than stock breeding, 28891.

GRAZING.

Facilities given for labourers' cows (Co. Fermanagh), 26790.
 There is a large area in Co. Donegal which could be reclaimed and made into grazing land, 28279.

H.**HANNA, MR. STEELE** (Hon. Secretary of the Eglinton Branch of the W.N.H.A., Co. Londonderry).

Cookery lessons are given in the local National Schools, 28610-23, 28677-87.
 The branch assists necessitous children by giving them milk and eggs, 28625-8.
 Goats are kept by labourers, 28627-8.
 As a milk vendor, goes in for winter dairying, 28638-40.
 The medical officer inspects the byres, but not the cattle in Derry No. 1 Rural District, 28641-7.
 To ensure rigid inspection under the Dairies Order, independent inspectors should be appointed, 28648-51.
 There is no scarcity of milk, 28652-65.
 Buttermilk is cheap and is largely used, 28666.
 The building of labourers' cottages has not caused friction between farmers and labourers, 28675-6.

HARRIS, DR. HUGH (Medical Officer of Health, Stewartstown, Co. Tyrone).

After acting as inspector of cowsheds for the Cookstown Rural District for two years, was superseded by a veterinary inspector at half the salary, 29687-706.
 The Rural Council was not anxious to enforce the Dairies Order, 29697.
 There is scarcity of milk, 29711-27.
 Creameries might be the means of relieving the scarcity, 29791-800.
 Recommends that farmers be subsidised to provide poor people with milk, 29737.

HARRIS, DR. HUGH—continued.

Goats of an improved breed would be useful, 29737-42, 29808-10.
 The Order has not put anyone out of business, 29761-5.
 Supervision by a central authority is necessary to ensure uniform administration of the Order, 29766-8.
 Appointment of whole-time veterinary inspector and medical officer necessary, 29769-73.
 Would assist an urban authority to detect contaminated milk in the rural district, 29816.

HOSPITALS.

Special milk supply for Manchester hospitals, 30745-52, 30791-5; Glasgow, 30878-81; Liverpool, 31547-53; Birmingham, 31997, 32069-72, 32199-202.

HOWATT, JOHN, M.R.C.V.S. (Veterinary Inspector, Derry).

Tuberculin test used, and no reaction obtained from several cows suspected as tuberculous, 28412-8.
 Recommends isolation of reactors, 28421.
 In two cases post-mortem examination showed no visible signs of tuberculosis by animals which had reacted, 28467-79, 28485-7, 28498-507.
 The tuberculin test is the best method of detecting tuberculosis, 28480, 28498-500.
 The difficulty is as to the disposal of reactors, 28481, 28523-31.
 A tuberculous cow may give tuberculous milk, though not suffering from tuberculosis of the udder, 28531-5.
 If the udder was indurated or tuberculous, the milk would be stopped, 28428, 28514-6.
 In the adjoining rural district the medical officers supervise the byres under the Dairies Order, 28430, 28520-2.
 There is no veterinary inspector in the Unions of Londonderry and Inishowen, 28438-49.
 Advantage of keeping milk records, 28453-63.
 Municipal authorities should have power to inspect outside dairies supplying milk to the city, 28488-92.

I.**IMMUNISATION.**

Infection of children by tuberculous milk, 31811-4.
 The theory of immunisation against tuberculosis is not borne out by facts, 31814-8

INFECTION OF MILK. See "*Contamination.*"**INFECTIOUS DISEASE (PREVENTION) ACT, 1890.** See "*Disease, Prevention Act.*"**INSPECTION OF DAIRIES, COWS AND MILK UNDER THE DAIRIES ORDER OF 1908.**

The giving of power to inspect outside dairies under Section 19 of the Tuberculosis Prevention Act, 1908, advocated for—
 Enniskillen, 26045-7, 26080-1.
 Sligo, 26896.
 Londonderry, 28349-50, 28404.

Recommendation that powers of outside inspection be given to municipalities and urban authorities, 28488-92, 28724-6, 28759-61, 31823-7.

Policy of Local Government Board when dealing with applications of municipal and urban authorities for power to inspect outside dairies, 32705-13.

Proposed administration of the Order by a central authority, and the appointment of whole-time inspectors. See "*Dairies Order: Administration of the Order.*"

Medical Officer of Health in rural district would assist an urban authority to detect contaminated milk coming from the rural district, 29816.

Division of Ireland into large administrative areas proposed, each with a veterinary staff under central control, 31823.

The Boroughs should have power to make outside inspections, 31823-7.

INSPECTION OF DAIRIES, COWS AND MILK— *continued.*

England.

The existing method of protecting the milk supply is a clumsy makeshift; each city has to protect itself, 32526; the results are imperfect, 32566-71; and the system is expensive, 32656-8.

Circumstances leading up to the passing of the Manchester Milk Clauses, 30668-70.

Procedure in Manchester of tracing tuberculous milk received from country districts, 30701-6, 30816-21.

Co-operation of outside local authorities, 30810-1. Cowsheds and farms supplying milk to Manchester are inspected and brought up to standard, 30670; great improvements effected, 30721-2, 30730.

The effect of the Milk Clauses has been to secure for Manchester a milk supply from healthy cows, 30711-2; but diseased and suspicious cows have been sold to persons supplying other towns whose milk supply was less rigorously safeguarded, 30713-5, 30739.

As to procedure in other English and Scottish cities, see "*Birmingham*," "*Glasgow*," "*Leeds*," "*Liverpool*," "*Sheffield*."

To justify inspection of an outside farm there must be ground for suspecting the existence of disease, 31067-9, 31144, 31689-95.

The veterinary inspector does not report on the condition of outside cowsheds, 31198-222, 31961-3, 32124-5.

Defective cowsheds in the country are reported to the county authorities, 31688-8, 32309-20.

INSPECTORS, VETERINARY. See "*Dairies Order*."

INSURANCE OF CATTLE.

As a means of getting rid of tuberculosis among cattle, 30974-81.

K.

KERRY COWS.

The Kerry bull is most suitable for Co. Donegal, 28825-84.

L.

LABOURERS.

Get milk from the farmers for whom they work, 30109-84; and are allowed to keep goats, 30124-8. Regular labourers get milk as part wages, 26201-7. The labourer's independence of the farmer has not caused him difficulty in procuring milk, 28675-6. Rural labourers have not difficulty in procuring milk, 29094; farmers object to sell in small quantities, 26534.

Farmers give their labourers the use of a cow (Ennis-killen district), 26397-403, 26724, 26768, 26780. Migratory labourers sometimes buy a cow with their savings, 27778-83.

Milkers get milk for nothing, 29917-20.

LAIRD, DR. JOHN, J.P. (Medical Officer of Health, Sligo No. 1 Rural District).

The Dairies Order has not been put into force in the district, 26802-4.

There is not sufficient milk in Sligo at any period of the year, 26805-14.

And the health of children and others suffers in consequence, 26819-20, 26838-9, 26922-6.

The establishment of creameries in the rural districts reduced the milk available for household use, 26821-4, 26840, 26969.

Creameries retail milk, 26825-7.

Recommends the keeping of goats as a remedy for scarcity, 26840, 26938-46.

Children are getting tea out of feeding bottles, 26842; to the great injury of their health, 26843.

The cost of providing milk for children would be a legitimate charge on public funds, 26845-8.

The local authority would be justified in opening a milk depot, 26886-8.

LAIRD, DR. JOHN, J.P.—*continued.*

The Dairies Order should apply to home butter-makers, 26858.

Infantile cholera traceable to the way milk is fed to children, 26909-10.

The long-tube feeding bottle should be made illegal, 26910-3.

It is illegal in France, 26911.

LEEDS.

The city authorities inspect cows inside and outside the city which supply milk to Leeds, 31062-4.

Procedure for tracing tuberculous milk, 31114-21.

Proportion of tuberculous milk sent into Leeds, 31065-6.

To justify inspection of an outside farm there must be ground for suspecting there is disease, 31067-9, 31144.

Powers to act where milk is suspected of spreading infectious disease, 31070-3, 31141-5.

Action taken when a cow suspected to be tuberculous is discovered, 31074-6, 31120.

There is not a municipal milk depot for infants in Leeds, because the expenditure was ruled *ultra vires*, 31079, 31162.

So a depot was opened on philanthropic lines, 31079-81.

Infant mortality reduced, method of computation, 31079.

5s. fine imposed on a man convicted of having a cow with tuberculosis of the udder, which he had not reported, 31100, 31103-4.

Diphtheria outbreak due to milk supply; traced to persons having the bacilli of sore throat, 31145.

Cowkeepers are not willing to report tuberculous cows, 31183-5.

Outside dairy-keepers do not show hostility to the city inspector, 31189-96.

The veterinary inspector does not report on the condition of outside cowsheds, 31198-222.

Inside the city the Dairies Order re cowsheds is strictly enforced, 31223, 31227-34.

LEGISLATION PROPOSED.

Milk suspected of causing infectious disease; for power to suspend the supply at once, 30973-4.

Power to deal with milk suspected of causing infectious disease; limiting power of the Infectious Disease (Prevention) Act, 1890, 32767-70, 32788-93.

Proposed amendment of the Act, 32771.

The Act is adoptive, 32811-6.

LIVERPOOL.

Inspectors who look after the city's milk supply, 31389-95.

Procedure for detecting infected milk, 31530-5.

There has been no conflict with outside authorities consequent on the inspection of outside farms by the city officials, 31396-9.

Procedure when making such inspections, 31400-9.

Co-operation of local authorities to secure improvements in cowsheds, 31410-9.

Re inspection of city cows on grass during the summer, 31616-31.

Responsibility for adulteration; efforts to fix it on the right party, 31636-43.

Fines imposed, 31644-6.

Form of analyst's certificate, 31647-55.

Difference between morning and evening milk, 31656-67.

Cow-keepers are prosecuted for not notifying cows with diseased udders, 31668; the plea of ignorance is not accepted, 31669-71; fines imposed, 31672.

Cleanliness by city milkers is insisted on, 31673-8.

Defective cowsheds in the country are reported to the county authorities, 31683-8.

No power to inspect outside byres or cattle without a magistrate's order, 31689-90, 31699; and the city authorities must have suspicion there is something wrong, 31691-5.

110 farms visited in 10 years, 31699-700; not all outside farms are visited, 31709-12.

No opposition is now made by farmers to inspection, 31705.

LIVERPOOL—continued.

The lay inspector does not deal with the veterinary surgeon's work at all, 31707-8.
 Refrigerating cars or platforms for milk traffic are not provided by railways, 31714-22.
 Dirty milk; there has been no prosecution for, 31723-9.
 Tuberculosis other than phthisis has been reduced, 31514-8.
 Arrangements made by hospitals to get a pure milk supply, 31547-53.
 There is no sale of "certified" milk, 31532-7.

Municipal Infants' Milk Depots, Liverpool.

Genesis, 31423-5.
 For whom intended, 31426-31, 31574.
 Graduated prices, according to ability of parents to pay, 31432-47, 31577-81.
 Mode of distributing the milk, 31448, 31456-7.
 Loss on working, 31449-50, 31461-6, 31471-81, 31490.
 The expenditure is treated as one for the protection of public health, 31513.
 Mode of treating the milk, 31451-5, 31582.
 Medical advice is not given with the milk, 31458-9, 31482-6.
 Source of supply, 31467-70.
 The milk is a medicine for the infants, 31482.
 Reduction of infant mortality, 31487-9, 31522-6.
 Milk is supplied to nursing mothers, 31491-502.
 Milk is supplied to children under a year old, 31519-21, 31575-6.
 No bad effects observed on children using the milk heated up to 210 degrees Fahrenheit, 31585-7, 31597-600.

LICENSING, instead of Registration, of cow-keepers and milk-vendors proposed.

Licences proposed for
 Cow-keepers, 26059-61, 32047-56, 32636-7.
 Milk-vendors, 26059-61, 31109-10, 30967-9, 30963, 32189.
 Dairyman's premises, 30957-9, 30963.
 Persons selling milk from carts, 30969-73.
 Licensing, instead of registration, under the Dairies Order recommended, 32678-80.
 The effect of the proposed change on the milk supply is not a matter for the Local Government Board, 32681-4.

LLOYD, JOHN SMOUT, F.R.C.V.S. (Chief Veterinary Inspector, Sheffield).

Two-thirds of Sheffield milk supply come from outside, 32284-8, 32428-32.
 Supervision exercised over the milk supply, 32289.
 The city has right to inspect outside sources of supply, 32291-2.
 The quantity of tuberculous milk received has been reduced, 32293, 32351-3.
 Inspection and control exercised over dairies inside and outside the city, 32297-304.
 The opposition to outside inspection has died away, 32305-8, 32323-4.
 Cowsheds in outside districts are defective, 32309-17.
 The Medical Officer of Health, Sheffield, informs the M.O.H. of the district in which the defective byre has been found, 32318-20.
 Compensation is necessary to induce farmers to report diseased cows, 32325-32, 32409-17.
 Ridiculous penalties in prosecutions for failing to notify animals suspected of disease, 32333-5.
 The harm caused by inadequate fines, 32336-8.
 Milk is bacteriologically examined in Sheffield, 32345-50.
 Uses of the tuberculin test, 32354-60.
 A tubercle-free herd, which afterwards contained 50 per cent. of reactors, owing to the place in which they were kept, 32370-80.
 Conditions in Cheshire and the Severn Valley compared, 32388-91.
 There is a dried milk depot for infants in Sheffield, 32392-6.
 To secure uniformity of administration of the Dairies Order, the County Council should be the executive authority, 32397-9.
 Experienced veterinary surgeons are required to detect tuberculous udders, 32400-7.
 Advisability of feeding calves on boiled milk, 32439-46.

LOANS.

For purchase of cows proposed, 27812-6.
 Small loans for alteration, etc., of cowsheds desirable as a means of enforcing the Dairies Order, 26650-1, 20382-6.
 Cow-parks or grazing-fields; loans for purchase of, not admissible, 32348-55.

LONDONDERRY.

There is no scarcity of milk, 28319-20, 28713; and there is an increasing appreciation of it as a food, 28709-12, 28733-8, 29146-52.
 Price of milk, Derry, 28352-3.
 The Dairies Order is enforced in, 28288-96, 28325-31, 28336-41, 28383.
 Milk is kept separate in shops where other articles are sold, 28390-6.
 Milk is sold in the streets from carts which come from outside the city, 28300, 28371-80.
 A large proportion of the milk consumed in Derry is brought in from outside, 28297-301.
 The Corporation officers cannot inquire into the conditions under which that milk is produced, 28302-5, 28397-401.
 The city authority should have power to inspect outside dairies, 28349-50, 28404.
 Buttermilk in Derry is a staple food of the poor, 28311-6.
 Prosecutions for adulteration of buttermilk; substantial penalties imposed, 28306-10.
 Infectious disease traced to milk, action taken, 28333-5.
 Tuberculosis among factory hands is diminishing, 28716-23.
 The factory operatives are nearly all females; women continue to work in the factory after marriage, 28767-88.
 Health of factory operatives good, 29359-69.
 More employment for women than men in, 29381-94.
 Establishment of milk depots advocated, 29369-70, 29373-5.
 Objection to the taxation of milk carts coming into, 29376-80.
 Table showing number of cattle slaughtered in the abattoir since 1907, distinguishing the sound from the diseased, 28537-40, 28555-7, 28576-8.
 Post-mortem examination of carcasses to ascertain if they fit for human food, 28541-54.
 There is no licensed private slaughter-house in, 28565-6, 28580-5.
 Condemned carcasses are destroyed, 28567-8.
 Standard of condemnation, 28586-92.
 Meat may come into Derry which has not been inspected, 28598-604.

LYON, JAMES (Manager of the Ballyrashane Co-operative Creamery, near Coleraine).

The creamery and its auxiliaries tap North Antrim, 29259-60.
 Works three days a week in the winter, 29263.
 A few progressive men go in for winter dairying, 29267-76, 29350-5.
 It is a blot on the Dairies Order that a milk supplier can exempt himself from its provisions by becoming a home butter-maker, 29282-4, 29296.
 The creamery sells milk retail in small quantities, 29288-92; but the auxiliaries do not, 29293-5.
 It would be possible to retail milk at the auxiliaries, 29323-8.
 Deterioration in milk-yielding qualities of cows attributed to (1) premium bulls, 29306; (2) sale of the best milking cows, 29307.
 Milk records are useful, 29309-12.
 Milk and cream are pasteurised, 29313-7.
 Disposal of the creamery effluent, 29330-43.

M.

McCAUL, DR. GEORGE B., J.P. (Representing the Derry Corporation).

Has large experience of factory operatives, 28691-705.
 Recommends milk and buttermilk in preference to tea, 28706; or porter, 28744.
 Food value of milk and buttermilk compared with that of porter and tea, 28744-7.
 There is no scarcity of milk in Derry, 28713; and there is an increasing appreciation of it as a food, 28709-12, 28733-8.

McCAUL, DR. GEORGE B.—*continued.*

- Tuberculosis among factory hands is diminishing, 28716-23.
- Municipal authorities should have the right to inspect outside dairies supplying milk to the city, 28724-6, 28759-61.
- Need of veterinary inspection, and power to apply the tuberculin test, to stamp out tuberculosis among cattle, 28751-4.
- Recommends the appointment of a County Medical Officer of Health and veterinary inspector, 28755-7.
- The factory operatives are nearly all females; women continue to work in the factory after marriage, 28767-88.

MACDOWEL, DR. E. C. (Surgeon to the Sligo County Hospital and Visiting Physician to the Sligo Lunatic Asylum).

- There is an inadequate milk supply in Sligo and district for poor children, especially in winter, 27203-5.
- Farmers sometimes stint their own families of milk, 27206-7.
- Milk essential to children up to five years of age, 27208.
- Favours the establishment of milk depots by local authorities, 27209-11.
- Thinks farmers could combine to start a depot, 27211.
- All milk for children should be boiled, 27223-7.
- Want of cleanliness in handling milk, 27235, 27268-9.
- Pure milk depot opened in Sligo by the W.N.H.A., 27250.
- Advocates the appointment of a County Officer of Health, 27272-4.

McDWEYER, REV. HUGH (Manager of the St. Columba Industrial School for boys, Killybegs).

- Scarcity of milk in County Donegal in winter and spring, 28059-63.
- Experiment in catch-cropping was a failure, 28076-83.
- The Aberdeen Angus is generally used in the Western part of the county, 28090; and is a poor milker, 28091-4.
- Tuberculosis is fairly common, 28107-19.
- The improved breed of goats would be useful to labourers, 28121-8.
- The old Irish cow described, 28132-8, 28084-6.
- Oatmeal is not so much used as formerly, 28149; and stewed tea is common, 28150-4.

McGILLION, JAMES (Representing the Omagh Urban District Council).

- The Dairies Order has been enforced by the Urban Council, 29559-78, 29600-16.
- There is scarcity of milk in Omagh in three winter months, 29579-82, 29624-5, 29631-49; also in the rural district, 29626-30.
- The creameries are blamed for the shortage, 29650-66.
- The spread of infectious disease has been attributed to the milk supply, 29588-98.
- The fines for adulteration of milk are small, 29617-28.
- Recommends the establishment of an urban milk depot, 29634, 29644.
- The creamery sells separated milk, but the supply is not sufficient for the demand, 29658, 29676-82.

McLOUGHLIN, PATRICK (Member of the Omagh Urban District Council).

- Great scarcity of milk in Omagh in winter; some scarcity in summer, 30266-73.
- Magistrates do not convict, or impose only nominal fines, in prosecutions for adulteration, 30274-8.
- The creamery should be required to sell milk and buttermilk, 30279-81, 30291.
- Blames the creameries for the shortage of milk for domestic use, 30282-90.
- Creamery buttermilk is not the same as that from the old dash churn, 30292-5.

McMEEL, REV. GEORGE, D.D. (Parish Priest of Pettigo, and representing the Belleek Branch of the W.N.H.A.).

- There is scarcity of milk in the mountainous district of Mullybreen, 26509.
- Prejudice against goats, because destructive, 26513.
- The goat would be a remedy where there is scarcity in County Fermanagh and County Donegal, 26515-6, 26537-9.
- Creameries are blamed for the scarcity, 26517-8.
- Farmers are not willing to sell milk in small quantities, 26534.
- The need of milk is such as to justify State or rate aid, especially in the winter, 26540-9.

McNELIS, MICHAEL, J.P. (Clerk of the Glenties Rural District Council, Co. Donegal).

- The Dairies Order is in force in the district, 27666, 27756-63; and three lay inspectors have been appointed, 27667-73.
- A veterinary inspector has not been appointed because there is no veterinary surgeon resident in the Union, 27674-7.
- People who gave up milk-selling because of the Order have resumed selling, 27798-804.
- There is scarcity of milk in parts of the district, 27681-2, 27695-705, 27728-37.
- Status and occupation of the population, 27683-94.
- The Galloway breed is used in the mountainous districts, 27706-11.
- No complaint is made of it as a poor milker, 27849-51.
- Major Gosselin's dairy at Burtonport, 27711-22.
- Price of milk, 27764-6.
- Migratory labourers sometimes buy a cow with their savings, 27778-83.
- Goats are not used for milk purposes, 27784-6.
- Would be useful for labourers, 27873-4.
- Loans for purchase of cows would be useful, 27812-6.
- The average yearly milk yield of cows in small holdings is from 100 to 150 gallons, 27817-9.
- The Congested Districts Board give assistance to provide dairies and byres, 27822-32.
- Disease attributed to the milk supply, 27834-40.

MALCOLM, JOHN, F.R.C.V.S. (Chief Veterinary Inspector, Birmingham).

- Steps taken to safeguard the Birmingham milk supply from infection, 31929, 31965, 32093-5.
- Power to go outside the city to inspect herds suspected of supplying tuberculous milk, 31980, 31935, 32059-64, 32121-3.
- Action taken re infected cow on discovery, 31930.
- Disposal of milk of suspected cow, 31966, 32114-7.
- The percentage of tuberculous milk coming in has been reduced, 32102-5.
- Extent to which the power to make outside inspections has been exercised, 31934, 31964.
- There has been no hostility from outside sources, 31959-60.
- The city officers do not take notice of outside cowsheds, only of tuberculous cattle, 31961-3, 32124-5.
- Inspection inside the city has had salutary results, 31986-49.
- Genuine milk of poor quality; the veterinary inspector advises farmer how to remedy the defect, 31951-6.
- The tuberculin test is used for ridding herds of tuberculosis, not for ascertaining if a cow gives tuberculous milk, 31967-70, 32106-12.
- Tuberculin-tested herds which supply milk to Birmingham, 31971-80, 32088-92; such milk fetches a higher price, 31993-8.
- Reliability of the tuberculin test, 32008-14.
- Disposal of reactors, 32007, 32072-5; the difficulty is to secure the means of isolating them, 32084-7.
- A herd having 85 per cent. of reactors which gave no tuberculous milk, 31981-92; another instance of reactors giving tubercle-free milk, 32076-83.
- Hospitals' milk supply, 31997, 32069-72.
- To secure uniform administration central supervision is necessary, 32015-21.
- Balance of advantage in making the Board of Agriculture the central authority, 32022.

MALCOLM, JOHN—continued.

The Birmingham Public Health Authority give as compensation half the value of tuberculous cows slaughtered up to £4, 32023-30, 32041-6. But general measures are necessary if tuberculosis is to be eradicated, 32031-4.

Licensing, instead of registering, cowkeepers, is necessary, 32047-56.

MANCHESTER.

Duties of chief veterinary inspector in connection with milk, 30658A.

The sanitary inspector acts as Inspector of Milk-shops, 30665, 30829; but does not deal with the conditions of cattle, 30830.

Circumstances leading up to the passing of the Manchester Milk Clauses, 30668.

Supervision of the milk supply dates from the appointment of Dr. Niven as Medical Officer of Health, 30668.

Condition of cows and byres at date of Dr. Niven's appointment, 30668.

Work done by Dr. Niven and Professor Delépine showing the necessity for securing control over milk supplies coming into Manchester from outside, 30668-70.

The result of Manchester's action was the framing of the Model Milk Clauses by the Local Government Board which all authorities may apply to adopt, 30670.

Areas from which the Manchester milk supply is drawn, 30711; cow-keepers in these areas were notified of the Milk Clauses, 30711.

Procedure in Manchester of tracing tuberculous milk received from country districts, 30701-5; mode of tracking down the cow giving tuberculous milk, 30706, 30816-21.

Co-operation of outside local authorities, 30810-11.

As to prosecution of offenders outside the city area, 30831-2, 30864-7.

Cowsheds in the city area which are not a nuisance are encouraged, 30665.

Cowsheds and farms supplying milk to Manchester are inspected and brought up to standard, 30670.

Great improvement in cowsheds effected, 30721-2, 30739.

Requirements as to light, ventilation, drainage, etc., of cow-byres, 30671-3, 30723-45.

The custom of keeping old cows in the city has been done away with, 30674; tending to the freedom of milk from disease, 30674.

Mode of dealing with cow-keepers who do not keep their cattle and byres clean, 30688-90.

Few cows with tuberculous udders have been found in the city in last ten years, 30674.

There are no tuberculin-tested herds in the city, 30674-8.

Special milk supply for city hospitals, 30745, 30791-5.

The producer placed himself in the hands of the Corporation officials, who have eradicated tuberculosis from his herds, 30745-52.

The incidence of disease other than tuberculosis has also been enormously reduced, 30752-9.

Practical impossibility of convicting a farmer of knowingly selling tuberculous milk, 30711: but prosecutions have been instituted for not notifying cows with tuberculous udders, 30711. The effect of the Milk Clauses has been to secure for Manchester a milk supply from healthy cows, 30711-2; but diseased and suspicious cows have been sold to persons supplying other towns whose milk supply was less rigorously safeguarded, 30713-5, 30739.

Price of milk in Manchester, 30779-81, 30771-3.

The quality of Manchester milk is good and comparatively free from adulteration, 31293-9.

The city authorities have not provided milk depots, 31270-1.

A private enterprise was started on the lines of the Copenhagen Milk Supply (Busck's), but did not succeed, 31271-6.

The amount of dirt in Manchester milk has been enormously reduced, 31277.

The quantity of tuberculous milk sent in has been reduced to the minimum possible by existing methods, 31278-9, 31328.

MANCHESTER—continued.

Power to prevent tuberculous milk coming into the city, 30864-7.

Continuous fall in the infantile death-rate (Manchester) from tuberculosis, 31255, 31259-60.

No reduction in rate from other forms of tuberculosis than phthisis for age period of 5 to 14 years, 31255.

The inference is that two factors are working to reduce human tuberculosis—purer food (especially milk) and less human infection, 31256-64, 31280-92.

No outbreak of infectious disease traced to the milk supply, 31265.

MANCHESTER MILK CLAUSES.

Circumstances leading up to the passing of, 30668-70.

The result of Manchester's action was the framing of the Model Milk Clauses by the Local Government Board, which all authorities may apply to adopt, 30670.

The effect of the Milk Clauses has been to secure for Manchester a milk supply from healthy cows, 30711-2.

But diseased and suspicious cows have been sold to persons supplying other towns whose milk supply was less rigorously safeguarded, 30713-5, 30739.

MEDICAL OFFICER OF HEALTH.

The appointment of whole-time medical officers by a central or county authority to report on the health of districts is desirable; they would investigate the reports of local practitioners, 26280-91, 28755-7.

Appointment of a County Medical Officer of Health advocated, 27272-4, 29769-73.

Power of Local Government Board to deal with an M.O.H. who does not report case of infectious disease, 32822-5.

MILK.

Scarcity of milk: alleged causes, and proposed remedies. See "*Scarcity*."

Dried milk. See "*Dried milk*."

Separated milk. See "*Separated milk*."

Value as a food.

Milk is essential to children up to five years of age, 27208.

Not sufficiently appreciated as a food, 26128-45, 26159, 28248-7, 29775.

Contra, 29146-52.

Not used, because of poverty, 26160-5; or because the money available is spent on drink, 26248-7, 29776.

Farmers sometimes stint their own families of milk 27206-7, 26871, 29722.

Milk and buttermilk recommended in preference to tea, 28706; or porter, 28744.

Food values of these four articles compared, 28744-7.

Price of milk.

Glenties, 27764-6; Derry, 28352-3.

Price of winter milk, 26862-70, 26886.

Dirty Milk.

Want of cleanliness in handling milk, 27235, 27268-9.

Filtration of milk removes dirt but not dangerous bacteria, 31768-70.

Winter milk.

See "*Winter dairying*."

Legal standard of pure milk.

The legal standard is based on the poorest pure milk, 31655.

Difference between morning and evening milk, 29192-3.

Milk production.

Cabbage is good feeding for, 28881-5, 28892.

General.

Improvement possible in regard to the storage of milk in shops (Enniskillen), 26020-1, 26094-8, 26194-200; to prosecute would mean closing the shops, 26022-4.

Huxters' shops; to forbid the sale of milk in, might cause hardship. Special supervision necessary, 32260-5, 32664-71.

MILK—continued

It is better to have a plentiful supply of milk produced under ordinary conditions than a smaller supply of more expensive milk, 32287.

Children drinking tuberculous milk usually resist infection if of good vitality, 32572-6.

Children suffer more from want of milk than from the effects of milk, 32577-8, 32585-6.

The butter content of milk varies sometimes according to the pastures the cows feed on, 26387-9.

Difference between morning and evening milk, 29192-3.

Decomposition of milk above a temperature of 60 degrees Fahrenheit, 30525.

Effects on children, 30525, 30571.

People do not know the value of tubercle-free milk, 31377, 31385-6.

Bottled milk, advantages of, 30966-7, 31089-92; is dearer than ordinary milk, 31093-5.

Milk suspected of causing infectious disease; for power to suspend the supply at once, 30973-4.

City milk is better than country milk, 31611-4.

"Certified" milk, no sale of, 31562-7.

Is dearer than ordinary milk, 32222-4.

Difficulty of controlling milk which comes from the same farm partly from tuberculin-tested and partly from non-tuberculin-tested herds, 30686-8.

Nutritive properties of milk are injured by heat, 30882, 30897-9, 30926-7, 31085-8.

Cooling preferable to boiling, 30822.

To boil milk interferes with its food value, 31731.

But boiled milk is a much safer food for infants than ordinary unboiled milk, 31731-2.

Milk should be first raised to the boiling point and then used, 31733-4.

Ordinary pasteurisation diminishes, but does not remove the danger of infection, 31736.

Results of experiments at various temperatures for different periods, 31736; showing that cream cannot thereby be sterilised for butter-making, 31737-9.

Commercial pasteurisation would be less efficient, 31740-1.

Effects on butter of heating cream to various temperatures, 31742.

Separated milk which has been pasteurised sometimes undergoes putrefaction more easily than milk which has not been so treated, 31742-6.

Recommends sterilisation rather than the introduction of lactic acid bacilli, 31747-52.

Buttermilk; effect on, from cream heated to various temperatures, 31742.

Lactic acid bacilli retard putrefaction in milk or milk products, 31748.

Knows of no facts to support the statement that the use of sterilised milk by babies causes rickets and scurvy, 31753.

Babies and cows have thrived well on boiled milk, 31753-8.

Butter made from milk containing tubercle bacilli, and the buttermilk, remain infectious, 31759.

Cheese also may be infected, 31759.

Question whether a cow-keeper should be allowed to sell, untreated, the milk of reacting cows, 30835-60.

Microscopical examination of milk is not sufficient, 31764-7, 31802-5.

Direct inspection of farms, plus bacteriological testing of milk of suspected cows, is better, 31772.

Filtration of milk removes dirt, but not dangerous bacteria, 31768-70.

Milk does not need to be ventilated, 32665-8.

MILK CLUBS, as a remedy for scarcity of milk.

There is no organised demand for milk, hence difficulty of arranging for a supply, 30297, 30311-4, 30340-2.

Suggested means of organising a demand, e.g., formation of milk clubs, 30315.

Work done by the United Irishwomen; depot in Borris and itinerant distribution at Fenit, 30319-34.

Need of an organising body to ensure a milk supply, 30323.

The United Irishwomen and the W.H.N.A. might be the organisers, 30339.

MILK CLUBS—continued.

The I.A.O.S. will try to arrange through creameries and farmers to meet a demand, 30297, 30339.

Re payment, tickets could be bought beforehand at the depot and handed to the contractor for the milk, 30335-8, 30419; this would prevent fraud and bad debts, 30372.

Milk in the winter is scarce and might be pasteurised, 30297, 30410-3.

Creameries are willing to sell milk, 30300-1; objections to sell could be overcome, 30389-92.

If creameries are too far away, milk could be distributed at cross-roads, etc., 30300.

Probable price of milk sold at creameries, 30302-8.

Creameries might be able to sell milk daily in the winter, 30448-51.

Chilling milk after pasteurisation, 30344-57.

Co-operative societies could not be started solely for the sale of milk because of the expense, 30362.

Clubs would be sufficient, 30397-409.

MILK DEPOTS, INFANTS'.

In Glasgow has been abandoned, 30896-905.

Annual loss on the undertaking, 30948-53.

There is not a depot in Leeds because the expenditure was ruled *ultra vires*, 31079.

So a depot was opened on philanthropic lines, 31079-81.

Infant mortality reduced; method of computation, 31079.

There is a dried milk depot for infants in Sheffield, 32392-6.

Municipal Infants' Milk Depots, Liverpool.

Genesis, 31423-5.

For whom intended, 31426-31, 31574.

Graduated prices, according to ability of parents to pay, 31432-47, 31577-81.

Mode of distributing the milk, 31448, 31456-7.

Loss on working, 31449-50, 31461-6, 31471-81, 31490.

The expenditure is treated as one for the protection of public health, 31513.

Mode of treating the milk, 31451-5, 31582.

Medical advice is not given with the milk, 31458-9, 31482-6.

Source of the supply, 31467-70.

The milk is a medicine for the infants, 31482.

Reduction of infant mortality, 31487-9, 31522-6.

Milk is supplied to nursing mothers, 31491-502.

Milk is supplied to children under a year old, 31519-21, 31575-6.

No bad effects observed on children using the milk heated up to 210 deg. F., 31585-7, 31597-600.

Local authorities have no right to establish milk depots in Ireland, 32772-82.

MILK PRODUCTS.

Proposal that the provisions of the Dairies Order should apply to. See "*Dairies Order: proposed amendments.*"

MILK RECORDS.

Records kept, 27403-6.

Advantage of keeping, 28453-63, 28856-61, 29309-12.

By keeping records, has been able to get rid of poor milkers, 29965-70, 29993-6.

The average yield per cow has been raised from 300 to 500 gallons, 29967.

By keeping records a farmer turned a loss into a profit, 31015-9.

MILK VENDORS.

Should be licensed. See "*Licensing.*"

MORRISON, Dr. H. S. (Medical Officer of Health, Aghadowey, Co. Antrim; and President of the Aghadowey Co-operative Creamery).

The Dairies Order is enforced in the Coleraine rural district, 28895-906, 28924-6.

The creamery has not been asked to retail milk, 28914-6; but would do so if asked, 29090-3.

The manager returns dirty milk, 28918-21.

The long-tube baby's bottle is used, 28935-9, 28978-9.

No scarcity of milk in Coleraine and district, 28927-34, 28940-4.

Farmers sell milk to labourers, 29094.

MORRISON, DR. H. S.—continued.

- The cream is pasteurised, 28952-65.
 Recommends the use of a shorthorn bull of milking strain, 28980-6, 29086-7.
 Winter dairying is not considered profitable, 28990-1, 29060-9, 29111.
 The creamery suffers by the absence of winter dairying, 29118-9.
 Whether winter dairying pays depends on the cow's yearly yield, 29131-6.
 Price of winter milk, 28992-3, 29071-6, 29137; of summer milk, 29070.
 Creamery works three days a week in winter, 28994-6.
 Inspection of creameries should be made by expert inspectors acting under a central authority, 29019-36.
 Disposal of creamery sludge, 29040-8.
 Goats are not popular, 29089; would not object to goats which were not destructive and gave a good milk supply, 29083-8.
 The Control Butter Scheme of the I.A.O.S. described, 28963-5, 29098-102.
 Home-butter makers should come under the Dairies Order, 29110.

MOTHERS.

- Instruction of, as to value of milk as a food desirable, 29775.
 Need instruction as to the rearing of children, 26146-52, 26218-22.

MURRIN, THOMAS (Resident in Killybegs district, Co. Donegal).

- Milk plentiful, May to Xmas; scarce for the rest of the year, 28161-4.
 The population consists of small farmers, 28165-7.
 The old Irish cow is not extinct, 28172-4, 28181-7.
 There is not much disease among cattle, 28213-7.

MUSSEN, DR. A. A. (Assistant Medical Officer of Health, Liverpool).

- Inspectors who look after the city's milk supply, 31380-95.
 Procedure for detecting infected milk, 31530-5.
 There has been no conflict with outside authorities consequent on the inspection of outside farms by city officials, 31396-9.
 Procedure when making such inspections, 31400-9.
 Co-operation of local authorities to secure improvements in cowsheds, 31410-9.
 Tuberculosis other than phthisis has been reduced, 31514-8.
 Arrangements made by hospitals to get a pure milk supply, 31547-53.
 There is no sale of "certified" milk, 31562-7.

Municipal Infants' Milk Depots, Liverpool.

- Genesis, 31423-5.
 For whom intended, 31426-31, 31574.
 Graduated prices, according to ability of parents to pay, 31432-47, 31577-81.
 Mode of distributing the milk, 31448, 31456-7.
 Loss on working, 31449-50, 31461-6, 31471-81, 31490.
 The expenditure is treated as one for the protection of public health, 31513.
 Mode of treating the milk, 31451-5, 31582.
 Medical advice is not given with the milk, 31458-9, 31482-6.
 Source of the supply, 31467-70.
 The milk is a medicine for the infants, 31482.
 Reduction of infant mortality, 31487-9, 31522-6.
 Milk is supplied to nursing mothers, 31491-502.
 Milk is supplied to children under a year old, 31519-21, 35575-6.
 No bad effects observed on children using the milk heated up 210 deg. F., 31585-7, 31597-600.

N.

NIVEN, DR. JAMES (Medical Officer of Health, Manchester).

- Continuous fall in the infantile death-rate (Manchester) from tuberculosis, 31255, 31259-60.
 No reduction in rate from other forms of tuberculosis than phthisis for age-period of 5 to 14 years, 31255.
 The inference is that two factors are working to reduce human tuberculosis, purer food (especially milk) and less human infection, 31256-64, 31280-92.
 No outbreak of infectious disease traced to the milk supply, 31265.
 There is occasional objection to the application of the Widal test, 31266-9.
 The city authorities have not provided milk depots, 31270-1.
 A private enterprise was started on the lines of the Copenhagen Milk Supply (Busck's), but did not succeed, 31271-6.
 The amount of dirt in Manchester milk has been enormously reduced, 31277.
 The quantity of tuberculous milk sent in has been reduced to the minimum possible by existing methods, 31278-9, 31328.
 Tuberculosis in adult life is largely due to human infection, 31292.
 The quality of Manchester milk is good and comparatively free from adulteration, 31293-9.
 Dried milk shows good results in the feeding of children, 31312-7.
 Summer diarrhoea: causes of, 31319.
 The complete eradication of tuberculosis in cattle is necessary to stamp out the disease, 31328.
 State aid necessary, 31320.
 Importance to agriculture and the dairy industry, 31330.
 It has been done in single herds, 31331.
 Discussion as to treatment of reacting cows and the disposal of their milk, 31333-75.
 If owners of tuberculin-tested herds would communicate with physicians, the latter could recommend the milk for patients, children, and hospitals, 31376-84.
 Ordinary people do not know the value of tubercle-free milk, 31377, 31385-6.

O.

O'BOYLE, JAMES, J.P. (Farmer, Killala district, Co. Mayo).

- No creameries in North Mayo, 27536.
 There is scarcity of milk, 27537-8, 27578, 27591-3.
 Goats are not used for milking purposes, 27584-9.
 The Angus breed predominates: there are some Galloways, 27539-48, 27562.
 Wants a pure-bred shorthorn bull of milking strain to be sent to the district, 27552-4, 27568, 27656-60.
 The Department has allowed shorthorn cattle of good milking strain to be lost to the district, 27555-61, 27628-31, 27641-55.
 The Galloway breed has not been good for the milk supply, 27551, 27566-7.
 They deteriorate in value after the first cross, 27563-5, 27608-11.
 Suggests that no bulls be used except those approved by the Department, 27569-74.
 Trade in old cows, 27598-608.
 No Veterinary Inspector has been nominated for Killala rural district, 27634-8.

O'BYRNE, PATRICK (Resident in Killybegs, Co. Donegal).

- Milk is scarce from December to April all over the district, 27998-804.
 More scarce in villages than in the country, 28022-31.
 As a result of the Dairies Order, a number of milk sellers became home-butter makers, 28005-6; but this righted itself subsequently, 28007-8.
 There is not much winter calving, 28009; and no catch cropping, 28020-1.
 The old Irish cow; good as a milker, 28013-6.

O'BYRNE, PATRICK—*continued*.

Fishermen make an easier livelihood now than formerly, 28082-4.

Loans are made by the Congested Districts Board to buy nets and boats, 28046-51.

There is an agricultural bank in the district, 28038-45.

A good milking breed of goats is required, 28052-7.

OUTBREAKS OF DISEASE attributable to milk.
See "*Disease, outbreaks of*."

P.

PASTEURISATION OF MILK.

For—

Pasteurisation is the best way to deal with milk from herds which are not tuberculin tested, 30581; but it enables the dishonest vendor to sell milk not fit for consumption, 30581.

The preliminary souring is eliminated by pasteurisation, and milk may be dangerous before there is warning, 30581-6.

Against—

Pasteurised milk not liked, 27222.

General.

Keeping qualities of pasteurised milk, 30216-20, 30230-47.

Ordinary pasteurisation diminishes but does not remove the danger of infection, 31736.

Results of experiments, 31736.

Commercial pasteurisation would be less efficient, 31740-1.

PENALTIES for adulteration of milk, etc. See "*Fines*."

PORRIDGE.

Not so much used as formerly, 28149.

Is eaten, if milk is available, 28268.

PORTER.

Food value of, compared with milk and buttermilk, 28744-7.

PRENTICE, DAVID, M.R.C.V.S. (Superintendent Transit Inspector in the Veterinary Branch of the Department of Agriculture, Dublin).

The Department's Veterinary Inspectors cannot well exercise control over the locally appointed Veterinary Inspectors, 32947, 32957.

Harmonious working between the Department of Agriculture and Local Government Board where there are points of contact, 32948.

But one Board—the Department—must be responsible for diseases in animals, 32948, 32967.

A Committee representing the Department, the Local Government Board, and the Veterinary College not a suitable body to control the veterinary service, 32958.

But the present system of having two sets of inspectors responsible to different departments is not economical or efficient, 32960-2.

Two sets of Veterinary Officers: appointed

(1) By local authorities under the Public Health Acts, 32949.

(2) By County or Borough Councils under the Diseases of Animals Act, 32950.

Local bodies appoint inspectors at nominal salaries, making the efficient performance of duty impossible, 32951-4.

Locally appointed officers who are not independent, 32951A.

Central control necessary to secure uniform administration, 32988-93.

Tuberculosis Notification Order of 1910 not successful as a means of ascertaining the number of tuberculous cows, 32954, 32981-7.

Compensation must be paid to induce owners to report, 32969-70.

The State should pay part of the compensation, 32973-7.

Reliability of the tuberculin test, 32965-6.

PRESERVATIVES.

Use of, in Ireland, 32845-7.

Forbidden in England, 32668-4.

Use of, illegal in milk in England, 31162-5, 32280; legal in cream, 32281.

Q.

QUINTON, JOHN T. (Food and Drugs Inspector, Liverpool).

City milk is better than country milk, 31611-4.

Re inspection of city cows on grass during the summer, 31616-31.

Responsibility for adulteration: efforts to fix it on the right party, 31636-43.

Fines imposed, 31644-6.

Form of analyst's certificate, 31647-55.

Difference between morning and evening milk, 31656-67.

Cowkeepers are prosecuted for not notifying cows with diseased udders, 31668. The plea of ignorance is not accepted, 31669-71. Fines imposed, 31672.

Cleanliness by city milkers is insisted on, 31673-8.

Defective cowsheds in the country are reported to the county authorities, 31683-8.

No power to inspect outside byres or cattle without a magistrate's order, 31689-90, 31699; and the city authorities must have suspicion there is something wrong, 31691-5.

110 farms visited in 10 years, 31699-700; not all outside farms are visited, 31709-12.

No opposition is now made by farmers to inspection, 31705.

Does not deal with the Veterinary Surgeon's work at all, 31707-8.

Refrigerating cars or platforms for milk traffic are not provided by railways, 31714-22.

Dirty milk: there has been no prosecution for, 31723-9.

R.

RAILWAYS.

Refrigerating cars or platforms for milk traffic are not provided by, 31714-22.

REACTORS. See "*Tuberculin Test*."

RICKETS. References to.

Causes of, 32616.

Use of scalded milk leading to scurvy rickets, 30626-32.

Milk sterilised by peroxide of hydrogen; alleged as a cause of scurvy rickets, 30906.

Not caused by the use of sterilised milk, 31753.

Is a bottle-fed baby's ailment, 32617.

ROBERTSON, DR. JOHN, M.D., B.Sc. (Medical Officer of Health, Birmingham).

There is less tuberculosis in Birmingham than in other large comparable towns, 32135-6.

There is a staff of lady health visitors who instruct poor mothers as to the care of their babies, 32138-44, 32153-5.

Attributes the high rate of infant mortality to improper feeding and treatment of babies; the milk supply is not the cause, 32145-51.

It is better to have a plentiful supply of milk produced under ordinary conditions than a smaller supply of more expensive milk, 32237.

The small shops which sell milk serve a useful purpose, but require special supervision, 32260-5.

There is no municipal milk depot in Birmingham, 32152.

Sterilised food is not good for children continuously, 32158; but to avoid danger to young children, milk should be sterilised, 32155-8.

ROBERTSON, DR. JOHN—*continued.*

There is power to deal with a milk supply which causes an outbreak of infectious disease, 32159-61, 32218-9, 32266-73.

It would be a benefit if an outbreak of typhoid, etc., in a milk producer's family were notified by the local Medical Officer of Health to the public health authority of the town receiving the milk, 32162-70.

Danger of typhoid from use of impure water for washing cans or cattle standing in foul water, 32173-9.

Would like to have power to forbid milk to come into the city from dirty sheds, or where the water supply is bad, 32232-4.

The existing (slow) method of detecting tuberculous milk is reliable and therefore preferable to others, 32180-5.

The Dairies Order should be administered by the County Councils, 32191-4; if administered by a central body it weakens the interest and initiative of the local body, 32195; and the standard of uniformity would have to be the minimum standard, 32196-8.

The appointment of a County Veterinary Inspector would be good, 32207-12.

The hospitals get tubercle-free milk, 32199-202.

Certified tubercle-free milk is dearer than ordinary milk, 32222-4.

"Nothing we can do is too expensive to stop tuberculosis," 32225.

The proper way to get non-tuberculous milk is to free cattle of tuberculosis, 32225-7.

No one city can undertake that task, 32227A-9.

Try simple methods of keeping bovines under better conditions as a remedy, 32239-41.

It would not be wise to rely on the Widal test to discover typhoid carriers, 32273-9.

Preservatives in England; not legal in milk, legal in cream, 32280-1.

ROBERTSON-SCOTT, J.W. (*re goats and milk-sheep*).

Scarcity of milk in labourers' cottages in rural England, 32450, 32498-9.

Causes, 32500-9.

Re Goats:

Tethering, 32450, 32452-4.

Housing, 32450, 32481, 32496-7.

Exercise, 32450, 32481.

Feeding, 32450, 32482.

Milk yield, 32463-76, 32479-80.

Price, 32468.

Use of milk of, for domestic purposes, 32519-22.

State assistance given to goat-keeping in Holland, 32450, 32523.

In favour of encouragement of goat-keeping in Ireland, suggested means of, 32454.

Good milking strains to be preferred to good-looking animals, 32455-8, 32461-2, 32477-8.

Difficulty of importing new goats, 32462, 32483-9, 32493-5.

Foreign goats kid at all times of the year, thus ensuring a continuous milk supply, 32490-3.

Milk-sheep, 32459-60, 32517-8.

State encouragement of milk-sheep breeding in Holland, 32523.

Milk yields in Holland have been increased by State control, 32511-3.

S.

SCARCITY OF MILK, ALLEGED CAUSES AND PROPOSED REMEDIES.

SCARCITY OF MILK.

Areas of scarcity—Co. Fermanagh, Enniskillen R.D., 26173.

Co. Sligo—Sligo, 26805-14, 27203-5.

Co. Donegal—Glenties R.D., 27681-2, 27695-705, 27728-37, 27887-99, 27908; Killybegs, 27998-28004, 28161-4; Falcarragh Union, 28230.

More scarce in villages than in the country, 28022-31.

Scarcity in the county in winter and spring, 28059-63.

Co. Tyrone—Omagh, 29579-82, 29624-5, 29631-49, 30266-73; (*Contra*, 30055-8, 30098-102); Stewartstown, 29711-27.

SCARCITY OF MILK, ALLEGED CAUSES AND PROPOSED REMEDIES—*continued.**England.*

Scarcity of milk in labourers' cottages in rural England, 32450, 32498-9.

Causes, 32500-9.

Milk ordered by doctor for children or patients not procurable, 26809, 26922-4, 27203, 27790-2, 29717.

The scarcity is greater in non-creamery than in creamery districts, 30297.

No scarcity:

Co. Fermanagh—Enniskillen, 26029-30, 26128.

Co. Sligo—Collooney, 26983-93, 27488-93.

Co. Mayo—Killala district, 27537-8, 27578, 27591-3.

Co. Londonderry—Derry, 28319-20, 28713; Derry No. 1 R.D., 28652-65; Coleraine R.D., 28927-34, 28940-4.

Co. Tyrone—Omagh R.D., 29419-30, 29543; (*Contra*, 29626-30); N. Tyrone, 29841-3, 29864; Strabane No. 1 R.D., 29934-8, 29964, 29974.

CAUSES OF SCARCITY:

Creamery as a cause. See "*Creameries: in relation to the domestic milk supply.*"

Cases where there is no scarcity and there are creameries, 26979-93, 28927-34, 28940-4, 29417-9.

Cases where there is no creamery and there is scarcity, 27536-8.

Breeding from bulls of non-milking strain. See "*Bulls.*"

The best milking cows are sold out of the country, 27439-44, 28797, 29307, 30090-4.

Disinclination of the producer to sell retail, 26534.

Absence of winter dairying. See "*Winter dairying.*"

The Department has allowed shorthorn cattle of good milking strain to be lost to the district, 27555-61, 27628-31, 27641-55.

Introduction of the Aberdeen Angus bull into Mayo and Donegal, 27910-5, 28090-4.

EFFECTS OF SCARCITY.

Tuberculosis among poor children caused by, 26153-4, 26228-30, 27228.

The health of children and other persons suffers, 26819-20, 26838-9, 26922-6.

Children are given tea instead of milk, 26842-3.

Home-made bread not made for want of milk or buttermilk, 29505.

Reduced vitality of infants, consequent on lack of proper nourishment, increases the susceptibility to disease, 30895, 31077.

REMEDIES PROPOSED.

In Urban Districts.

The establishment of milk depots by the local authorities, 27209-11, 29369-70, 29373-5, 29634, 29644.

In Rural Districts.

Creameries:—

If creameries were required to sell milk it would give partial relief, 26861-4.

See also "*Creameries; in relation to the domestic milk supply.*"

Cow-plots. See "*Cow-plot.*"

Goats. See "*Goats.*"

Milk Clubs. See "*Milk Clubs.*"

Arguments for and against Rate and State aid.

The subsidising of a milk supply from the rates or taxes justifiable, 26276-9, 26540-9, 26886-8.

Urban authorities not willing to provide a milk supply, 26259-70.

The cost of providing milk for children would be a legitimate charge on public funds, 26845-8.

Milk is an essential, and its provision should be the concern of the Government, 27944, 27953-5.

General.

Farmers could combine to start a milk depot, 27211. Government should subsidise farmers to provide poor people with milk, 29737.

SCURFIELD, DR. HAROLD, M.D. (Medical Officer of Health, Sheffield).

The existing method of protecting the milk supply is a clumsy makeshift; each city has to protect itself, 32526; and the results are imperfect, 32566-71; and the system is expensive, 32656-8. Measures taken by Sheffield against tuberculous milk, 32527, 32548-52; against milk likely to cause infectious disease, 32561-4.

Compensation for slaughter of tuberculous cattle must be part of a complete scheme for eradication of tuberculosis, 32529.

The keeping of tubercle-free herds is not eradicating the disease, 32530.

Expense of buying cows subject to passing the tuberculin test, 32531-2.

Sometimes the farmer gets an extra price for his certified milk, 32531; sometimes not, 32533.

The advantage lies in having the herd free from disease, 32584-6.

Tuberculin Test.

Danger of fraud, 32537-9.

The Government should undertake the work, 32540.

Reactors should not go back to the vendor for disposal elsewhere, 32540.

The city has no power to order slaughter of a tuberculous cow; the remedy is to forbid the sale of the milk of the herd in the city, 32542-7, 32553-60.

Children drinking tuberculous milk usually resist infection if of good vitality, 32572-6.

Children suffer more from want of milk than from the effects of milk, 32577-8, 32585-6.

Dried Milk.

Is sold to nursing mothers by the Corporation, 32587-9, 32592.

No loss on the undertaking, 32594-6, 32602-3.

Its advantages, 32590-1, 32605.

The Corporation give general advice to mothers as well, 32592.

Doctors examine the babies, but no medicine is given, 32597-609.

No danger of scurvy or rickets, 32616-7.

Leicester has also tried dried milk, 32630-5.

Long-tube babies' bottles not approved of, 32611-5.

Death-rate from tuberculosis in Sheffield; effect of precautions *re* milk supply on, 32624-9.

Cowkeepers should be licensed, 32636-7; slaughter-houses are better controlled because they are licensed, 32638-9.

The County Council should administer the Dairies Order to ensure uniformity, 32640-8.

Strong legislation *re* by-products of milk is not justified; the proper action is to reduce tuberculosis in cattle, 32651-5.

Use of preservatives forbidden, 32663-4.

Milk does not need to be ventilated, 32665-6.

Mode of dealing with small shops selling milk, 32664-71.

SEPARATED MILK.

Prejudice against creamery separated milk, 26180-93. Should be cooled down to make it keep better, 26457-65.

Is not used for human consumption; it is unpalatable, 27518-30, 27005-12, 28949-51, 29318-21.

Calves fed on, with addition of meals, make good yearlings, 27510-6, 27021-8, 26449, 29491-9.

Uses of, 27002-4, 27013-20.

Used as a substitute for butter milk, 29973.

Keeping qualities of, 30203-20, 30230-47.

If properly treated might be largely used for baking purposes, 30430-7.

Is used for reducing the quality of new milk, 30941-3.

When pasteurised, sometimes undergoes putrefaction more easily than milk which has not been so treated, 31742-6.

As a cause of outbreaks of enteric fever, 32672, 32856.

SHEEP.

Milk-sheep, 32459-60, 32517-8.

State encouragement of milk-sheep breeding in Holland, 32523.

Milk yields in Holland have been increased by State control, 32511-3.

SHEFFIELD.

Two-thirds of Sheffield milk supply come from outside, 32284-8, 32428-32.

Supervision exercised over the milk supply, 32289.

Measures taken by Sheffield against tuberculous milk, 32527, 32548-52; against milk likely to cause infectious disease, 32561-4.

The city has right to inspect outside sources of supply, 32291-2.

The quantity of tuberculous milk received has been reduced, 32293, 32351-3.

Inspection and control exercised over dairies inside and outside the city, 32297-304.

The opposition to outside inspection has died away, 32305-8, 32323-4.

Cowsheds in outside districts are defective, 32309-17.

The Medical Officer of Health, Sheffield, informs the M.O.H. of the district in which the defective byre has been found, 32318-20.

Ridiculous penalties in prosecutions for failing to notify animals suspected of disease, 32333-5.

The harm caused by inadequate fines, 32336-8.

Milk is bacteriologically examined in Sheffield, 32345-50.

The city has no power to order slaughter of a tuberculous cow; the remedy is to forbid the sale of the milk of the herd in the city, 32542-7, 32553-60.

Dried Milk.

Is sold to nursing mothers by the Corporation, 32587-9, 32592.

No loss on the undertaking, 32594-6, 32602-3.

Its advantages, 32590-1, 32605.

The Corporation give general advice to mothers as well, 32592.

Doctors examine the babies, but no medicine is given, 32597-609.

No danger of scurvy or rickets, 32616-7.

Leicester has also tried dried milk, 32630-5.

Death-rate from tuberculosis in Sheffield; effect of precautions *re* milk supply on, 32624-9.

Large number of private slaughter-houses in, 32342-3.

Price of milk in, 32427.

About 10 per cent. of samples of outside milk is found to be tuberculous, 32575.

SHIER, R. (Superintendent of the Derry Abattoir).

Table showing number of cattle slaughtered in the abattoir since 1907, distinguishing the sound from the diseased, 28537-40, 28555-7, 28576-8.

Post-mortem examination of carcasses to ascertain if they are fit for human food, 28541-54.

Cattle in prime condition apparently are sometimes found to be tuberculous, 28559-64, 28605-7.

There is no licensed private slaughter-house in Derry, 28565-6, 28580-5.

Condemned carcasses are destroyed, 28567-8.

Standard of condemnation, 28586-92.

Meat may come into Derry which has not been inspected, 28598-604.

SHORTHORNS.

Use of shorthorn bull of milking strain recommended, 28980-6, 29036-7.

SLAUGHTER-HOUSES are better controlled because they are licensed, 32638-9.

SLAUGHTER OF COWS, COMPULSORY. See "*Compensation.*"

SLUDGE, or slime, creamery. Disposal of, 26641-3, 26499-505, 27354-8, 29040-8, 29330-43, 30197-202.

SMITH, J. L. (Principal Clerk, Local Government Board, Dublin).

Outbreaks of enteric fever attributed to infected separated milk from creameries, 32672, 32856.

See also pages 179 and 180, and Appendix C, p. 191.

Pasteurising plant noted in table when referred to in reports, 32857-9.

Imperfect press reports of witnesses' evidence give rise to misapprehension as to the purport of the evidence, 32674-8.

SMITH, J. L.—*continued.*

- Licensing instead of registration under the Dairies Order recommended, 32678-80.
- The effect of the proposed change on the milk supply is not a matter for the Local Government Board, 32681-4.
- Representations have been made as to the unfairness of not making the Dairies Order applicable to home butter-makers, 32685-8.
- Considered as a public health question, the supervision of the milk supply is of far greater importance than that of the butter supply, 32689, 32806-10. The danger from butter is slight, 32890-3, 32817-21; the danger from milk is serious, 32894-6.
- The objection to extending the Order to home butter-makers is the additional work that would be involved, 32802-5.
- It would be inconsistent to have whole-time veterinary inspectors under the Dairies Order if the medical officer of health remained a part-time officer, 32696-701: need of these officers being in an independent position, 32702-4, 32836-9, 32843.
- Policy of Local Government Board when dealing with applications of municipal and urban authorities for power to inspect outside dairies, 32705-13.
- The slaughter of cows with tuberculous udders should be made compulsory, 32714-8.
- Power of Local Government Board to compel a local authority to offer an adequate salary to a veterinary inspector, 32718A-21.
- Well-paid inspectors, cases of, 32727-31.
- The Local Government Board have no power over creameries, 32723-4.
- Power of Local Government Board to require local authorities to act on the reports of their officers under the Dairies Order, 32751-6.
- There should be no difficulty in administering regulations *re* public health and the health of cattle by the Local Government Board and the Department of Agriculture acting separately, but harmoniously, 32792-50.
- The two departments do act in consultation, 32748-9, 32834-5.
- Widal Test. There is no right to apply it compulsorily, 32757-64: nor to interfere with the liberty of a known typhoid carrier, 32766.
- There is limited power to isolate contacts, 32765.
- Power to deal with milk suspected of causing infectious disease: limiting power of the Infectious Disease (Prevention) Act, 1890, 32767-70, 32783-93.

STERILISATION.

- All milk for children should be boiled, 27223-7.
- Milk sterilised by peroxide of hydrogen; alleged as a cause of scurvy rickets, 30906.
- Sterilised milk should be labelled as such, 30955.
- Milk should be raised to boiling point and then used, 31733-4.
- Preferable to the introduction of lactic acid bacilli, 31747-52.
- Rickets and scurvy not caused by the use of sterilised milk, 31753.
- Sterilised food is not good for children continuously, 32158; but to avoid danger to young children milk should be sterilised, 32155-8.

STEWART, JAMES, J.P. (representing the Strabane No. 1 Rural District Council).

- There is no scarcity of milk, 29934-8, 29964, 29974.
- Milk production and calf-rearing are the principal occupations in the district, 29931-2.
- Milk is sold or made into butter at home rather than sent to a creamery, 29933, 29987-9.
- The Dairies Order is enforced, 29939-47.
- Winter dairying is followed and found to pay, 29950-61, 30002-7.
- The existence of creameries has not caused a shortage of milk for labourers, because farmers supply them, 29964, 29980-4.
- Where farmers churn Sunday's milk, there is a sufficient supply of buttermilk, 29964, 29975.
- Separated milk is used as a substitute for buttermilk, 29973.

STEWART, JAMES, J.P.—*continued.*

- By keeping milk records has been able to get rid of poor milkers, 29965-70, 29993-6.
- The average yield per cow has been raised from 300 to 500 gallons, 29967.
- Goats are objectionable because destructive, 29976-9.
- The consumption of butter locally has increased latterly, 30023-5, 30035-6.

T.

TALBOT, LADY (Milk Institute, Melbourne).

- The problem in Australia is how to secure a wholesome milk supply for children, 30523-4.
- Circumstances leading to the creation of the Institute, 30525.
- The Institute was launched to provide pure milk for (chiefly) sick and necessitous infants, 30525, 30579-91.
- The consequent reduction in infant mortality is very great, 30525.
- Subscriptions to the Institute are made by Government, the municipality and private persons, 30525, 30549-56, 30640-7.
- The Director of Agriculture is on the Committee, 30555.
- The women have been interested in the question, 30525, 30653-4.
- University extension lectures given to women on the chemistry of milk, 30525, 30633-6.
- The work of the Institute has improved the methods of commercial vendors, 30565-6.
- Melbourne's milk supply: condition of, 30598-600, 30651-7.

TEA.

- Is given to children out of feeding bottles, 26842-3.
- Excessive use of stewed tea, 26531, 28150-4.
- Tea given to children, 27868-9.
- No food value in tea, 28744.

TILLIE, ALDERMAN MARSHALL, D.L. (representing the Londonderry Corporation).

- Health of factory operatives good, 29359-69.
- Advocates establishment of milk depots, 29369-70, 29373-5.
- Objects to the taxation of milk carts coming into Derry, 29376-80.
- More employment for women than men in Derry, 29381-94.

TROTTER, A. M., M.R.C.V.S. (Chief Veterinary Inspector, Glasgow).

- From 70 to 80 per cent. of cows re-act, 30983-96.
- Lack of encouragement to a cowkeeper to have his herd tuberculin tested, 30997-9.
- Power to compel removal of tuberculous cows inside or outside the city, 31000-7.
- The control over the city milk supply is exercised by visitation, 31027-31.
- By keeping milk records one farmer turned a loss into a profit, 31015-9.
- Would have cows registered, 31040-1.
- Incidence of tuberculosis of the udder among cows, 31043.
- To get rid of tuberculosis among cattle would apply the tuberculin test and kill off reactors, 31044-60.

TUBERCULIN TEST.

- Reliability of, 30800-4, 31174-81, 32008-14, 32965-6.
- Absolutely reliable for cows under 7 or 8 years old, 31773-6, 31799-801.
- For cows over 8 years old the error is easily corrected by a competent veterinary surgeon by observation, 31774.
- The test should only be applied by qualified persons, 31776, 31792-3.
- Advantage of applying the test to all cattle at an early age, 31779.
- Effects of repeated applications of the test, 31786-91.
- Elimination of tuberculosis from one herd by use of the test, 31794-8.
- Pedigree stock should be treated specially, 31785.

TUBERCULIN TEST—*continued*.

- Danger of fraud, 32537-9.
 The Government should undertake the work, 32540.
 Uses of the test, 32354-60.
 The test is used for ridding herds of tuberculosis, not for ascertaining if a cow gives tuberculous milk, 31967-70, 32106-12.
 Tuberculin-tested herds which supply milk to Birmingham, 31971-80, 32088-92; such milk fetches a higher price, 31993-8.
 A herd having 85 per cent. of reactors which gave no tuberculous milk, 31981-92; another instance of reactors giving tubercle-free milk, 32076-83.
 The keeping of tubercle-free herds is not eradicating the disease, 32530.
 Expense of buying cows subject to passing the tuberculin test, 32531-2.
 Sometimes the farmer gets an extra price for his certified milk, 32531; sometimes not, 32533.
 The advantage lies in having the herd free from disease, 32534-6.
 If owners of tuberculin-tested herds would communicate with physicians, the latter could recommend the milk for patients, children, and hospitals, 31376-84.
 Ordinary people do not know the value of tubercle-free milk, 31377, 31385-6.
 Lack of encouragement to a cowkeeper to have his herd tuberculin-tested, 30997-9.
 Application of, not required by Co. Mayo Agricultural Committee for premium bulls, 27624.
 No reaction obtained from several cows suspected as tuberculous, 28412-8.
 Post mortem examination showed no visible tuberculosis in animals which had reacted 28407-79, 28485-7, 28498-507.
 The test is the best method of detecting tuberculosis, 28480, 28498-500.
 Difficulty as to disposal of reactors, 28481, 28523-31, 32007, 32072-5, 32084-7.
 Isolation of reactors recommended, 28421.
 Reactors should not go back to the vendor for disposal elsewhere, 32540.
 For power to apply, 28751-4.
 There is no tuberculin-tested herd in Manchester, 30674-8.
 Arrangement for supply of non-tuberculous milk to hospitals, 30745-52 (and see "*Hospitals*").
 A reacting cow does not necessarily give tuberculous milk, 31054.

TUBERCULOSIS.

Re Human Beings.

- Among poor children, attributed to the want of milk, 26153-4, 26228-30.
 Infectivity of; families destroyed, 26250-7.
 Milk should be boiled as a safeguard against, 27227.
 Insufficient feeding of children a cause of, 27228.
 Is fairly common in Co. Donegal, 28107-19; Co. Sligo, 27229-32.
 Continuous fall in the infantile death-rate (Manchester) from, 31255, 31259-60.
 No reduction in rate from other forms of tuberculosis than phthisis for age period of 5 to 14 years, 31255.
 The inference is that two factors are working to reduce human tuberculosis, purer food (especially milk) and less human infection, 31256-64, 31280-92.
 In adult life is largely due to human infection, 31292.
 Infection of children by tuberculous milk, 31811-4.
 The theory of immunisation against tuberculosis is not borne out by facts, 31814-8.
 "Nothing we can do is too expensive to stop tuberculosis," 32225.
 The proper way to get non-tuberculous milk is to free cattle of tuberculosis, 32225-7.
 No one city can undertake that task, 32227A-9.
 Try simple methods of keeping bovines under better conditions as a remedy, 32239-41.

TUBERCULOSIS—*continued*.

Re Cattle.

- Detection of tuberculosis in cattle. See "*Tuberculin test*."
 Difficulty of disposing of cows reacting to tuberculin, 28481, 28523-31.
 Isolation of reactors recommended, 28421.
 Proposed disposal of, 30679-84.
 A tuberculous cow may give tuberculous milk, though not suffering from tuberculosis of the udder, 28531-5.
 If the udder was indurated or tuberculous the milk would be stopped, 28428, 28514-6.
 Cattle in prime condition apparently are sometimes found to be tuberculous, 28559-64, 28605-7.
 Need of veterinary inspection and power to apply the tuberculin test to stamp out tuberculosis among cattle, 28751-4.
 On the increase (Co. Tyrone); causes, 29452-61, 29522-31.
 Mode of tracking down cows giving tuberculous milk (Manchester), 30701-6, 30816-21.
 Prosecution of offenders outside the city area, 30831-2, 30864-7.
 Few cows with tuberculous udders have been found in Manchester in last 10 years, 30674.
 Tuberculosis eradicated from herd under supervision of Manchester Public Health officials, 30745-52.
 The incidence of disease other than tuberculosis has also been enormously reduced, 30752-9.
 Danger of healthy cattle being infected by tuberculous cattle, 30708, 30749-52.
 Cattle insurance as a means of getting rid of, among cattle, 30974-81.
 Cows may recover from, 31782-3.
 Cows suffering from tuberculosis of the udder estimated at 2 per cent., 32126.
 For human protection it is necessary to destroy all cows with tuberculous udders and which yield tuberculous milk, 31821-2.
 For the agricultural interest it is well to stamp out tuberculosis in cattle, 31822.
 Cows may pass tubercle bacilli in their milk without having tuberculosis of the udder, but this is unusual, 31806-10, 32127.
 To get rid of tuberculosis among cattle, would apply the tuberculin test and kill off reactors, 31044-60.
 High milking capacity of Cheshire cows and susceptibility to tuberculosis, 30716-8.
 Percentage of cows in Derbyshire and Staffordshire suffering from tuberculosis of the udder, 30719-20.
 See tabular statements, pp. 105-106.
 Case of a tubercle-free herd, which afterwards contained 50 per cent. of reactors, owing to the place in which they were kept, 32370-80.
 Conditions in Cheshire and the Severn Valley compared, 32388-91.
 The complete eradication of tuberculosis in cattle is necessary to stamp out the disease, 31328.
 State aid necessary, 31329.
 Importance to agriculture and the dairy industry, 31330.
 It has been done in single herds, 31331.
 Discussion as to treatment of reacting cows and the disposal of their milk, 31333-75.
 Experienced veterinary surgeons are required to detect tuberculous udders, 32400-7.
 The slaughter of cows with tuberculous udders should be made compulsory, 32714-8.
 Tuberculosis Notification Order of 1910 not successful as a means of ascertaining the number of tuberculous cows, 32954, 32981-7.
 Compensation must be paid to induce owners to report, 32969-70.
 The State should pay part of the compensation, 32973-7.

TYPHOID CARRIERS.

- There is no right to apply the Widal test compulsorily to a suspected typhoid carrier, 32757-64; nor to interfere with the liberty of a known typhoid carrier, 32766.
 There is limited power to isolate contacts, 32765.

U.

UNITED IRISHWOMEN.

Work done by; depot in Borris and itinerant distribution at Fenit, 30319-34.
Might organise Milk Clubs (see "*Milk Clubs*"), 30339.

V.

VETERINARY.

Power of Local Government Board to compel a local authority to offer an adequate salary to a veterinary inspector, 32718A-21.

Well-paid inspectors, cases of, 32727-31.

Appointment of county veterinary inspector recommended, 28755-7, 29769-73, 32207-12.

It would be inconsistent to have whole-time veterinary inspectors under the Dairies Order if the medical officer of health remained a part-time officer, 32696-701; need of these officers being in an independent position, 32702-4, 32836-9, 32843. See also "*Dairies Order: Veterinary Inspector*" and "*Administration of the Order*."

W.

WHALEY, GEORGE (Chairman of the Enniskillen Urban District Council).

Enforcement of the Dairies Order in Enniskillen Urban District, 26007-19, 26048-50.

Magistrates co-operate to have the Order enforced, 26014-5.

Improvement possible in regard to the storage of milk in shops, 26020-1, 26094-8.

To prosecute would mean closing the shops, 26022-4.

The Order as regards byres is strictly enforced, 26025.

There is no scarcity of milk in Enniskillen at any time of the year, 26029-30.

The Urban Council should have power to inspect outside dairies supplying milk within the town, 26045-7, 26080-1.

The Rural Council have only recently appointed a veterinary inspector, 26051-3.

Supervision of local administration by a central authority desirable, 26062-6.

Favours licensing dairies and cowkeepers instead of registering them, 26059-61.

The Dairies Order should apply to all the by-products of milk, 26083-6.

WHYTE, WM. R., J.P. (Manager of the Scottish Wholesale Co-operative Society, Enniskillen).

There is scarcity of milk in Enniskillen in the winter, 26295-6.

The creamery does not retail milk, 26299-302; and would not be prepared to do so if asked because of the labour involved, 26303-10; not even to meet a bulked order, 26486-95.

Milk is rejected if not clean and sweet, 26311-3, 26425.

Creameries in the district have agreed not to take milk refused by one of them, 26314-21.

The creamery is inspected by the Department, 26322-3; the inspection is most helpful, 26324-5.

Method of separating and cooling the milk, 26326-43, 26450-6.

Separated milk should be cooled to make it keep better, 26457-65.

Creameries in the North do not work on Sundays, 26349-51.

Believes the milk-yield of cows has increased, 26352-8; partly as the result of tests made for farmers by the creamery, 26359-61.

Price of winter milk, 26362-70, 26386.

WHYTE, WM. R., J.P.—continued.

Winter dairying has not been found profitable by those who tried it, 26380-6.

The butter content of milk varies sometimes according to the pastures the cows feed on, 26387-9.

Farmers give their labourers the use of a cow, 26397-403.

Labour is scarce in the district, 26405-16.

Precautions taken against receiving milk from houses in which there is infectious diseases, 26426-33.

Cow-testing associations have been established in the district, 26437-41.

WIDAL TEST.

There is occasional objection to the application of, 31266-9.

Power to apply, 31123-4, 31126.

It would not be wise to rely on, to discover typhoid carriers, 32273-9.

There is no right to apply it compulsorily, 32757-64; nor to interfere with the liberty of a known typhoid carrier, 32766.

There is limited power to isolate contacts, 32765.

WILSON, R. J. (Secretary to the Omagh Co-operative Agricultural and Dairy Society).

There is no scarcity of milk in Omagh, 30055-8, 30098-102.

Average price paid for milk by the creamery, 30065-70.

There is an increasing winter supply, 30074; it is necessary for the maintenance of the Irish butter trade, 30075-81.

Winter feeding, 30082-7.

Dairy stock suffer by the export of the best cows, 30090-4.

The creamery could retail milk without inconvenience, 30103-6.

In the country labourers get milk gratis or at reduced rate from farmers, 30109-34; and are allowed to keep goats, 30124-8.

The Dairies Order should apply to home butter-makers, 30138-9.

Milk is very rarely rejected because it is dirty, 30145-51; cloths are not used under the lids of tankards, 30153-5; milk cans are cleaned at home, but cream cans are scalded at the creamery, 30156-64.

WINTER DAIRYING.

Farmers think winter dairying does not pay, 27047, 27393-8, 28990-1, 29060-9, 29111, 29544-9.

Has not been found profitable by those who have tried it, 26380-6, 29924-7.

Would be taken up if it paid, 27418-20.

But the calves are better, 29924.

Increased production of winter milk, 26577, 30074, 30255-61, 30309-10; causes, 26578-87.

Price of winter milk, 26362-70, 26386, 26588-9, 28992-3, 29071-6, 29137.

The winter-calving cow gives a heavier yearly yield than the summer-calving cow, 27399-402.

Lack of winter milk injures the butter trade, 26374, 29118-9, 30075-81.

There is not much winter calving in Co. Donegal, 28009.

Winter dairying practised, 28633-40, 29267-76, 29350-5; and found to pay, 29950-61, 30002-7.

Whether winter dairying pays depends on the cow's yearly yield, 29131-6.

Winter feeding for cows, 29165-86, 30082-7.

Profit on winter-calving cows, 29350.

WOMEN'S NATIONAL HEALTH ASSOCIATION.

Have opened a pure milk depot in Sligo, 27250.

Eglinton Branch, Co. Londonderry, gives milk to necessitous children, 28625-6.

Might organise milk clubs (see "*Milk Clubs*"), 30339.

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