

Tuberculosis : its casualties, causes and control : a report to the Sanitary Committee by the medical officer of health.

Contributors

Newcastle upon Tyne (England). City & County Council.

Publication/Creation

Newcastle-upon-Tyne : Easey & Best, 1907.

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CITY AND COUNTY OF NEWCASTLE-UPON-TYNE.

TUBERCULOSIS:

ITS

CASUALTIES,

CAUSES, AND CONTROL.

A REPORT

TO THE

SANITARY COMMITTEE

BY THE

MEDICAL OFFICER OF HEALTH.

APRIL, 1906.

WITH AMENDMENTS—JANUARY, 1907.

Newcastle-upon-Tyne:
EASEY & BEST, 142, PILGRIM STREET.

1907.



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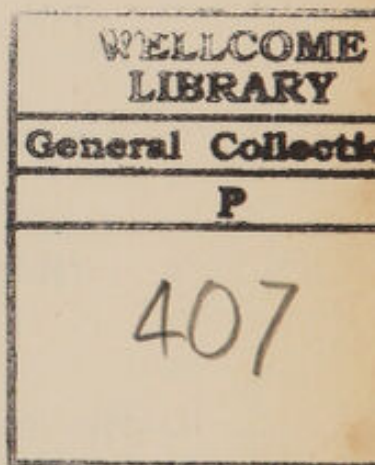
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TUBERCULOSIS.

EXTRACT FROM THE MINUTES OF THE SANITARY COMMITTEE.

The Sanitary Committee, at a Special Meeting held on Monday, 11th March, 1907, considered the draft Report of the Medical Officer of Health relative to "Tuberculosis: its Casualties, Causes and Control."

The Medical Officer of Health read the report, drawing the attention of the Committee to the new matter which had been introduced since the report was last under consideration.

After discussion, in the course of which various slight amendments were agreed to by the Committee, it was unanimously resolved that the report of the Medical Officer of Health, as amended, be approved of by this Committee, and that "the Committee desire to place on record their high appreciation of the very admirable, instructive, and useful report presented to them by Dr. H. E. Armstrong, which, in the opinion of the Committee, will not only be valuable in their own deliberations but also to the country generally in dealing with the important question of Tuberculosis."

THE PREVENTION OF TUBERCULOSIS.

REPORT

BY THE

MEDICAL OFFICER OF HEALTH.

I.—HUMAN TUBERCULOSIS: ITS EXTENT
AND FATALITY.

Tuberculosis is one of the most prevalent and most fatal of the diseases of mankind. In England and Wales upwards of 60,000 persons per annum die from this cause alone, a mortality equivalent to about 2·5 per 1,000 of the entire population. The following table shews the number of deaths and the death rates from Tuberculosis at all ages and under 1 year of age, in English Towns with a population of over 260,000 (including Newcastle-upon-Tyne), and the three neighbouring towns.

TABLE I.

NUMBER OF DEATHS AND DEATH RATES FROM TUBERCULOSIS
DURING THE YEAR 1905.

Towns with a population of over 260,000, including Newcastle-upon-Tyne.	Number of Deaths from Tuberculous Diseases.		Death rate per 1000 popn. from the foregoing (all ages).	Rate per cent. of Deaths under 1 year from the foregoing, to Births registered.
	All ages.	Under 1 year.		
Birmingham	999	75	1·8	0·5
Bristol	559	41	1·6	0·4
Bradford	442	26	1·5	0·4
Leeds	846	82	1·9	0·7
Liverpool	1,648	130	2·2	0·7
London	9,323	764	2·0	0·6
Manchester	1,362	123	2·2	0·7
Newcastle-upon-Tyne ...	608	54	2·3	0·6
Sheffield... ..	701	72	1·6	0·5
<i>Three neighbouring towns—</i>				
Gateshead	171	7	1·4	0·2
South Shields	191	10	1·7	0·3
Sunderland	359	41	2·4	0·8

The mortality from Tuberculous diseases in this country is nearly one-third more than that of all Infectious Fevers and Diphtheria. Thus, during the decade 1881-90, the death rates in England and Wales from Consumption and other Tuberculous diseases was 2,420 per million population at all ages; whilst the death rate per million from the six following diseases combined, viz.: Smallpox, Measles, Scarlet Fever, "Fever," Diphtheria, and Whooping Cough, was 1,667.

The four following Tables give details as to the fatality of Tuberculosis in Newcastle at all ages and in infants.

TABLE II.

NEWCASTLE-UPON-TYNE.

NUMBER OF DEATHS AND DEATH RATES FROM TUBERCULOSIS (ALL AGES)
DURING THE 5 YEARS 1901-1905.

	NUMBER OF DEATHS.					
	1901.	1902.	1903.	1904*	1905*	Average for five years.
Tabes Mesenterica, etc. ...	59	48	60	47	49	53
Tubercular Meningitis, Hydrocephalus, etc. ...	62	75	97	78	86	80
†Phthisis (Pulmonary and Laryngeal) ...	428	357	371	377	397	386
Other Tubercular and Scrofulous Diseases ...	47	45	44	52	76	53
*TOTAL ...	596	525	572	554	608	571

	Death Rate per 1,000 population.					Average for 5 years.
†Phthisis (Pulmonary and Laryngeal) ...	2·0	1·6	1·7	1·7	1·5	1·7
*Total Tuberculous Diseases ...	2·8	2·4	2·6	2·5	2·3	2·5

* The boundary of the City was extended in November, 1904.

TABLE III.

NEWCASTLE-UPON-TYNE.

NUMBER OF DEATHS AND DEATH RATES FROM TUBERCULOSIS DURING THE
5 YEARS 1874-1878, AND 5 YEARS 1901-1905.

	1874	1875	1876	1877	1878	Average for 5 years.	1901	1902	1903	* 1904	* 1905	Average for 5 years.
Number of Deaths from Tuberculous Diseases (all ages)	516	491	492	474	529	500	596	525	572	554	608	571
Death Rate per 1,000 population from above	3·8	3·6	3·5	3·3	3·7	3·6	2·8	2·4	2·6	2·5	2·3	2·5
Number of Deaths from Tuberculous Diseases (under 1 year of age)												
Tabes Mesenterica, etc.	74	57	52	42	31	51	17	11	21	11	11	14
Tubercular Meningitis, Hydrocephalus, etc...	7	9	10	6	4	7	11	18	25	16	24	19
Phthisis(Pulmonary and Laryngeal)	9	6	1	6	4	5	3	2	1	5	3	3
Other Tuberculous and Scrofulous Diseases...	...	7	4	6	16	7	3	2	7	...	16	6
Total under 1 year of age	90	73	67	60	56	69	34	33	54	32	54	41
Rate per cent. of above deaths (under 1 year) to births registered...	1·6	1·3	1·1	1·1	1·0	1·2	0·5	0·5	0·8	0·5	0·6	0·6

TABLE IV.

NEWCASTLE-UPON-TYNE.

NUMBER OF DEATHS UNDER 5 YEARS FROM TUBERCULOSIS AND
FROM ALL CAUSES.

5 Years 1875-1879.

5 Years 1901-1905.

	1875	1876	1877	1878	1879	1901	1902	1903	1904*	1905*
Tuberculosis ...	161	120	124	128	141	115	119	137	124	139
All Causes ...	1,605	1,426	1,354	1,504	1,506	1,833	1,595	1,623	1,652	1,762

Deaths under 5 years from Tuber-
culosis, average 135.

From Tuberculosis, average 127.
(Improvement of second period
over first, 6%).

Equals a death rate of 6·57 per 1,000
pop. under 5 years.

Equals death rate of 4·4 per 1,000
pop. under 5 years.

(Pop. under 5 years at census
1881, 20,557.)

(Pop. under 5 years at census
1901, 28,901.)

* The boundary of the City was extended in November, 1904.

TABLE V.
NEWCASTLE-UPON-TYNE.

DEATH RATES PER 1,000 POPULATION FROM THE "SEVEN CHIEF ZYMOTIC DISEASES" AND TUBERCULOUS DISEASES (ALL AGES) DURING THE 5 YEARS 1901-1905.

	1901	1902	1903	1904*	1905*
"Seven Chief Zymotic Diseases" (all ages)	2.2	1.6	1.1	1.5	1.3
Tuberculous Diseases (all ages) ...	2.8	2.4	2.6	2.4	2.3

The average death rate of the city during the past five years from the "Seven Chief Zymotic Diseases," per 1,000 population, was 1.5, and from Tuberculous Diseases, 2.5.

The above figures shew a marked reduction in the later as compared with the earlier years of the periods to which they respectively refer. This does not justify the assumption that Tuberculosis is diminishing, although the figures alone seem to indicate such a conclusion. The diminution in the number of these deaths is largely, if not entirely, the result of improved accuracy of diagnosis, and may therefore be only apparent and not actual.

II.—THE DUTY OF THE SANITARY AUTHORITY AS TO THE CONTROL OF TUBERCULOSIS.

In a circular recently issued to Sanitary Authorities and others by Sir Wm. Broadbent, M.D., Chairman of Council of the National Association for the Prevention of Consumption and other Forms of Tuberculosis, attention is earnestly and forcibly called to the prevention of this disease as being a social and public question of vast national importance. The disease is contagious, and therefore preventable. It is very costly to the nation, being a source of both direct and indirect loss in many ways, but perhaps in none more positively than as being a serious cause of pauperism.†

* The boundary of the City was extended in November, 1904.

† Dr. Nathan Raw, of Liverpool, ascertained that out of 4,000 Consumptive paupers under his care, "60 per cent. became paupers because they were phthisical, and not phthisical because they were poor."

There can be no doubt, on the other hand, that Consumption is largely dependent on various conditions attendant on poverty.

The circular in question points out that Sanitary Authorities, being "charged with the responsibility of protecting the community from preventable disease, ought to regard it as a duty to take an active part" in the work of coping with Tuberculosis.

The discharge of this important duty includes the carrying out of all measures for the extinction of the disease in man and animals under domestication.

As has recently been well observed by Dr. J. E. Squire,* the care of the poor, among whom Consumption is most prevalent, should not be left to private charity, which is demoralising to them, but should be dealt with by some national scheme, by which every individual, however poor, could earn the right to be taken care of when sick, as is the case in Germany, where this question is treated imperially, whereas in England it is parochial.

One object of the present Report is to shew that this dire disease is a penalty for neglect of hygienic law.

III.—THE CAUSES OF TUBERCULOSIS.

The primary cause of Tuberculosis is a bacillus which circulates throughout the body by means of the blood—and lymph—vessels. These bacilli multiply and increase to immense numbers. They are invisible to the naked eye. At a certain stage in their life-history, they begin to form visible masses which are termed "*tubercles*." These tubercles may occur in almost any or every part of the system; they are, however, most commonly found in the abdominal cavity in children and in the lungs of adults, where they not

*Article on "The Results of the Sanatorium Treatment of Consumption." *Tuberculosis* for November, 1906.

unfrequently attain to a great size. The simultaneous presence of one or two small isolated masses of tubercle in remotely distant parts of the body—a matter of common occurrence—is not in any sense a proof of the so-called “localization” of the disease itself. It merely indicates to the unaided eye that certain of the bacilli, having reached given spots, mark the advance of the disease into its *second or visible stage* in those particular parts; just as in smallpox the germ of infection remains in the system for twelve days, unrecognised and without causing symptoms of ailment; then the patient feels ill, and on the third day of his illness—but not earlier—the characteristic pocks appear on his skin. In this case, as every one knows, it would be wrong to say that the disease was localized in the skin, and began only with the eruption of spots. So in Tuberculosis before the production of “tubercle,” there is a stage of the disease of unknown duration, during which the bacilli multiply and circulate throughout the body..

In evidence—if not, indeed, in positive proof—of this statement, we have the universally acknowledged fact that the reaction of the tuberculin test may be obtained at any and every stage of the disease—even when the visible tubercle is very small in amount and situated in a part remote from that at which the tuberculin was introduced into the body of the affected animal.

Even were the idea of “localisation” of Tuberculosis absolutely correct, it would be of little use as a guide in meat-inspection; because the extent of the tubercle in a given carcase can only be ascertained after cutting up the flesh into pieces so small as to render the meat unsaleable. Short of this, to attempt to lay down a rule as to what portions of a tuberculous carcase may, and what may not, be eaten with safety by man, is as unsound in principle as unsafe in practice, and would be unhesitatingly condemned by any customer to whom a joint from such a carcase was offered for

sale. To regard Tuberculosis as beginning with and being localized in, Tubercle, is to fail to recognize the purely bacillary stage of the disease, and is therefore wrong. This special feature of the disease has been brought into prominence here, and will be so afterwards in this Report, inasmuch as its recognition is a matter of much import in the early and thorough application of certain preventive measures. Recent non-recognition or neglect of it on the part of persons in highly responsible positions is, and probably will be in the future, the cause of much apathy of private individuals and of opposition from those commercially interested in the two great food trades to which the spread of the disease is chiefly due, viz., those of milk and meat. The subject will be again referred to in considering these prominent articles of human diet as agents in the spread of Tuberculosis.

The *infectiousness* and *communicability* of Tuberculosis from the sick to the healthy was taught long ago by Morgagni, Villemin, and others.

THE VEHICLES OR MEDIA BY WHICH THE BACILLUS OF TUBERCULOSIS GAINS ENTRANCE INTO THE BODIES OF PREVIOUSLY HEALTHY HUMAN BEINGS are the following, viz.—

- (a) The milk and milk-products* of tuberculous cows consumed as food.
- (b) The milk of a tuberculous human mother.
- (c) The flesh of tuberculous animals consumed as food.
- (d) Dried expectorated matters and other infectious discharges of consumptive persons inhaled or swallowed as atmospheric dust, &c.
- (e) Heredity.
- (f) Marriage of the tuberculous; other vehicles, &c.

*The term "milk products" includes, of course, butter, buttermilk, whey, and cheese. Each of these substances, except the last named, have recently been proved experimentally by Prof. Delépine to be capable of conveying Tuberculosis to animals. (*Rept. of Cheshire C.C.—1st March, 1906*).

MILK.

THE MILK AND MILK-PRODUCTS OF TUBERCULOUS COWS.

This division of the subject may be considered under the following heads, viz :—

1. The prevalence of Tuberculosis among Dairy Cattle.
2. The entrance of Tubercle-Bacilli into milk—and the state of milk-supplies in town and country dairies in relation to Tuberculosis.
3. The extent of the disease causable by milk and its products.
4. The difficulty of detecting or judging of Tuberculosis in Dairy Cattle by ordinary methods.
5. The Tuberculin test as a means of detecting Tuberculosis in Cattle, and an important agent in the extinction of the disease.
6. The possibility of the elimination of Tuberculosis in Cattle. Action taken in England and elsewhere.
7. The control of the Milk Supply.—Regulations.—Procedure.
8. Action desirable.
9. The attitude of recent Royal Commissions and its consequences.
10. Law.

1. THE PREVALENCE OF TUBERCULOSIS AMONG DAIRY COWS.

The Report of the Royal Commission on Tuberculosis issued in 1898 states that “of all the animals slaughtered for food in Great Britain and Ireland those of the bovine race seem to be more largely affected with Tuberculosis than any

other." In the absence of statistical information as regards our own country the Report proceeds to show that in Leipzig, of 9,303 cows slaughtered, 4,048 or 43·51 per cent., were tuberculous. The proportion of such diseased cattle in English cow-houses, which has been publicly and authoritatively stated at about 30 per cent., (MacFadyean)§ may not be excessive.

In the year 1901 there were 1,887,414 milch cows in England, and 4,102,061 in the United Kingdom.* 30 per cent. of these means upwards of 560,000 tuberculous milch cows for England alone, and nearly 1½ millions for the United Kingdom. The bare idea of the amount of possible human tuberculosis from the milk of so immense a number of diseased cows is appalling. Notwithstanding this truly dreadful possibility the Report above quoted gives prominence to the following statement. "It was not proved to our satisfaction that tubercle bacilli had ever been detected in milk unless drawn from a cow with tuberculosis of the mammary gland."†

2. THE ENTRANCE OF TUBERCLE BACILLI INTO MILK, AND THE STATE OF MILK SUPPLIES IN RELATION TO TUBERCULOSIS.

In a well known work‡ the means of entrance of Tuberculosis into healthy cows is described, and may be summarised as follows:—

- (a) Tuberculous excretions and discharges conveyed to soil, air, water, fodder, and general surroundings (premises, stables, straw, stable refuse, utensils).
- (b) The milk of a tuberculous animal may be consumed by other animals.
- (c) The bacilli may be distributed by the cough of a tuberculous cow (Ravenel) or

§Trans. Brit. Cong. on Tuberculosis, 1901.

* Rept. of Roy. Com. p. 4.

† p. 13., s. 28.

‡ "The Bacteriology of Milk," Harold Swithinbank and George Newman, M.D., London, 1903.

- (d) By the saliva of a cow in licking. In this way she may also infect the surface of her udder, and thereby the milk, by means of the hands of the milker.

Each or all of these ways may lead to the contamination of the milk after yield. By the repulsive habit of spitting on the hands before milking, or by dried expectoration in a cowhouse, a consumptive milker may infect the milk after it has left the teats of the cow.*

STATE OF COWHOUSES.

The foul state of many cowhouses both in town and country is only too well known, and ample illustration of this is on record.† It is right to add that of late years great improvement has taken place in many town cowhouses—but most of those in rural districts are as insanitary as ever. Dr. Hope, of Liverpool, has shewn that in town-yielded samples of milk the tubercle bacillus was found in 2·8 per cent., whereas in supplies sent from the country 29·1 per cent. were found to be tuberculous.

Speaking from personal experience, the writer affirms that the cowhouses in Newcastle and the surrounding country districts are in much the same condition as in other places; and he has every reason to believe that a bacteriological examination of the different urban and rural milk supplies sold in the city would disclose results similar to those found in Liverpool and elsewhere.

Even accepting the untenable hypothesis that cow's milk is only rendered infectious when the udder becomes diseased—the difficulty of diagnosing such disease at an early stage in time to prevent the use of the milk for food is so great as to put beyond the range of practical utility most of the apparent value of the suggestion.

* "The Bacteriology of Milk," Harold Swithinbank and George Newman, M.D., London, 1903.

† Rept. Roy. Com. on Tuberculosis, 1898, ss. 45, 46.

3.—THE EXTENT OF THE DISEASE CAUSED OR CAUSABLE BY MILK AND ITS PRODUCTS.

The milk-trade is one of the most complex of organizations. Under defective management it may become a most elaborate means for the spread of different infectious diseases, and of none more frequently than Tuberculosis. The fact that milk as sold to consumers is the mixed yield of perhaps from 10 to 50 different cows—a certain proportion (perhaps a large one) of which are possibly tuberculous, renders the entire product, if so infected, a most potent agent of evil. As milk is distributed night and morning to the houses of dairy customers, by many of whom—especially the children—it is consumed raw, the opportunities of the dissemination broadcast of the virus of Tuberculosis or other disease are far beyond comparison greater than with any other article of diet. The spread of infection from a diseased cow may go on for many months without detection, whilst her milk is being consumed without suspicion. That the many forms of Tuberculosis among the young, and indeed at all ages, are not oftener traced to the milk-supply is the consequence, not of the harmlessness of the milk itself, but of the complexity of the circumstances attending its distribution, together with the very nature of the disease and the conditions of its development. In the case of an outbreak of Scarlet or Enteric Fever, of which there have been several hundreds within the last twenty years or so, the suddenness of the outburst, the nature of the ailment, the common routine of inquiry invariably made by the special inspector, and a host of other circumstances, point at the outset to the milk-supply as the possible, if not probable cause. But, with Tuberculosis this is not so. This disease is insidious in its approach; its period of incubation is unknown; the signs of its presence are for a considerable time indistinguishable from those of other ailments; and the means of tracing its probably remote origin are not available. Hence the impossibility in the present state of our knowledge of presenting evidence of the extent to which the disease may be attributed to milk or any other

individual cause. This circumstance has led to the idea on the part of some that "if there had been anything like the danger from the meat and milk of tuberculous cattle that Medical Officers of Health say there is, we should all have been dead of Tuberculosis long ago!" Such an idea, if true, would apply to all infectious diseases, which would never cease till they had exterminated the entire human race. But they do not spread in this way for several well-known reasons which it is unnecessary here to state; and the same applies to Tuberculosis, with respect to which it may be added that special predisposition on the part of some persons and exactly the opposite condition on the part of others, are special characteristics of that disease.

It is stated on good authority that about 90 per cent. of the cases of Tuberculosis among calves and swine have been proved to originate in feeding with infected milk.*

4.—THE DIFFICULTY OF RECOGNIZING TUBERCULOSIS IN DAIRY CATTLE BY ORDINARY MEANS.

The difficulty of diagnosing Tuberculosis by ordinary physical means at any but the most advanced stages of the disease is universally recognized; and this very fact is an element of the greatest mischief in the possibility it allows for the continuous spread of infection for a long period, from a diseased cow. Daily visitations at cowhouses afford but little information to the Inspectors of the Sanitary Authority as to the health of Dairy Cattle.

5. THE TUBERCULIN TEST AS A MEANS OF DIAGNOSING TUBERCULOSIS OF CATTLE.

The Royal Commission of 1898 in their Report, s. 15, "recommended that funds be placed at the disposal of the Board of Agriculture in England and Scotland, and of the Veterinary Department of the Privy Council in Ireland, for the preparation of commercial tuberculin, and that stock-

* L. Rabinowitsch, Trans. Brit. Cong. of Tuberculosis, 1901. Vol. III., p. 508.

owners be encouraged to test their animals by the offer of a gratuitous supply of tuberculin and the gratuitous services of a veterinary surgeon on certain conditions."

"These conditions shall be:—

- (a) That the test be applied by a veterinary surgeon.
- (b) That tuberculin be supplied only to such owners as will undertake to isolate reacting animals from healthy ones.
- (c) That the stock to be tested shall be kept under satisfactory sanitary conditions, and more especially that sufficient air-space, ventilation, and light be provided in the buildings occupied by the animals."

The Commission further recommended the circulation among agricultural societies of instructions for the proper use of the tuberculin test, with explanation of the significance of reaction, and direction for effective isolation of re-acting animals.

The above recommendations are sufficient proof of confidence in the value of the tuberculin test. Although made eight years ago, so far as is known to the writer they *have led to no practical result whatever on the part of the British Government*. For this reason and seeing the well known disinclination of farmers to speculation, and their not unnatural hesitation to experiment with the object of discovering disease in their herds, it is perhaps not surprising that the test has not become popular among them. The responsibility incidental to such a discovery may not be unconnected with their failure to adopt it.

The magnitude of the task, and the claims for compensation involved have doubtless deterred the Government from pushing the subject forward on their part. Hence little or no progress has been made in England toward the elimination of bovine tuberculosis as a commercial project. Its compulsory extinction as a source of the greatest danger to human life has never yet, it is believed, been seriously proposed. What is the reason? "*If preventible, why not prevented?*"

6.—POSSIBILITY OF ELIMINATING TUBERCULOSIS OF CATTLE.

In reviewing the pros and cons of this momentous question the chief points for consideration appear to be the following :—

- (a) The tuberculin test is admittedly reliable as a means of detecting the disease.
- (b) Voluntary attempts to eliminate Tuberculosis have been freely tried in Denmark and have met with a very large measure of success. To ensure complete success of the process compulsory and universally complete application of the principle is necessary.
- (c) The process of elimination should involve the immediate slaughter of all re-acters and the destruction of their carcasses. Stockowners should not be responsible for the carrying out of this great work for the public benefit ; neither should they be at any pecuniary loss in its execution.

Fair compensation should be granted on compliance with requirements during a stated period whilst the process is in operation. Doubtless the knowledge of the sum of money that would be required for this purpose is the main objection to the enforcement of the measure by Government. Such an objection would not hold in the case of an acute and widespread epizootic of other disease, say of cattle plague, an outbreak of which in this country in 1865-6 involved the death of upwards of 233,000 head of stock. Here the first consideration was the stamping out of the disease, as quickly as possible, and at any cost. Tuberculosis of animals is more widely spread than cattle plague has ever been ; it is always chronically prevalent in our herds and dairies ; whereas visitations of cattle plague are few and far between : and what is worst of all, it causes a vast amount of human sickness and death, which cattle plague does not do. Hence its extinction,

both on hygienic and economic grounds, is more urgently called for than would be that of an epizootic disease of different kind. It is estimated that the disease in animals may be eliminated in a single year. It might be attacked in single counties or districts in successive years to diffuse over a longer period the cost of dealing with it. All fresh importations of cattle into a district after a given date should be subject to the test.

If all stockowners and butchers were required to purchase subject to guarantee against tuberculosis, as proved either by the tuberculin test or by inspection after slaughter, the test would rapidly become general. Owners would only be too glad to adopt it in self defence, and other action necessary for the extinction of the disease would soon follow.

7.—THE CONTROL OF THE MILK-SUPPLY BY SANITARY AUTHORITIES.

The control of the Milk-supply of any district, to be satisfactory or complete, involves of necessity the frequent bacteriological examination of specimens drawn from the udders of each and all of the cows yielding milk for the supply of that district. This means that such examination should apply to the produce of dairies within the district and others sending supplies to it from without. A Sanitary Authority may take power to obtain the required specimens, and may carry it into effect in its own district; but to do so in the case of districts at a distance would be difficult and troublesome unless through the co-operation of the Sanitary Authorities of such districts. But under present conditions such co-operation is scarcely to be expected. For example: a large amount of milk is sent daily to London from Cheshire. Are the different Rural Authorities of the latter county to be expected to bestir themselves vigorously in order to condemn, in the interest of the distant Metropolis, the cowsheds and milk-supplies of their own farmers, many of whom may be members of these same Authorities? And how can London supervise the Cheshire dairies for itself?

The necessity for the regular and frequently repeated bacteriological examination of the milk-supply from every dairy cannot be too strongly insisted on. Tuberculosis of the udder is a well-known, though not by any means a common, form of the disease in cows, and the great danger in such cases of spreading the disease to consumers of the milk is admitted, even by the late Royal Commission, who cannot justly be charged with undue severity—at least to the dairy-trade—in their proposals for dealing with the milk of tuberculous cows, seeing that their protective recommendations extend only to animals with obvious disease of the *udder*, notwithstanding the fact that the milk of cows *without visible sign of tuberculosis of the udder* has been shewn by many bacteriologists to be infectious.*

This systematic and general bacteriological examination of milk is all the more urgently required by the fact that dairy farmers are not yet compelled by law to take steps to ascertain whether their milch-cattle are all tubercle-free.

The possibilities of spreading tuberculosis through the milk-supply are very great, inasmuch as in case of one cow only having the disease in a large dairy-herd, her milk, mixed with that of the other cows, will contaminate the entire supply, which, being distributed twice a day for a lengthened period, and consumed largely by children and principally uncooked—whether in its natural state or in the form of butter or cheese—has thus greater probabilities for conveying infection than any other article of food.

The ramifications of the Milk Trade throughout Great Britain are so complex and so intricate that no proper supervision in the interest of the consumer is at present practicable. Such supervision is possible only by the union of representatives of County Councils and District Authorities, both Urban and Rural, in one general body, with power to

* L. Rabinowitsch : Trans. Brit. Cong. on Tuberculosis, 1901. Vol. III., pp. 508-9, and Swithinbank and Newman's "Bacteriology of Milk," pp. 240-1.

organize and cause to be carried out all such measures for the regulation of the production and distribution of milk as are required for the protection of the health of the consumers. The action of such a body need not by any means be limited to the control of the milk supply. In the national interest it might extend to the extinction of bovine tuberculosis, and other matters relating to public hygiene.* The work for such an organization is abundant, and if taken in hand will be found to increase year by year.

A Sanitary Authority should have power to collect at the place of production samples of any milk intended for sale within their district.

No power is given to deal with any form of Tuberculosis in a dairy, no matter how extensive, other than the comparatively rare one in which the udder is affected; and how is the dairyman to be proved to know that a disease of his cow's udder is tuberculosis? The application of the tuberculin test to dairy cattle, even in case of suspected Tuberculosis of the udder, is not provided for.

The Liverpool milk clauses also fail to afford the protection against, and means of detection of, Tuberculosis among the dairy cattle yielding the milk-supply for the City, which the public health demands. The Medical Officer of Health may, it is true, by a very tedious and roundabout process, obtain an order to prohibit the sale of milk at any dairy, but *not unless he is of opinion that such milk has caused, or is likely to cause, Tuberculosis to its consumers!* How, without previous application of the tuberculin test, is he to obtain the information on which to form such opinion? How long may the distribution of such milk have to continue to cause Tuberculosis before the Medical Officer can possibly feel justified in concluding that it has done so? As it stands, the supposed "power" is a pure delusion.

* See p. 41.

8.—ACTION DESIRABLE.

Every Sanitary Authority should have power to enforce, and should be required to enforce, the following provisions, viz. :—

- (1) To apply the Tuberculin test to, and
- (2) To take such specimens as may be required of the milk of any cow, the yield of which is intended for sale in the district of such Authority ;
- (3) To prevent the sale of the milk of any cow re-acting to the tuberculin test, or found to be affected with tuberculosis in any form whatever.
- (4) To destroy any dairy cow re-acting to the tuberculin test and to compensate the owner, in the event of his compliance with the requirements being approved by the Sanitary Authority.
- (5) To require that no fresh cow shall be brought into any dairy for the production of milk for sale, that has not previously been recently tested with tuberculin and failed to re-act thereto.

The administration in detail of the foregoing and other requirements for the regulation of the milk trade ought, in the national interest, to be directed by a combination of Sanitary Authorities, as elsewhere indicated in the present report.

9.—THE ATTITUDE OF THE LATE ROYAL COMMISSION IN RESPECT TO THE MILK OF TUBERCULOUS COWS, AND ITS CONSEQUENCES.

Among much that is valuable in the report of the Royal Commission of 1898, there is also much that is grievously disappointing. The observations on milk-supply (ss. 39 and 42) and recommendations 7 and 8 on the same subject are,

as already stated, directed against the milk of cows with diseased udders only. The sale of the milk of other tuberculous animals is not condemned and therefore, by inference, is sanctioned by the Commissioners. In view of the abundance of proof as to the deadly nature of such milk, this is a lamentable fault in the report. As a whole, the sections of the report above referred to may, not inaptly, be characterised as milk and water.

The effect of the pronouncement of the late Royal Commission (quoted on page 13 of the present report) on their want of evidence as to the danger from the milk of a tuberculous cow, unless her udder was diseased, has naturally been to convey the general impression that the Commission did not regard such milk as dangerous, no matter how extensive the disease of the cow in the rest of her body—an admission only too likely to be taken as a rule for universal guidance. This opinion of the Commission is confirmed by subsequent sections* of their report, in which the protective measures recommended relate only to milk from cows with udder disease. That the conclusion of the Commission is absolutely incorrect and the doctrine advanced upon it dangerous to the highest degree, is proved by scientific evidence, part of which was before the world long before the sitting of the Commission, but of which they appear to have had no knowledge, and part of which was published subsequently. Thus Bollinger in 1880 produced tuberculosis by inoculation with the milk of a cow whose udder was not tuberculous; Hirschberger (1889) found milk infective from a cow affected with slight tuberculosis of the *lung only*; Ernst found in 114 samples of milk from 36 tuberculous cows, shewing no udder lesion, that 28·57 per cent. were infective; Smith and Schroeder found the milk infective in two cases out of six; and Delépine found the same in five out of twenty-four tuberculous cows with no udder lesion.†

* ss. 39, 42, and 43.

† *Lancet*, 20th January, 1900.

Again: " . . . The presence of tubercle bacilli in the milk of cows that respond to the tuberculin test without showing clinical evidence of tuberculosis was proved in the same year (1899) by the thorough experiments of Adami and Martin. A further proof in support of this theory was furnished by my last year's observations on milk supplied to infants in Berlin. . . . The supply of milk taken from animals . . . contained tubercle bacilli, though they shewed no clinical symptoms of Tuberculosis."*

The attitude of the Royal Commissioners on the matter of tuberculous meat will be referred to later.

10.—LAW IN RELATION TO TUBERCULOUS MILK.

Special powers for dealing with Tuberculosis and Milk have been obtained by the authorities of Glasgow, Manchester, Liverpool† and many other English towns. Most of these powers, as ultimately granted, are based on the findings and recommendations of the Royal Commission of 1898, and for that reason alone, and others also, fall far short of requirements. The Corporations of Manchester and several other towns "sought unlimited power of inspection of the cows on all farms supplying them respectively with milk; and of exclusion of milk of cows with any form of udder disease or suffering from advanced‡ tuberculosis." These proposals were modified considerably by the Local Government Board, the Board of Agriculture, and the Associated Chambers of Agriculture—and finally, the Corporations in question obtained the very limited power (1) to fine a dairyman who sold milk from a cow with a tuberculous udder, or continued to keep a diseased cow among other dairy cattle; (2) to require dairymen to notify tuberculosis of the udder.

*Dr. L. Rabinowitsch, Trans. Brit. Cong. on Tuberculosis, 1901. Vol. III., pages 508-9.

† The Liverpool Clauses are given in extenso in the Appendix to this Report, p. 51.

‡ The Sanitary Committee of Newcastle-upon-Tyne are of opinion that the word "advanced" should be omitted from the list of powers to be sought for the City.

MEAT.

THE DANGER OF THE USE OF THE FLESH OF TUBERCULOUS
ANIMALS FOR FOOD.

In matters concerning meat and other foods, with the older sanitarians "Purity" was the aim, and "Avoid every appearance of evil" the motto. But, like Molière's Physician in spite of himself, "we have changed all that," and henceforth we are to practise hygiene on entirely new methods! As regards the consumption of tuberculous meat, our rule in future is to be "go as near to danger as possible, without absolute proof of injury" (which it is often impossible to obtain!). In other words, we are to attempt to find out by practical processes whether or not "a man can eat a peck of dirt before he dies!" This, at least, appears to be the opinion and teaching of the Royal Commission on Tuberculosis, 1898. In commenting on the inspection as carried on in Edinburgh,* the Commissioners, although favourably impressed with the organisation, state that "the standard by which the meat of tuberculous carcasses was judged appeared to us unnecessarily severe." They think that an exaggerated view has been taken of the extent of the danger arising from tuberculous meat (ss. 25-34). They quote the example of Saxony shewing that Tuberculosis was found to exist in 22,758 carcasses, or upwards of 27 per cent. of the whole, and yet 92½ per cent. of these diseased carcasses were *passed as fit for food!* 5½ per cent. were disposed of in the Freibank as inferior meat at a fixed cheap rate, and "the remainder or 2 per cent. of the whole number pronounced tuberculous . . . were condemned as unfit for food and destroyed."†

The Royal Commission were favourably impressed with what they aptly term the "peculiar institution," known in Germany as the Freibank, where diseased meat after sterilization, or raw, as the case is considered to warrant, is sold at half price! They do not, however, go quite so far as to

* Report, s. 21.

† Ibid, s. 25.

recommend the introduction of this "peculiar institution" into England.

The Commission comment on the evils and commercial inconveniences arising from the want of uniformity of action in condemning tuberculous meat, and recommend for adoption a decidedly low standard,* of which the general effect will probably be to cause the passing of a large amount of meat which without it would be condemned. In the first place this standard specifies certain very marked conditions of tuberculous disease, in which the entire carcase and all the organs *may* (not *must*) be seized. It then proceeds to define four other conditions in which the lesions, no matter how extensive, are "confined respectively to (a) the lungs, etc., or (b) to the liver, or (c) to the pharyngeal lymphatic glands, or (d) to any combination of the foregoing, but collectively small in extent," and prescribes in any of these that "the carcase, *if otherwise healthy* (!) shall not be condemned, but every part of it containing tuberculous lesions shall be seized."

These very remarkable principles, intended for the general instruction and guidance of meat inspectors, suggest the following observations: In the very worst cases of tuberculosis the seizure is left to the option of the officer. In other cases, the parts to which the tuberculous lesions are confined, and these parts only, are to be seized. The rest of the carcase, "if otherwise healthy," is to be passed. How can it be otherwise healthy in the circumstances? Without extensive dissection of the entire carcase, how is an inspector to determine whether the lesions are limited to a particular set of organs? By the term "lesions" is evidently meant "signs of disease apparent to the naked eye." The parts not containing such signs, *i.e.*, the remainder of the carcase, may, according to the Royal Commission, be sold for food. This assumes that the disease is confined to the visible deposits of tubercle, which is erroneous.

* Report of Royal Commission, 1898, pp. 21 and 22.

The danger of consuming the flesh of animals affected with tuberculosis, when such flesh does not contain obvious tubercle, was proved by Dr. Sidney Martin* before the Royal Commission of 1895, in his experiments on guinea-pigs. The Report of this Commission (s. 18) says: "We cannot but regard these differential experiments as shewing a danger to a healthy animal from the introduction into its food of material taken from a tuberculous animal." The experiments in question were not made with "material containing tuberculous matter recognised as such," but "with some material, sometimes meat, much in the sense that a butcher might speak of meat derived from a tuberculous animal."†

Notwithstanding the foregoing evidence, the Royal Commission of three years later advises that a carcase having tubercle in only one of the great sets of organs should not be condemned! What would be said of a proposal to destroy the visible diseased parts of a carcase of trichinatous pork, and allow the remainder to be sold for food?

To assume, as the later Commission appears to have done, that visible tubercle in one part only of a carcase does not imply infection in the rest of the flesh, is, it is submitted, unjustifiable. To ignore the presence of tubercle bacilli in such circumstances would be no less dangerous than to disregard those in the air of the bedroom of a consumptive person.

A pronouncement such as that of the Royal Commission of 1898 above referred to, cannot but be far-reaching in its effects, and is likely to lead to the passing of large quantities of diseased meat in this country, which but for it, would be condemned. Through it, the action of officers is now questioned, as the following illustration shews. In May, 1903, the following letter was addressed by the Assistant Secretary of the Local Government Board to the Town Clerk of Newcastle-upon-Tyne:—

* R. C. Report, 1895, pp. 9, 10.

† Ibid.

LOCAL GOVERNMENT BOARD,

WHITEHALL, S.W.,

12, May 1903.

SIR,

I am directed by the President of the Local Government Board to state that he has been furnished by Mr. W. Field, M.P., with a statement, of which the accompanying is a copy, respecting seizures of carcasses made in the City of Newcastle-upon-Tyne in the years 1899-1902.

The President would be glad to be furnished with information as to the circumstances in which these seizures were made, and with any observations which the Town Council may have to offer on the matter.

I am, Sir,

Your obedient Servant,

JOHN LITHIBY,

Assistant Secretary.

*The Town Clerk,**Newcastle-upon-Tyne.*

The statement above referred to consisted of a list of ninety so called "locally affected" carcasses condemned and destroyed by the officers of the Newcastle Corporation in the four years named, giving the date, cost, and other particulars of each animal referred to: including, in several instances, observations as to the extent of the visible disease; the objection of the owners to destruction of the carcasses; the alleged remarks of the Medical Officer of Health, etc.

At the request of the Sanitary Authority the Medical Officer of Health replied at length on the foregoing question in a report from which the following particulars are taken. The carcasses in question belonged to members of a Butchers' Company, and were "surrendered" by their owners. In all 104 such carcasses belonging to the members of this company had been so "surrendered" during the years 1899-1902. So far as could be remembered, in every instance the carcase was tuberculous to a very marked degree.

The records of the Butchers' Society shewed that of upwards of 60,000 cattle insured by the members in the years 1899-1902, only 104 had been condemned, *i.e.*, 1 in 584 of all classes, or about 1 in 38 cows, and 1 in 848 other kinds of cattle, at a total loss to the Society of 4'05d. per head insured, paying two-thirds of the cost price of each animal. The report concluded as follows:—

"The statement of Mr. Field, M.P., appears to be an indictment of the action of the Medical Officer of Health in condemning diseased meat belonging to members of the Newcastle and District Butchers' Insurance Society.

"Under the circumstances above described, the Medical Officer of Health, whilst sympathising with the owners of the meat, fails to recognise the ground of their special complaint against him, or to understand how he can impartially discharge his duty to the public if his decision is to be influenced by the pecuniary considerations involved."

This ended the matter, so far as is known to the Medical Officer of Health. It can scarcely be said that the number of carcasses condemned as above described is excessive, and yet an explanation of his action was required from the officer responsible. To those who know the real proportion of tuberculous animals in our markets, the figures above given, instead of being an indication of excessive activity on the part of the officials, suggest that a great many diseased carcasses were sold for food which were never inspected. With a public abattoir such a thing would not take place.

Seeing the indifference with which all but the most advanced cases of tuberculosis in cattle, the flesh of which is intended for human food, are regarded in high official quarters, it is no wonder that the trade begins to make objection to the action of the officers of certain Sanitary Authorities who, recognising that Tuberculosis is something more than mere tubercle, do not hesitate to condemn the flesh of animals so affected to any considerable extent in any single part or organ of the carcass, even though the other parts fail to shew visible signs of disease, and are not deterred, through an undue sense of the commercial as against the human interests involved, from the execution of their duty under the powers conferred on them by section 116 of the Public Health Act, 1875.

Butchers complain that tuberculous meat is destroyed at their expense, whilst the farmers who sell the living animals escape scot free. This contention at first sight seems to contain an element of justice, but as the butchers can, if they choose, buy on warranty of freedom from disease, which the farmers may with the aid of the tuberculin test very safely give, the former have the remedy in their own hands. Even without warranty, by insurance to two-thirds the value of the cattle the loss to the butchers through condemnation is reduced to insignificance.

MEAT INSPECTION.

The importance of having trained, certificated meat inspectors can scarcely be too strongly insisted on. In Newcastle there are three skilful and experienced officers for this purpose, and, so far as is possible without a public abattoir, their work is exceedingly well done. But they are not ubiquitous, and it must be obvious to everyone that there is ample opportunity for concealment and disposal of diseased meat in the slaughter houses scattered over a city seven miles in extent.

OTHER CAUSES OF TUBERCULOSIS.

In the foregoing observations, the consideration of the causes of Tuberculosis has been limited to articles of diet. But the introduction of the tuberculous infection into the human system by way of the respiratory passages is quite as common as that by the alimentary canal. Pulmonary Consumption is the direct result of the inhalation of the bacillus of tuberculosis floating in the air as dust. The conditions leading to this inhalation of tubercle bacilli comprise the following:—

Atmospheric pollution in houses and rooms occupied by consumptive persons. This may arise from want of care with regard to expectorated matters which, if allowed to dry, are readily diffusible through the air. Consumptive persons should always expectorate into special bottles. By coughing into the air (without expectoration), or even by sneezing, the

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This process is carried out by shop-keepers in all main thoroughfares at the time when they are crowded with foot passengers on their way to business; and the *dust*, especially in windy weather, is both disgusting and a serious source of disease. The invention of *an apparatus* after the style of the household carpet sweeper *for taking the dust from footways without creating a nuisance, would be a public boon.* Sanitary Authorities would insist on its adoption, and it would rapidly gain favour with shopkeepers.

PREDISPOSITION TO TUBERCULOSIS.

Among other causes of Tuberculosis *special conditions of the body*, and certain *habits and customs*, play important parts by creating in persons, otherwise strong and healthy, a predisposition to develop the disease. Tuberculosis bacilli are so very generally diffused in food or in the atmosphere that there are probably few persons who do not at one time or another inhale or swallow them. But with the majority of such persons some protective agency in the system prevents for longer or shorter periods the development of these disease-germs, otherwise there would be no limit to their harmfulness. Certain conditions of the body appear to diminish or destroy this protective agency, and thus allow or facilitate the development of the disease-germs in question. This state of matters constitutes at least one of the phases of "predisposition." Any condition or circumstance which causes, or contributes to, predisposition is therefore an essential factor in the production of the disease. These conditions vary widely in nature, including as they do, heredity, alcoholism, and other debilitating influences. Heredity was formerly considered to be the chief, and often the sole, cause of pulmonary consumption, the tendency of which to appear in successive generations, both of human beings and animals, is well known. But it is now taught that the offspring of tuberculous parents are, with very few exceptions, born free of the disease. The predisposition to it is inherited, but seldom anything more. If the new born child or calf of a tuberculous mother is immediately removed into tubercle-free

surroundings and fed on tubercle-free food, there is very little likelihood of its developing tuberculosis; but if fed on the mother's milk, or allowed to inhale the air she breathes out, infection may be conveyed to it, from the effects of which, through its already inherited predisposition, it has but small chance of escape.

Alcoholism is probably by far the most potent predisposing cause of consumption in adults. The marriage of a tuberculous person with a previously healthy one is a frequent cause of disease in the latter. Insufficient respiratory action from prolonged sedentary attitude, stooping deportment of the body, and faulty breathing habits, are each and all fertile predisposing causes of the same disease in children and adolescents. Failure to change thoroughly and frequently the residual air in the extremities of the air passages of the lungs by deep inspirations and expirations, is a habit which children at desks in school and others very readily acquire, and should always be carefully taught to avoid as a danger to health. Drill-exercises, gymnastics, running, jumping, skipping, and dancing, are all excellent counter-agents to predisposition towards pulmonary consumption in the young; but the practice of steady and prolonged in-and-out drawing of the breath as deeply and as slowly as possible is probably better than any of these.

IV.—THE EXTINCTION OF TUBERCULOSIS.

In the foregoing account an attempt has been made to indicate the prevalent causes of Tuberculosis and the means by which they act. In the control of the operation of these lies the possibility of the extinction of the disease. Whether this control shall be exercised, and to what extent, depends on public opinion. So far as it relates to the two chief articles of diet, meat and milk, the question resolves itself mainly into one of expense. Is it worth while trying? To this the reply is undoubtedly "Yes!" For although the cost of exterminating tuberculosis in food-yielding

animals must of necessity be great, and is likely to be opposed by persons whose private interests may be touched, and by party politicians, yet the prospect of the benefit in view to the State and suffering humanity, and the hope of obtaining it, are greater still.

V.—ADMINISTRATIVE MEASURES FOR THE NATIONAL AND LOCAL TREATMENT AND PREVENTION OF TUBERCULOSIS.

If Tuberculosis is to be attacked with the hope of securing its ultimate extinction—and being a preventable disease such hope is well grounded—the measures requisite for dealing with it must be complete in conception and thorough in execution. These measures include the following:—

1. The compulsory notification of all cases of pulmonary consumption and other forms of tuberculosis attended with infective evacuations or discharges.
2. The isolation and treatment of the foregoing diseases in institutions specially provided for the purpose, and the prevention of such treatment in other institutions.
3. The prevention of the danger of infection through the digestive and respiratory passages of man and the domesticated animals.
4. The education of public opinion as to the nature and causes of Tuberculosis and the means of preventing it.
5. The acquisition and application of legal power to carry out the foregoing requirements.
6. The establishment of a *Supreme National Health Authority* charged, *inter alia*, with the special duty of administering and executing the measures required for the treatment and prevention of Tuberculosis.

With respect to the measures above indicated—the following observations are offered.

1.—COMPULSORY NOTIFICATION.

Voluntary notification is insufficient. The notification of pulmonary consumption only, leaves out of consideration other forms of the disease attended with discharges by which infection may be spread, and which ought to be dealt with by the Sanitary Authority.

2.—INSTITUTIONS FOR THE ISOLATION AND TREATMENT OF TUBERCULOSIS AT DIFFERENT STAGES.

These include (a) *Sanatoria* in healthy situations for isolation and curative treatment of cases *at an early stage*; (b) *Hospitals* for the isolation and palliative treatment of advanced cases and (c) *Dispensaries* for the special treatment of Infantile Tuberculosis.

Every Sanitary Authority should have the means of isolating early cases of Consumption and other forms of Tuberculosis attended with evacuations or discharges. At present Sanatoria are principally employed for the reception of the pulmonary form; but with the development of public opinion it is hoped that the other forms may be dealt with in the same manner. One bed per 5,000 population seems a suitable basis on which to calculate the amount of accommodation to provide. This for Newcastle will represent a total of 54 beds for a Sanatorium. As a commencement in this direction it is suggested that the Sanitary Committee arrange with the Newcastle and Northumberland Branch of the National Society for the prevention of Tuberculosis, to have the use of, say 20 beds for patients in their recently erected Sanatorium near Barrasford, North Tyne. The site, situation, surroundings, and structure of this Sanatorium are all that could be desired for the purpose.

This isolation of *advanced cases* of consumption, &c., is as urgently necessary in the interest of public health as for any other infectious disease. The Corporation have an excellent hospital for Incurables at Moor Lodge. For some reason

unknown to the writer consumptives are not admitted there. Being equally hopeless of cure as others, if not more so, and being also infectious, they have a double claim to the benefit of the Charity.

ANTITUBERCULOUS DISPENSARIES.

Apart from the cases admitted into Sanatoria or Hospitals for the hopelessly incurable, there will always be a numerous class of others including a large proportion of children and of adults able to go about, or even to work, who, for one reason or another remain at home. These require medical treatment, and among the working class population, usually attend as out-patients at the public hospitals or general dispensaries of their town to the great danger of other patients. There should be special Antituberculous Dispensaries for the treatment of such cases, and their visits to other medical institutions should be prohibited. Such institutions are in active operation in France and Germany and are doing good work. At these Dispensaries the consumptive patient is provided with a pocket spittoon in which he is instructed to bring a specimen of his sputum for bacterial examination. If the disease is tubercular, the patient is furnished with printed instructions as to precautions to be taken to prevent spread of infection, &c.; he is provided with pocket and table spittoons, and disinfectants. A personal enquiry is made into the circumstances and surroundings of the sick person. The soiled linen of the household is removed to a special laundry for disinfection and cleansing. The sick-room, walls, floors, &c., are disinfected.

At the Lille Dispensary, arrangements are also made for the provision of food and maintenance for the families of the sick. Registers are kept shewing the occupations of the patients, the causes of their illness, the state of their habitations, and other particulars bearing on the cases.*

The establishment of an Antituberculous Dispensary for Newcastle on the lines above described is greatly needed.

* "The Emile Roux Antitubercular Dispensary at Lille."—Paper by Dr. A. Calmette. Trans. Brit. Cong. on Tuberculosis. Vol. II., p. 447, &c.

3.—PREVENTION OF INFECTION THROUGH THE DIGESTIVE AND RESPIRATORY PASSAGES.

To prevent the infection of tuberculosis from gaining access to the body *through the mouth* implies the strict regulation of Cattle and Cow-houses, Meat and Slaughter-houses, and the supply of Milk and Milk-products. The dangers from these several causes have been plainly stated in the foregoing pages. The administrative and other measures required for dealing with them may be summarised as follows :—

A.—THE COMPULSORY ELIMINATION OF BOVINE TUBERCULOSIS FROM ALL BRITISH CATTLE.

This should be carried out compulsorily and universally by means of the tuberculin test on the lines recommended for voluntary application by the Royal Commission of 1898.* All re-acting animals whatever should be forthwith sterilized and destroyed.

All cattle freshly brought into a district or market after the carrying-out of the foregoing measure of elimination, should be subject to warranty of freedom from tuberculosis, or they should be tested immediately after arrival, and all re-acters should be promptly dealt with as in the preceding section.

All sales of living cattle or pigs should be made on similar conditions to those described in the two preceding paragraphs.

B.—MEAT INSPECTION.

An abattoir is an absolute necessity for the proper supervision of meat in towns. The sale in towns of the flesh of animals not slaughtered in an abattoir or otherwise not submitted to official inspection should be made illegal.

Meat passed as fit for food, after inspection should be stamped as such by the Inspector.

Rural Slaughter-houses should be supervised by the County Councils and made subject to regulations as in towns,

*Rept. 1898. Ss. 15 and 16.

Meat of quadrupeds slaughtered in one district and sent for sale to another, should be accompanied by an official certificate of freedom from tuberculosis, or should be subject to confiscation, and its sender to penalty.

The doctrine of tuberculosis at any stage being "localised" is false and mischievous and should be utterly abolished.

C.—MILK AND DAIRIES.

No milk or milk-product of any cow should be allowed to be sold unless such cow have previously been subjected to the tuberculin test and failed to react.

The limitation of the prohibition of the use of the milk or milk-products of tuberculous cows to such cows only as have disease of the udder is mischievous and should be utterly condemned.

The officers of the Sanitary Authority should have full power to take from any cow, the milk of which is sold or offered for sale in their district, such samples of milk for examination as they consider necessary.

The Sanitary Authority of a district to which milk or a milk product is sent for sale from another district, should have full power to require the sanitary regulation to their satisfaction of the cow-house and dairy in which such milk or milk-product was produced. For this purpose, they should have through their officers readier access to outside cow-houses and dairies than they have at present.

The "Milk-clauses" of the Liverpool Corporation Act 1900* are (subject always to the exceptions specified in the four preceding paragraphs and certain others) recommended as a general basis for imitation.

Sterilization of milk as a protection against tuberculosis and other infectious diseases is unsafe and otherwise objectionable. The only real safeguard lies in the prevention of the sale of the milk from a tuberculous cow.

* See Appendix—page 51.

Samples of the mixed milk of every dairy should be taken at frequent intervals for bacteriological examination. In the event of tuberculosis bacilli being found in any such mixed sample, a detailed enquiry should be forthwith carried out to ascertain the particular cow or cows in the dairy which had yielded the diseased milk. Any such cow should be forthwith removed from the byre and slaughtered and the carcase destroyed.

4.—THE EDUCATION OF PUBLIC OPINION AS TO TUBERCULOSIS AND ITS PREVENTION.

In the campaign against Tuberculosis, not by any means the least important item of the programme of requirements is the instruction of the people, both children and adults, in the general principles of hygiene, especially in points bearing directly on the causes of this particular disease in the individual, and the means which everyone, to a certain extent, possesses of preventing their action in his own person. The direct advantage to health from the regular practice of early rising, open-air exercise, and cleanliness; the great value of fresh air and direct sun-light as destroyers of disease germs; the strength, energy and happiness which ensue as the direct results of correct breathing habits, athletics, gymnastics, drill exercises, and erect carriage of the body; these are matters the systematic inculcation of which is infinitely more important to the young than some of the subjects now taught in our schools, and might with untold benefit be learnt and practised by persons at every age. Adults should have impressed upon them by addresses, lectures, and other means, the importance of lighting and free ventilation in tenement and private dwellings, in offices, workshops, and places of assembly for worship or amusement. If clergymen were only taught to realize how weary and sleepy their hearers often become before the close of even a stirring sermon, and to recognise that this is (perhaps entirely) due to the effects of long continued breathing and re-breathing of each others' breaths during the service,

the lesson would speedily lead to structural changes for the bodily and spiritual welfare of the worshippers.

Workmen and others should be thoroughly instructed as to the special insalubrity of certain occupations, the circumstances that give rise to and aggravate it, and the means of preventing their evil consequences. They would thus learn to take an intelligent interest in the sanitary aspects of their work which could not but lead to good practical result.

Butchers, cowkeepers, dairymen, and farmers, should be taught to understand and appreciate fully the immense and direct influence of their respective avocations on public hygiene and on the health of private individuals. Further, after a given date, special training, examination, and certification in the principles and practice of sanitation as applied to each of these businesses respectively should be held as a necessary qualification for every person proposing to follow any one of them.

The evil of unnecessary pollution of the atmosphere from any source, but more especially by dust from floor—and foot-path—sweeping, which is very apt to carry into the air the germs of consumption and other forms of tuberculosis, should be brought before shopkeepers from time to time by circulars and notices. The disgusting and dangerous practice of spitting in public places should be discouraged by the enlightenment of public opinion through placards and posters, and after a time by fine on conviction.

Not only should the personal advantages of combatting consumption and other forms of tuberculosis be inculcated. The benefits thereof to the public health and to the State should be impressed as continuously and as forcibly as possible on the popular mind by bodies of specially informed and public spirited persons, such as the National Association for the Prevention of Consumption, with its many branches, the Physical Culture Society, and others.

Every Sanitary Authority would do well to appoint for itself a Special Committee of experts to report on the local reforms desirable to combat the various forms of Tuberculosis at any and every period of life; to advise as to the action needed to carry them out, and to superintend their progress.

5.—THE ACQUISITION AND APPLICATION OF THE NECESSARY POWER TO CARRY INTO EFFECT THE FOREGOING RECOMMENDATIONS :—

The adoption of the "Liverpool Milk Clauses" has, subject to certain amendments, already been recommended. As time goes on, the need of further powers in this direction will probably be recognized.

6.—THE ESTABLISHMENT OF A SPECIAL AUTHORITY TO INITIATE, ADMINISTER, AND EXECUTE THE MEASURES REQUIRED FOR THE NATIONAL TREATMENT AND PREVENTION OF TUBERCULOSIS, AND OTHER REFORMS FOR THE PROMOTION OF THE PUBLIC HEALTH.

A NATIONAL SANITARY AUTHORITY.

The object outlined in the foregoing paragraphs, viz. :—the treatment of tuberculosis as a serious national menace, is one of the highest imaginable, and one to the promotion of which any man may be glad to devote the best energies of his life. Such a work to succeed must be carefully planned and energetically executed. Its scope extends far beyond the selfish aims of party politics or the restricted sphere of an incorporeal Local Government Board; it requires for its conception, initiation and direction, a governing body freed from narrow interests and local prejudices, and having in view only the good of the State; a body so constituted as to represent the hygienic interests of all classes of the community alike; and prepared to give to the public health service that continuity of attention and breadth of treatment which the subject demands.

An Authority, constituted of representatives of County Councils, Metropolitan and Provincial, and the large Sanitary Authorities, Urban and Rural, of the Kingdom would form a truly representative and popular

SUPREME NATIONAL HEALTH AUTHORITY

to consider and deal with all questions of purely Public Hygiene, including *inter alia*

- Tuberculosis in man and animals ;
- Milk and meat supplies ;
- Infant mortality ;
- Occupational diseases ;
- Water supply ;
- Vagrancy ;
- Vaccination ;
- Physical degeneration ;
- The disposal of sewage ;
- The pollution of rivers ;
- The prevention of disease through shellfish in polluted waters ;
- The promotion and encouragement of the use of Bacteriology as a preventive measure in relation to disease ;
- The prevention of Syphilis as a national evil ;
- The Housing question in all its phases ;
- The stimulation of lax local authorities and the assistance of others in the carrying out of necessary sanitary reforms in their respective districts, &c., &c.
- The securing of the necessary powers and funds to carry out the requirements in respect of the foregoing matters ; and
- Any other questions relating to Public Health.

In the contemplation of an original scheme of the nature and extent above indicated, among the first questions likely to arise are those as to the necessity for it. It may be asked "Are not the means already available for promoting the physical health of the population sufficient for the purpose ?

If not, in what respect do they fall short, and what are the advantages of the innovation proposed over those of existing institutions ? ”

The answers to the foregoing queries are as follow :—

The consideration and carrying out of all matters relative to the maintenance and improvement of the public health at present rest with

1. Parliament.
2. The Local Government Board.
3. Occasional Royal Commissions and Departmental Committees.
4. Local Sanitary Authorities.

With respect to the first of these, it has been truly said that Parliament has neither time, opportunity, or inclination for the study of public health questions, each political party being too much absorbed in its own immediate concerns to be able to attend to matters of mere general sanitary interest, unless these are forced into notice, for example, by the dread of some impending epidemic. If it be advanced that the above drawback is met by the establishment of the Local Government Board, the reply is that that Board has already as much work to do as, *from its singular constitution*, it can manage.* Moreover, its organisation and the character of its existing duties unsuit it for the consideration and treatment of questions such as those at issue. Of strictly orthodox views, it perceives from the outside only, and fails to appreciate, the difficulties which Sanitary Authorities see and feel from within. Accustomed to stereotyped methods of procedure and averse to new departures, instead of leading, it discretely sails in the wake of public opinion.

Royal Commissions and Departmental Committees do unquestionably excellent service in collecting and analysing information on matters of public importance. But their function is advisory, not administrative ; their investigations

*See Annual Reports of the Local Government Board.

are merely special in character and limited in scope; and their work usually ends with the issue of their report.

Local Sanitary Authorities, as at present constituted, being isolated from each other and entirely self-centred, have no common bond of union, such as the health of the population at large, for which to work. That they are quite able and willing to combine in the promotion of such objects is proved by their readiness to meet in conferences for the consideration of questions of public health, and by the unanimity of their conclusions on these occasions. Here again the efforts of a large assembly of Authorities are apt to fail in effect through want of continuity of action and permanent cohesion on the part of its members.*

Popular interest in sanitation is, as goes without saying, stimulated by the officers of the Public Health Service, by the medical profession generally, and by Societies, Institutions, and Congresses for the advancement of Hygiene. The influence, however, of these, although undoubtedly beneficial, is chiefly educational and circumscribed.

State Medicine demands fuller and more special attention than under existing circumstances it either receives or can be expected to receive. The remedy for this is the establishment of a permanent *Supreme National Health Authority*, representative of the whole of the Sanitary Authorities of the kingdom, and entrusted with the sole object of safe-guarding and improving the bodily health of the race. Such an Authority will find ample scope for its deliberations and ever-increasing demands on its energies.

*This was only too plainly demonstrated at the Conferences convened by the London County Council on Smallpox in relation to Vagrancy in 1894 and 1904. The resolutions passed at the first of these Conferences were forwarded to the Local Government Board, and were heard of no more. At the second Conference a Committee was appointed to wait on the President of the Local Government Board, but the then President declined to receive the deputation. Shortly afterwards, on this gentleman leaving office, his successor was induced to receive the deputation, and did so, but almost immediately had to relinquish office on a change of Government. Since then, so far as is known to the writer of the present report, no further steps have been taken in the matter.

VI.—SUMMARY OF OBSERVATIONS AND RECOMMENDATIONS.

(A.) OBSERVATIONS.

- 1.—The extent and fatality of Tuberculosis are a grave national menace.
- 2.—The Control of Tuberculosis in man and animals under domestication is the duty of the Sanitary Authority.
- 3.—Tuberculosis is *not* a "localised" disease but always involves the entire system of the person or animal affected, as proved by the Tuberculin test.
- 4.—The extinction of Tuberculosis is possible and worth attempting.
- 5.—The use of the flesh of tuberculous animals for food is dangerous.
- 6.—The spread of Tuberculosis by the consumption of the flesh of a tuberculous animal was proved before the Royal Commission of 1895.
- 7.—The Local Government Board inquiry as to seizures of tuberculous carcasses in Newcastle, and its result.
- 8.—The importance of trained and qualified Meat Inspectors.
- 9.—The milk of tuberculous cows has been abundantly proved to be dangerous even *when their udders are not diseased*. The neglect of the Royal Commission of 1898 to point this out is a serious omission.
- 10.—The bacterial examination and control of the milk supply should be carried out by the Sanitary Authority, and any tuberculous milk found should be traced to the cow that yielded it.
- 11.—Certain causes of Tuberculosis other than those above indicated. (Insanitary dwellings, overcrowding, habits, predisposition, etc., etc.)
- 12.—The beneficial effect of respiratory and gymnastic exercises.

(B.) RECOMMENDATIONS.

The following measures are recommended for general adoption by Sanitary Authorities :—

HUMAN DISEASE.

- 1.—The compulsory general notification of human pulmonary consumption and other tubercular diseases attended with discharges or evacuations.
- 2.—The isolation and treatment of the disease in special institutions (Sanatoria, Anti-Tuberculous Dispensaries, Hospitals for Incurables), and the prevention of its treatment in other institutions.
- 3.—The prevention of infection through the digestive and respiratory passages of man and the domesticated animals, as indicated on page 34 of the present report and otherwise.

CATTLE AND SWINE.

- 4.—The compulsory application of the Tuberculin test to all British cattle and swine by competent Veterinary officials, and the branding and destruction of all re-acters. Owners complying with this requirement within a specified time from the date of the power coming into operation to be compensated. The application of the test by any unauthorised person to be made illegal.
- 5.—All sales of cattle and swine to be subject to the foregoing conditions, and to be made on warranty, by the seller, of freedom from Tuberculosis. The seller of a tuberculous animal to be subject to penalty.

MEAT.

- 6.—Every Urban District Council should have an abattoir of its own. The sale in towns of the flesh of animals slaughtered elsewhere than in an abattoir, or otherwise not submitted to official inspection, should be made illegal.

- 7.—Meat passed, after inspection, as sound, wholesome, and fit for food, should be stamped as such by the Inspector.
- 8.—Rural slaughterhouses should be supervised by the County Councils, and made subject to regulation as in towns. Meat of animals slaughtered in one district and sent for sale to another, should be either officially stamped as sound, wholesome, and fit for food, or be accompanied by an official certificate of its freedom from tuberculosis and fitness for food in all other respects, or be subject to confiscation.
- 9.—After a given date, every person intending to commence and carry on the business of a butcher, cowkeeper, or dairyman, should be required to undergo special training, and to produce a certificate, after examination, of qualification in the principles and practice of sanitation as applied to such business.
- 10.—Every Meat Inspector should, before appointment, produce evidence of sufficient training and qualification (after examination) for office.

MILK.

- 11.—Every Sanitary Authority should arrange for the systematic bacterial examination, and, as far as possible, the control, of the milk supply of its district.
- 12.—Every dairy farmer or producer of milk for sale should, before offering such milk for sale in any district, and whenever required by the Sanitary Authority of such district, satisfy such Sanitary Authority that the cattle yielding such milk are, each and all of them, free from tuberculous disease, as proved, after the application of the tuberculin test, by the certificate of the Veterinary Inspector of the district in which such milk is produced.
- 13.—With or without suspicion of any milk or milk-product having caused or being likely to cause infectious

disease, every Sanitary Authority should have full power—

- (a) To inspect the cowsheds and dairy premises of any farm or dairy supplying the district of such Authority with milk or a milk-product, and prevent the sale of such milk or its product in their district unless and until they are satisfied as to the sanitary condition and regulation of the cowshed and dairy premises generally in which such milk is produced ;
- (b) To inspect, examine, and apply the tuberculin test to any cow ;
- (c) To collect at the place of production or elsewhere such samples as they may require of the milk of any cow, the yield of which is intended for sale within the district of such Authority. Dairymen should be required to render assistance, and any person obstructing should be liable to penalty ;
- (d) To prevent under penalty the sale of the milk of any cow re-acting to the tuberculin test, or found to be affected with any form of Tuberculosis whatsoever, or any other disease of the udder ;
- (e) To brand and cause to be destroyed any dairy cow re-acting to the Tuberculin test ; the State to compensate the owner in the event of his compliance with the requirements being approved by the Sanitary Authority ;
- (f) To require under penalty that a cow shall not newly be brought into any sanitary district or allowed to remain therein for the production of milk for sale unless and until such cow has been recently, and within a specified time, officially tested with tuberculin and failed to re-act thereto.

- 14.—The limitation of the prohibition of the use of milk or milk-products of tuberculous cows to such cows only as have disease of the udder should be abandoned as mischievous.
- 15.—It should be the duty of every Sanitary Authority (Medical Officer of Health) of a district in which milk sent there for sale from an outlying district is found to be tuberculous, without delay to report the fact to the Sanitary Authority (Medical Officer of Health) of such outlying district, and the County Council in which such district is situated. On receipt of such information by the Sanitary Authority (Medical Officer of Health) of such outlying district it shall be their (his) duty without delay to cause the tuberculin test to be applied to each cow of the dairy at which such tuberculous milk was produced, and to cause all such steps to be taken as are indicated in the preceding par. 13, sections (d) and (e). Until the completion of such testing, they (he) should prevent the sale of any milk from the dairy in question, and should without delay inform the Sanitary Authority of every district ordinarily supplied with such milk, that they have (he has) done so. It should be the duty of the County Council to see to the carrying out of all of the foregoing requirements, and any farmer, dairyman, &c., who, after prohibition as above indicated, sends milk or its products to any district for sale, should be liable to penalty.

Every Sanitary Authority should be empowered and required to license for a stated period every dairy and cowshed in their district or in any outlying district in which milk is produced and sent to their district for sale; and to require as one of the conditions of every such licence or its renewal that all cows of such dairy, including new additions, be proved by official veterinary certificate, after applica-

tion of the tuberculin test, to be free from tuberculosis before their milk shall be offered for sale. Any unlicensed milk dealer selling or offering milk for sale should be liable to penalty.

Such of the "Milk Clauses" of the Liverpool Corporation Act, 1900, amended in the appendix to this Report, as may be necessary to supplement the present recommendations, should be adopted by all Sanitary Authorities.

EDUCATION.

All Sanitary Authorities should be encouraged to promote, by means of lectures and addresses, the education of the inhabitants of their respective districts as to the nature and causes of Tuberculosis, the measures for its prevention, and the duty of private persons and the public generally in respect thereto.

The Sanitary Authorities of Great Britain should unite to establish a Board of Representatives as

A SUPREME NATIONAL HEALTH AUTHORITY,
to deal with Tuberculosis and other national disease, physical degeneration, and the various matters relating to Public Health indicated on page 42 of the present report.

A special Council of Representatives should be appointed to consider and report on the foregoing recommendations, and the action desirable to give effect thereto.

As all Sanitary Authorities are equally interested in this great question, they are earnestly requested to consider and as far as possible to co-operate in carrying out the foregoing proposals.

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10th January, 1907.

APPENDIX.

THE
MILK CLAUSES
OF THE
LIVERPOOL
CORPORATION ACT,
1900,
(AMENDED).

THE LIVERPOOL MILK CLAUSES.*

The Liverpool Corporation Act, 1900, contained, amongst others, the following important clauses, designed to protect consumers of milk from the dangers of Tuberculosis:—

17.—In this part of this Act—

“Dairy” shall include any farm, farmhouse, cowshed, milk store, milk shop, or other place from which milk is supplied, or in which milk is kept for the purpose of sale.

“Dairyman” shall include any cowkeeper, purveyor of milk, or occupier of a dairy.

“Medical Officer” means the medical officer of health for the ~~city~~, (district), and includes any person duly authorised to act temporarily as medical officer of health.

18.—Every person who knowingly sells or suffers to be sold or used for human consumption within the ~~city~~ (district) the milk of any cow which is suffering from tuberculosis ~~of the udder~~, shall be liable to a penalty not exceeding ten pounds.

19.—Any person the milk of the cows in whose dairy is sold or suffered to be sold or used for human consumption within the ~~city~~, (district), who after becoming aware that any cow in his dairy is suffering from tuberculosis ~~of the udder~~, keeps or permits to be kept such cow in any field, shed or other premises along with other cows in milk, shall be liable to a penalty not exceeding five pounds.

20.—Every dairyman who supplies milk within the city, (district), and has in his dairy any cow affected with, or suspected of, or exhibiting signs of tuberculosis ~~of the udder~~, shall forthwith give written notice of the fact to the medical officer, stating his name and address, and the situation of the dairy or premises where the cow is.

* It is suggested that the words ruled out be omitted, and that the words in brackets, where they occur, be substituted.

Any dairyman failing to give such notice shall be liable to a penalty not exceeding forty shillings.

21.—(1) It shall be lawful for the medical officer or any person provided with and if required, exhibiting the authority in writing of such medical officer, to take within the ~~city~~ (district) for examination samples of milk produced, or sold, or intended for sale within the ~~city~~ (district).

(2) The like powers in all respects may be exercised outside the ~~city~~ (district) by the medical officer or such authorised person if he shall have first obtained from a Justice, having jurisdiction in the place where the sample is to be taken, an order authorising the taking of samples of the milk which order any such Justice is hereby empowered to make.

22.—(1). If milk from a dairy situate within the ~~city~~ (district) is being sold or suffered to be sold or used within the ~~city~~, (district), the medical officer or any person provided with and, if required, exhibiting the authority in writing of the medical officer, may ~~if accompanied by a properly qualified veterinary surgeon,~~ at all reasonable hours, enter the dairy and inspect the cows kept therein; and if the medical officer or such person has reason to suspect that any cow in the dairy is suffering from tuberculosis of the udder he may require the cow to be milked in his presence and may take samples of the milk, and the milk from any particular teat shall, if he so requires, be kept separate and separate samples thereof be furnished, *and may apply or cause to be applied to such cow the tuberculin test.*†

(2) If the medical officer is of opinion that tuberculosis is caused or is likely to be caused to persons residing in the ~~city~~ (district) from consumption of the milk supplied from a dairy situate within the

† The words in italics are suggested as an amendment.

city (district) or from any cow kept therein, he shall report thereon to the ~~Corporation~~, (Sanitary Authority), and his report shall be accompanied by any report furnished to him by the veterinary surgeon, and the ~~Corporation~~ (Sanitary Authority) may thereupon serve on the dairyman notice to appear before them within such time, not less than twenty-four hours, as may be specified in the notice to shew cause why an order should not be made requiring him not to supply any milk from such dairy within the city (district) until the order has been withdrawn by the ~~Corporation~~ (Sanitary Authority).

- (3) If the medical officer has reason to believe that milk from any dairy situate outside the city (district) from which milk is being sold or suffered to be sold or used within the city, (district), is likely to cause tuberculosis in persons residing within the city, (district), the powers conferred by this section may in all respects be exercised in the case of such dairy, ~~provided that the medical officer or other authorised person shall first have obtained from a Justice having jurisdiction in the place where the dairy is situate, an order authorising such entry and inspection, which order any such Justice is hereby empowered to make.~~

- (4) Every dairyman, and the persons in his employment, shall render such reasonable assistance to the medical officer or such authorised person or veterinary surgeon as aforesaid, as may be required by such medical officer, person, or veterinary surgeon for all or any of the purposes of this section; and any person refusing such assistance, or obstructing such medical officer, person, or veterinary surgeon in carrying out the purposes of this section, shall be liable to a penalty not exceeding five pounds.

- 5) If, in their opinion, the dairyman fails to show cause why such an order may not be made as aforesaid, the ~~Corporation~~ (Sanitary Authority) may make the said order, and shall forthwith serve notice of the facts on the county council of any administrative county in which the dairy is situate and on the Local Government Board, and if the dairy is situate outside the ~~city~~ (district) on the council of the borough or county district in which it is situate.
- 6) The said order shall be forthwith withdrawn on the ~~Corporation~~ (Sanitary Authority) or their medical officer being satisfied that the milk supply has been changed or that it is not likely to cause tuberculosis to persons residing in the city.
- 7) If any person, after any such order has been made, supplies any milk within the ~~city~~ (district) in contravention of the order, or sells it for consumption therein, he shall be liable to a penalty not exceeding five pounds, and if the offence continues, to a further penalty not exceeding forty shillings for every day during which the offence continues.
- 8) A dairyman shall not be liable to an action for breach of contract if the breach be due to an order under this section.
- 9) The dairyman may appeal against an order of the ~~Corporation~~ (Sanitary Authority) under this section, or the refusal of the ~~Corporation~~ (Sanitary Authority) to withdraw any such order either to a petty sessional court having jurisdiction within the ~~city~~, (district), or at his option, if the dairy is situate outside the ~~city~~ (district) to the Board of Agriculture, who shall appoint an officer to hear such appeal. Such officer shall fix a time and place of hearing within the ~~city~~, (district), and give notice thereof to the dairyman and the ~~town~~

clerk, not less than forty-eight hours before the hearing. Such officer shall, for the purposes of the appeal, have all the powers of a petty sessional court.

- (10) The Board of Agriculture may, at any stage require payment to them by the dairyman of such sum as they deem right to secure the payment of any costs incurred by the Board of Agriculture in the matter of appeal.

24.—Offences under this part of this Act may be prosecuted and penalties may be recovered by the ~~Corporation~~ (Sanitary Authority) before a petty sessional court, having jurisdiction in the place where the dairy is situate or the offence is committed, and not otherwise.

Sections 9 and 11 of the Sale of Food and Drugs Act, 1899, which came into operation on 1st January, 1900, contain the following clauses :—

9. "Every person who, himself or by his servant, in any highway or place of public resort sells milk or cream from a vehicle or from a can or other receptacle shall have conspicuously inscribed on the vehicle or receptacle his name and address, and in default shall be liable on summary conviction to a fine not exceeding two pounds."

11. "Every tin or other receptacle containing condensed, separated, or skimmed milk must bear a label clearly visible to the purchaser on which the words 'Machine-skimmed milk' or 'Skimmed milk' as the case may require, are printed in large and legible type, and if any person sells or exposes or offers for sale condensed, separated, or skimmed milk in contravention of this section he shall be liable on summary conviction to a fine not exceeding ten pounds."

