1905.

NEW ZEALAND.

PUBLIC HEALTH STATEMENT.

BY THE MINISTER OF PUBLIC HEALTH, THE HON. SIR J. G. WARD, K.C.M.G.

Presented to both Houses of the General Assembly by Command of His Excellency.

MY LORD,— Department of Public Health, Wellington, 4th September, 1905.

I have the honour to submit to Your Excellency the fifth annual report of the Chief Health Officer of the Colony.

I have the honour to be

Your Lordship's most obedient servant,

J. G. WARD,

His Excellency the Governor of New Zealand. Minister of Public Health.

DESPITE the occurrence throughout the past year of cases of plague at various times in New South Wales and Queensland, there has not, I am pleased to say, been any outbreak in New Zealand. The somewhat drastic measures against small-pox last year have been justified. The disease was completely stamped out, and there has been no further importation. There is now in working-order a laboratory planned and built on the latest scientific principles for the manufacture of pure calf-lymph.

The crusade against consumption is still being waged with earnestness, and good results have been obtained. The public generally are beginning to realise not only the infectious nature of the disease, but are becoming alive to its curability not less than the possibility of completely stamping it out by means of proper precautionary measures. Much remains to be done, but I feel assured New Zealand has no cause to feel ashamed of her work in this most laudable direction. That the forward position we have taken up on health matters has not escaped the eyes of our neighbours is evinced by the following extract from a recent report by an Australian expert:—

> We thus find in Australasia a process of administrative development in which South Australia stands at the bottom and New Zealand at the top. Such being the case, it appears to be the obvious duty of this State to profit by experience, and aim at the higher plane of New Zealand legislation. If that aim be too high in our present stage of development, let us at least try to improve on our position.

The Sanatorium at Cambridge is now in full swing, and excellent results have been obtained.

I have again to record my thanks to, and appreciation of the work of, the various officers of the Department from the Chief Health Officer downwards.

I have, &c.,

J. G. WARD,

His Excellency the Governor. Minister of Public Health.

The Chief Health Officer to the Hon. the Minister of Public Health.

Sir,— Department of Public Health, 24th August, 1905.

The past year has been one of comparative peace as regards epidemic disease, and in consequence the officers of the Department have been able to devote more time and attention to the sanitary needs of their respective districts. Without exception, the work done has been of a high quality, and I wish to acknowledge the great help which I have received from all in carrying out the varied functions of the Department.

The removal of the Veterinary Branch to the fine new laboratory at Wallaceville has freed the one in town, and Dr. Makgill will have greater opportunity to prosecute his researches.

The necessity for proceeding with the erection of the new offices, which is under consideration, is very urgent. It has been said, and not without good show of reason, that the Health Department offices are dilapidated and insanitary. The building is old, and there is much overcrowding in the rooms. In consequence of this there has been a considerable amount of sickness amongst the staff.

Vital Statistics.

Owing to the fact that the collecting and collating of all statistical data is performed by another Department, I have hitherto been unable to summarise the statistics in such a manner as to show at a glance the actual health-condition of the colony. Through the courtesy of the Registrar-General (E. J. Von Dadelszen, Esq.) this want is now supplied. This will greatly enhance the value of our reports, more especially in the eyes of those who live outside, and who seek to compare New Zealand with other countries. To save the gentleman who reads only that he may confute, the trouble of writing to draw attention to trivial differences in figures, I wish to point out that as our year extends from March to March, and the Registrar-General's tables cover the period January to December, some slight disagreement in figures results. As, however, this desirable addition to my report will henceforth be regular, those wishing to contrast one year with another will not be led into any error. The main features of the tables are that New Zealand has a lower general death-rate than any of the States of the Australian Commonwealth, or, as a matter of fact, any of the Home-countries, and that this year it is lower than it has been since 1887; that the rates of infant-mortality are lower in Auckland and Christchurch than they were in 1903; that the capital city of New Zealand—Wellington—has a higher rate of births than Melbourne, Sydney, Adelaide, Brisbane, or Hobart, being surpassed only by Perth; and that throughout Australasia the denizens of New Zealand have the highest expectation of life. Another feature of last year's mortality is the comparative freedom of the colony from some of the epidemic diseases most fatal to children, such as measles, scarlet-fever, and whooping-cough, the total deaths from these causes being only fifty-eight, as against 478 in 1903.

A regretable fact is that only one child in every ten born in 1904 has been successfully vaccinated; 10,625 exemptions were issued in 1904, and these mostly in one district of the colony Truly there will be a terrible reckoning to pay should small-pox ever get a footing in the country. The officers of the Department have done everything they could do to check this retrograde step. The State has also played its part in the erection of a vaccine laboratory on the latest scientific lines. A detailed account of this establishment will be found in the report of Dr. Makgill, Bacteriologist to the Department. So far as modern science can make it, the absolute purity of the lymph has been secured. The building has been arranged so that from the time the calf enters the bath-room no possible contamination can take place. From its warm disinfecting bath he is taken to the operating-room and placed alongside a patent table. One turn of the handle and he is ready for inoculation. For the five or six days while the pustules are maturing he stands in a stable with walls as smooth as marble. When the lymph has been collected he is killed and examined under the expert eye of the Chief Veterinarian, Mr. Gilruth. The lymph is pulped in specially constructed rooms, fitted with the latest electric machinery. It is tested bacteriologically at regular intervals, and only when absolutely free from extraneous organisms is it sent out. The Government can honestly lay claim to having a vaccine laboratory and a mode of procedure which cannot be excelled anywhere. I have no wish to say anything which would justify the anti-vaccinator pouring from his ever-well-filled vials of wrath any portion of his acrid store upon my head again, but I should not be doing my duty if I did not point out that he incurs a greater responsibility than he dreams of when he elects to deny his children the security which vaccination offers against that loathsome disease, small-pox.

The mortality from tubercular disease has been at the average of about 10¼ persons per 10,000 living for the last ten years; in 1904 it was 9.46. This, though far lower than in Eng-

land in 1903, still gives justification for the earnest efforts which are being made to check this aptly called "white plague." Despite the excellence of our climate, it is disquieting to learn that 55 per cent. of the total deaths from consumption of the lungs occurred among New-Zealand born people. You have at various times drawn attention to the economic loss which the colony suffers from this *absolutely preventable disease*. Speaking at the opening of an annexe for the treatment of persons suffering from this disease at New Plymouth, you said,—

To take a hand in the great war that was being waged against consumption was a privilege indeed, but to have been the first to adopt the suggestion that each district should look after its own sick, and grant to the sufferer—poor in purse as well as in health—an opportunity of trying what was now recognised as the best treatment of the fell disease was surely something to be proud of. In these days of incessant demand on the central exchequer, it was indeed a pleasure to find a community taking the lead in helping itself. The example set in New Plymouth has been followed in other places—notably, Nelson and Wellington. Apart from the blessings which come from self-denial, charity blessed him who gave not less than him who received. The fact that the annexe has risen by reason of the people's goodness of heart created a local patriotism and interest in it which was sometimes lacking towards an institution wholly supported by the State. It was a matter for the utmost congratulation that a sum of £300 had been subscribed in shillings, showing that what might be termed the poorer classes had taken an active part in connection with the institution. The shelters had been built on the most approved plan, and would, he was certain, bring health and hope to many an aching heart. The campaign in which New Zealand was taking a part was being waged over all the civilised world, for it was fast coming to be realised that not only was consumption one of the greatest devastators of the race, but at the same time a very preventable disease. The deaths from tuberculosis in England and Wales were still over sixty thousand a year, and throughout Europe it was estimated that the annual loss from this scourge amounted to a million lives—or £400,000,000 sterling, calculating the value of a life on the lowest economic basis. In the United States and Canada tuberculosis was equally prevalent. It costs the United States, on the same basis of calculation, sixty-six millions of money a year. Another thing to be remembered was that phthisis, the commonest form that the disease takes, seized the majority of its victims in the flower of youth and the prime of life, when working-capacity and all other powers should be at the highest. The war against this disease knew no creed save that of love to one's neighbour and one's-self, and all classes had joined together to promote the welfare of humanity. While the completion of the building would bring hope to some poor suffering souls now afflicted, it must not be forgotten that in saving them people were saving themselves. The guineas given towards this object might rightly be looked upon as an insurance against the disease itself. There had been requests that the Government should set up another institution like that excellent sanatorium at Cambridge. He had steadfastly set his face against that—at least, for the present. So long as the people played the same generous part they had done there was no need, because patients would receive in these annexes treatment which would leave little room for complaint. There was another reason, and that was finance. If he mentioned money or economy in respect to such a matter as sickness, or, may be, death, he did not want to be mistaken. The present Government had never considered money when the safeguarding of the health of the community or the welfare of the people was concerned; but he was convinced, from a careful study of the question, that in this system of annexes attached to already established hospitals was to be found not only the most economical, but the best method of dealing with this momentous question. By carrying out this system they would be able to cope with the enemy at once in the best and most acceptable manner. He had said on several occasions, and he repeated it now, that it would be unfair to dump down on any specific community all or nearly all of the sufferers from this disease. Every hospital-area should look after its own sick. In the present state of public opinion, it could not be denied that to placard a place or town as being peopled in any large degree by persons suffering from consumption had the effect of lowering it in the estimation of intending settlers. They could, therefore, rest assured that their generous efforts in the setting-up of open-air shelters would not result in the district being inundated by sick from other districts. He would resist as far as the law would permit the importation of the outside sick, and he would ask all other districts that requisitioned him to break this statutory rule to look at the self-sacrifice of Taranaki, and go and do likewise. In connection with the splendid work Taranaki had done, he would like to add a tribute of praise to Dr. Valintine. Though he now resided in Wellington, for many years he lived in Taranaki, and gained the respect and goodwill of all who knew him, and it was natural in this great work that he should have actively associated himself with the residents of Taranaki. He had gone whole-heartedly into the matter, and was deserving of all praise. He was sure they would all join in congratulating not only him, but His Worship the Mayor, who had devoted a large amount of time and work to this object, and all those ladies and gentlemen who had done so much work towards the uplifting of humanity. Particularly did he refer to Mr. George, the Secretary, and Mr. Tisch, Chairman of the Hospital Board. He desired also to place on record his recognition of the work of the Chief Health Officer, Dr. Mason. He had, in season and out of season, by voice and by pen, done his utmost to impress on colonists the importance of stamping out this terrible scourge. When they had two such enthusiasts occupying the chief positions in the Health Department, it was only right for him to state that nothing would be left undone on the part of the State to assist in the development of this great movement. Inquiry into the deaths of members of friendly societies throughout the colony has shown that in one case out of every seven the cause of death has been tuberculosis, and it might be worth the consideration of the members of friendly societies whether they should not combine and take united action to stem the inroads of a disease that was accounting for so large a proportion of the members, by establishing a sanatorium for

members of friendly societies alone. When he last spoke on this subject in the North he advocated the formation of an Anti-tuberculosis League throughout the colony, and His Excellency the Governor then expressed himself as willing to accept the presidency of such a league. Much had already been done to create a healthy public opinion in this direction, and Taranaki has shown its earnestness in a most practical way. If taken up as it would be all over the colony it must afford to sufferers from this disease not only a feeling of hope, but an actual means of relief, and even of perfect recovery. Surely there was no better work in which people of all classes without distinction of any sort could engage than one which would make these bright islands brighter and happier still.

As I dealt at length with the economic side of the question in my report to you last year, I will not further labour it now; but I here wish to put on record the splendid service which Dr. Valintine has rendered on behalf of this most-to-be-pitied section of the community. With a zeal untiring he has stumped the country, and by his eloquence has untied the purse-strings of the wealthy not less than the poor. Through his earnestness and devotion to this cause he has enlisted the sympathy of the many. He has been backed up in the most whole-hearted manner by the medical profession, which is in strong contrast—if we are to believe a recent writer—to the attitude taken up by the medical men in some parts of America. Speaking of the State of Indiana, he says,—

There is a State law providing for compulsory notification and disinfection, but public sentiment, *led by medical sentiment*, is against it. It is a dead-letter.

The reverse has been the case in New Zealand, and, while I do not forget the grand work of the many, I would like to record my appreciation of the work done by Dr. Newman and Dr. Albert Martin, of Wellington. Truly a phenomenal result attended their efforts in Wellington. In the space of a month over £2,500 was raised for the purpose of erecting an annexe in connection with the Wellington Hospital district. The campaign has extended to all parts of the colony, and good work has been done by many. Nurse Holgate has given a large amount of time, and has been able to set up a small tent sanatorium in Wellington, while Nurse Maude has bravely filled the want in Christchurch. These ladies are deserving of all praise for the excellent work they have done. Many more have put their hand to the plough, and I regret that all cannot be here mentioned. Gratitude, we are told by some latter-day philosophers, is becoming a lesser quantity. While I am not concerned to argue the matter, I would like to say that two ex-patients of the Sanatorium have given practical evidence of their gratitude for the treatment they received in that institution. Miss J. Barker, of Wellington, raised £40 by means of a bazaar held at Kilbirnie for the purpose of helping on the housing of the poor consumptive, and Mr. Beuth, of Cambridge, gathered over £25 for the purpose of setting up a library at "Te Waikato."

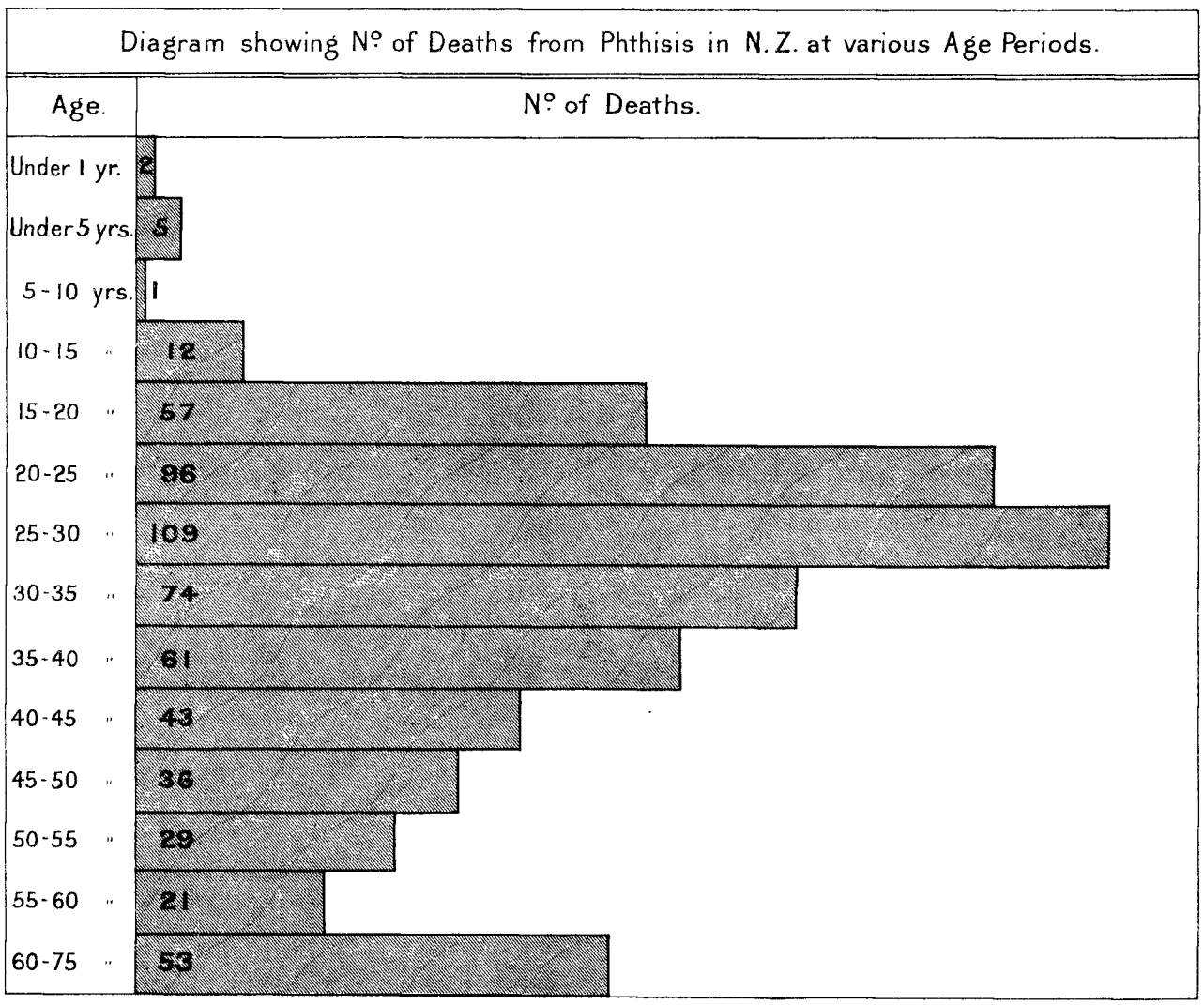
To New Plymouth is due the credit of having erected the first annexe by public subscription, and great praise is due for the excellent example of self-reliance which the capital of Taranaki has set. We are moving slowly but surely towards a complete provision for all indigent sufferers from this disease. That measures such as these and others which we have so strennuously advocated are powerful factors for good is shown by the fact that "owing to the general sanitary and hygienic improvements, the death-rate in Liverpool from tubercular diseases has dropped from 430 per 100,000 of the population to 234 per 100,000." "If the present rate of decline continues," the same writer states, "I anticipate this disease will be rarely seen in our midst another thirty years hence."

It is estimated that consumption costs London over £4,000,000 per annum, and that in Liverpool alone the working-classes lose £300,000 a year in wages when on the sick-list from tuberculosis.

One of the best tributes to the practical money-value of these outdoor sanatoria or annexes is the fact that the insurance companies in Germany find it cheaper to place the sufferers in such hospitals rather than continue paying sick-pay. Even from a purely selfish point of view, all moneys spent on such institutions repay the people and the State more than a hundredfold. Another important aspect is that consumption claims its victims at or about the period when the patient would otherwise be at his best—namely, from twenty to thirty years of age. Out of a total of 598 deaths at all ages which took place in New Zealand in 1904, 205 fell out of the race between twenty and thirty years of age. The following diagram indicates this clearly:—

Cancer was responsible for 571 deaths in 1904, giving a rate of mortality per 10,000 living of 6.75. The steadily increasing toll which this disease exacts is most certainly a matter for grave consideration. The recent alleged discovery of a curative serum by Dr. Doyen, of Paris,

Phthisis in 1904.



has again raised the hopes of the civilised world, but the data which has come to hand is still very meagre. It would seem that the celebrated French savant has, at any rate, advanced our knowledge of the disease—an important step. Metchnikoff, the Director of the Pasteur Institute, who was appointed to examine into Doyen's method of working, has put on record the fact that the *Micrococcus neoformans* described by Dr. Doyen as the causative agent of cancer is an entity hitherto unknown to the scientific world. We all most earnestly wish that the good things hoped for may be realised; meanwhile the more natural life which is to be found in our open-air sanatoria must make largely as a preventative.

In the report issued by the society established in London for the investigation of this disease special mention is made of Mr. Gilruth's work among fishes. It was found that a large number of the trout reared in captivity suffer from a form of this disease, which attacks the gills. The interdependence of the whole animal world is again illustrated, and the unwisdom of attempting to differentiate between diseases of the so-called lower animals and that of man is demonstrated.

The inclusion of the following tables will greatly enhance the value of my report, and I again express my thanks to the Registrar-General.

Births.

The number of births registered in the colony during 1904 was 22,766, or 26.94 in every 1,000 persons living. The rate is the highest reached since the year 1894, the number of births being 937 in excess of that for the year 1903, an increase of 4.3 per cent. From 1882 until the year 1899 there was a regular fall in the birth-rate. The number of births registered in a year reached 19,846 in 1884, and, after falling to 17,876 in 1892, has risen to 22,766 in 1904 as stated above.

The figures for each year from 1882 are worthy of notice, especially in connection with the subsequent particulars given to marriages solemnised and the growth of population:—

Year.	Number of Births.	Rate per 1,000 of Population.	Year.	Number of Births.	Rate per 1,000 of Population.
1882	19,009	37·32	1894	18,528	27·28
1883	19,202	36·28	1895	18,546	26·78
1884	19,846	35·91	1896	18,612	26·33
1885	19,693	34·35	1897	18,737	25·96
1886	19,299	33·15	1898	18,955	25·74
1887	19,135	32·09	1899	18,835	25·12
1888	18,902	31·22	1900	19,546	25·60
1889	18,457	30·07	1901	20,491	26·34
1890	18,278	29·44	1902	20,655	25·89
1891	18,273	29·01	1903	21,829	26·61
1892	17,876	27·83	1904	22,766	26·94
1893	18,187	27·50			

The marriages have increased numerically, and the population of the colony also.

Year.	Number of Marriages.	Mean Population (excluding Maoris).	Year.	Number of Marriages.	Mean Population (excluding Maoris).
1882	3,600	509,309	1894	4,178	679,196
1883	3,612	529,292	1895	4,110	692,417
1884	3,800	552,590	1896	4,843	706,846
1885	3,813	573,362	1897	4,928	721,609
1886	3,488	582,117	1898	5,091	736,260
1887	3,563	596,374	1899	5,461	749,984
1888	3,617	605,371	1900	5,860	763,594
1889	3,632	612,716	1901	6,095	777,968
1890	3,797	620,780	1902	6,394	797,793
1891	3,805	629,783	1903	6,748	820,217
1892	4,002	642,245	1904	6,983	845,022
1893	4,115	661,349			

The average number of children to a marriage may be ascertained by comparing the number of legitimate births for a series of years with the marriages, but commencing with the marriages in the year preceding that for which the first number of births is taken.

The figures for the twenty-year period 1885-1904 show a decline in the proportion of births to every marriage in the preceding year from 5.01 to 3.22, as below:—

Year.	Marriages.	Legitimate Births.	Proportion of Births to every Marriage solemnised in the Preceding Year.
1884	3,802	...	...
1885	3,815	19,063	5·01
1886	3,489	18,697	4·90
1887	3,565	18,518	5·31
1888	3,617	18,352	5·14
1889	3,632	17,845	4·93
1890	3,797	17,675	4·87

Year.	Marriages.	Legitimate Births.	Proportion of Births to every Marriage solemnised in the Preceding Year.
1891	3,805	17,635	4·64
1892	4,002	17,283	4·54
1893	4,115	17,514	4·37
1894	...	17,824	4·33
1894	4,178	...	...
1895	4,110	17,711	4·24
1896	4,843	17,778	4·32
1897	4,928	17,911	3·70
1898	5,091	18,154	3·68
1899	5,461	18,006	3·54
1900	5,860	18,640	3·41
1901	6,095	19,544	3·34
1902	6,394	19,734	3·23
1903	6,748	20,835	3·26
1904	...	21,737	3·22

If the average result be taken out for the ten years 1885-1894, it will be found to represent 4.80 births to a marriage. Dealing similarly with the figures for 1895-1904 the result is an average of 3.59, so that regarded annually or decennially there is a decided fall to be observed.

In the Australian States a similar decrease is noticeable.

New Zealand had in 1880 the highest birth-rate (40.78); in 1900 the case was reversed; but in 1904 the New Zealand rate was higher than that of Queensland (1903), New South Wales, Victoria, and South Australia.

The movement over ten years is calculated as under:—

Birth-rates per 1,000 of Population.

State or Colony.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.
Queensland	32·85	30·06	29·92	28·28	27·31	30·21	28·28	27·68	24·71	..
New South Wales ...	30·66	28·35	28·42	27·14	27·10	27·43	27·60	27·17	25·28	26·73
Victoria	28·56	27·33	26·59	25·72	26·71	25·82	25·77	25·23	24·46	24·65
South Australia ...	30·23	28·46	26·97	24·98	25·51	25·78	25·39	24·85	23·43	24·89
Western Australia ...	26·30	22·65	25·82	29·35	30·64	31·46	30·32	30·09	30·27	30·34
Tasmania	30·09	28·16	27·73	26·24	25·98	28·25	28·40	28·95	28·61	29·59
New Zealand	26·78	26·33	25·99	25·74	25·12	25·60	26·34	25·89	26·61	26·94

This table also shows that although New Zealand had in 1900 the lowest birth-rate in Australasia, the fall was less in this colony from 1895 to 1903 than in others, while the rate in this colony for 1904 is actually slightly higher than that ten years before.

A declining birth-rate is noticeable in many civilised countries, and attention has been drawn by statisticians and political economists to the serious consequences that may result. That fertility among women in New Zealand is decreasing, from whatever causes, further facts will tend to show.

Taking the number of married women in New Zealand at what may be considered the child-bearing ages (*i.e.*, from 15 to 45 years, inclusive) as shown by each census since 1878, and for the same years the number of legitimate births (excluding plural) registered, the birth-rate per 1,000 married women of the above-stated ages is easily found, and is shown to be steadily declining. In 1878 the rate was 337 per 1,000, in 1896 it had fallen to 252, and in 1901 to 244; or, in other words, in 1878 one married woman of the ages specified in every three gave birth to a child, while in 1901 the rate was one in four only. The figures for each census year are given below.

Birth-rates (Legitimate) per 1,000 Married Women at Child-bearing Ages for each Census Year, 1878 to 1901.

Year (Census).	Number of Married Women between 15 and 45 Years of Age.	Number of Legitimate Births (Confinements).	Birth-rate per 1,000 Married Women of from 15 to 45 Years of Age.
1878	50,995	17,196	337·2
1881	57,458	18,003	313·3
1886	62,704	18,532	295·5
1891	63,165	17,455	276·3
1896	69,807	17,596	252·1
1901	79,406	19,355	243·8

And another table is given, showing for a period of twenty years the numbers of married women at the quinquennial periods of age belonging to the full term 15 to 45 years, with the proportions that those numbers bear to every 100 married women living at 15-45.

These proportions are found to have diminished appreciably at the earlier ages, 15-20 and 20-25; but the numbers of the living are much smaller at those ages than at the higher ones, 25-30 and onwards to 40-45, and the effect of this lesser number of wives at lower ages in reducing the birth-rate would not be so much as might as first be thought probable.

It is, however, undoubtedly a fact that to have a growing proportion of wives at the earlier productive ages is the best position, but it is not the one which obtains at present in New Zealand.

Married Women under 45 Years of Age, given according to Age-groups, as at the Censuses of 1881, 1891, and 1901; with the Proportion in each Group for every 100 of the Whole.

Age-groups.	Married Women under 45, excluding Chinese.					
	Numbers at Census.			Proportion per Cent.		
	1881.	1891.	1901.	1881.	1891.	1901.
15–20	1,233	750	777	2·14	1·19	0·98
20–25	8,996	8,862	10,053	15·66	14·03	12·66
25–30	13,133	14,540	17,923	22·86	23·02	22·57
30–35	12,656	14,576	19,617	22·03	23·08	24·70
35–40	11,811	12,959	16,854	20·55	20·51	21·23
40–55	9,629	11,478	14,182	16·76	18·17	17·86
Totals	57,458	63,165	79,406	100·00	100·0	100·00

Marriage-rates in Australasia per 1,000 of Population for Five Years.

	1900.	1901.	1902.	1903.	1904.
Queensland	6·88	6·61	6·31	5·72	...
New South Wales	7·38	7·68	7·53	6·86	7·21
Victoria	6·96	6·99	7·02	6·29	6·80
South Australia	6·50	6·44	6·61	6·25	6·91
Western Australia	10·27	9·65	9·77	9·33	8·83
Tasmania...	7·71	7·68	7·47	7·57	7·75
New Zealand	7·67	7·83	8·01	8·23	8·26

In April, 1896, New Zealand had 83,650 children living under the age of five years, and in March, 1901, the number was 86,806, an increase of 3,147, although the population at all ages increased in the quinquennium by 9.86 per cent. Between 1886 and 1891 the children living under five years actually decreased in number by 3,624, the increase of population of all ages (8.33 per cent.) being less than between 1891 and 1896 (12.24 per cent.) or 1896 and 1901 (9.86 per cent.). The number of children under one year to the total population at all ages, according to the results of four censuses, was:—

	Children under One Year.	Total Population (all Ages).
Census 1886	18,355	578,482
" 1891	16,443	626,658
" 1896	17,070	703,360
" 1901	18,381	772,719

Thus, in 1886, with a population of 578,482 persons, there were 18,355 children under one year, against 18,381 children of that age in 1901, with a population of 772,719 persons.

The births registered in 1885 were 19,693, against 19,546 in 1900. The birth-rate fell from 34.35 per 1,000 of the population in 1885 to 25.60 in 1900.

Deducting 1,469, the number of deaths of children under one year registered in 1900, from 19,546, the number of births for that year, leaves 18,077, or within 304 of the living children under one year at the time of the last census.

Twin Births.

There were 241 cases of twin births (482 children), and triplets were registered in one instance, in 1904. The number of children born was 22,766; the number of mothers was 22,523; thus, on an average, one mother in every 93 gave birth to twins, against 97 in 1903, and 93 in 1902.

Illegitimacy.

The births of 1,029 children were illegitimate; thus 45 in every 1,000 children born were born out of wedlock, against 46 in 1903.

The following table gives the rates of illegitimacy in Australasia. The rate in 1904 in New Zealand was less than in any of the Australian States except South Australia and Western Australia:—

Proportion of Illegitimate Births in every 100 Births.

Year.	Queensland.	New South Wales.	Victoria.	South Australia.	Western Australia.	Tasmania.	New Zealand.
1895	4·93	6·51	5·33	3·13	4·47	4·97	4·50
1896	5·22	5·71	5·63	3·45	5·61	5·91	4·48
1897	6·02	6·58	5·42	3·53	5·27	5·74	4·41
1898	6·04	6·93	5·29	3·62	4·99	5·09	4·23
1899	5·97	7·15	5·49	3·95	4·91	6·08	4·40
1900	6·40	7·01	5·91	4·24	4·82	5·43	4·63
1901	5·93	7·16	5·58	3·98	3·88	5·94	4·57
1902	6·04	6·60	5·51	4·36	3·96	5·36	4·46
1903	6·76	6·71	5·73	4·18	4·69	5·61	4·55
1904	...	7·12	5·74	4·01	4·36	5·82	4·52

These figures show the proportion of illegitimate births to every 100 births for this colony to be very steady for the period 1895-1904; the difference amounts only to 0.02 per cent. on a comparison of the first and last years.

The total number of births registered was 19,299 in 1886 and 22,766 in 1904, while the illegitimate births rose from 602 to 1,029. The causes that led to the fall in the birth-rate certainly did not greatly affect the number of illegitimate children.

The number of spinsters in the colony between 15 and 45 increased during the ten years from 65,035 (census 1891) to 100,310 (census 1901), or at the rate of 55.9 per cent., while the illegitimate births increased from 638 to 927, or at the rate of 46.9 per cent. only.

It would therefore appear that the larger proportion of illegitimate births now obtaining cannot with any certainty be taken as indicative of increased looseness of living on the part of the people.

The following figures, showing the rate of illegitimacy per 100 births in Australasia and in the United Kingdom, are based on statistics for a period of five years:—

Country.	Illegitimate Births per Cent.	Country.	Illegitimate Births per Cent.
New South Wales	6·9	Tasmania	5·6
Victoria	5·6	New Zealand	4·4
Queensland	5·9	England and Wales ...	4·2
South Australia	3·8	Ireland	2·6
Western Australia... ...	5·0	Scotland	7·2

Of the total number of children born in Australasia during the five years ended 1900, 5.67 per cent. were illegitimate, as compared with 4.42 per cent. in the United Kingdom for the same period.

For England and Wales the proportion of illegitimate births to the total births in 1903 was 3.9 per cent., having gradually diminished from 7 per cent. in 1845. The minimum rate was 2.4 per cent., in Monmouthshire, and the maximum 7.7 per cent., in Montgomeryshire. For London the percentage was 3.6.

The average proportion of illegitimate births in Scotland in five years was 6.3 per cent., but in Ireland the extremely low average of 2.6 per cent. obtained.

Births and Birth-rates in the Four Chief Cities.

The total number of births registered as occurring in the four chief centres and suburbs in 1904 was 5,970, as against 5,812 for the previous year.

There is increase in the births for the four chief cities and suburban boroughs found on comparison with figures for 1903. The birth-rates for 1904 were:—

	Birth-rates per 1,000 of Mean Population.	
Auckland City	31·08	
" and five suburban boroughs		29·80
Wellington City	26·77	
" and two suburban boroughs		26·59
Christchurch City	27·53	
" and one suburban borough		27·41
Dunedin City	22·40	
" and eight suburban boroughs...		23·81

By the inclusion of the suburbs the rate is raised at Dunedin, but lowered at Auckland, Wellington, and Christchurch. It will be observed that Auckland has the highest rate, Christchurch next highest, Wellington and Dunedin following with intervals. The difference between the Auckland rate (29.80) and the Dunedin rate (23.81) is considerable. The birth-rate for the whole colony last year was 26.94 per thousand. Auckland and Christchurch are thus over the average, and Wellington and Dunedin below it.

The birth-rates for two of the central boroughs last year show a rise when compared with 1903. In Auckland the rate fell from 31.67 to 31.08, in Wellington from 29.22 to 26.77; but it rose in Christchurch from 26.59 to 27.53, and in Dunedin from 19.54 to 22.40. The rates for five years, 1900 to 1904, are:—

	Births per 1,000 of Population.				
	1900.	1901.	1902.	1903.	1904.
Auckland (without suburbs) ...	29·31	30·00	30·80	31·67	31·08
Wellington " ...	25·76	26·35	25·29	29·22	26·77
Christchurch " ...	21·51	24·12	25·84	26·59	27·53
Dunedin " ...	22·07	22·04	19·96	19·54	22·40

Deaths.

The deaths in 1904 numbered 8,087, being equivalent to a rate of 9.57 in every 1,000 persons living, as against 10.40 in 1903. The lowest rate experienced since the year 1887, when the deaths were 10.29 per 1,000 of the population, was that for 1896 (9.10).

Comparative Death-rate for the Period 1894 to 1904.

Country.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.
New Zealand ...	10·19	9·91	9·10	9·14	9·84	10·24	9·43	9·81	10·50	10·40	9·57
Queensland ...	12·08	11·38	12·10	11·33	12·66	12·07	11·73	11·88	12·08	12·38	...
New South Wales	12·36	11·79	12·30	10·88	12·48	11·82	11·16	11·68	11·95	11·59	10·62
Victoria ...	13·14	13·25	13·35	12·90	15·94	14·28	12·75	13·22	13·40	12·90	11·92
South Australia*	11·64	11·25	11·48	11 24	13·06	12·14	10·64	11·11	11·79	10·71	10·17
Western Australia	14·40	17·78	16·45	16·97	16·05	13·76	12·92	13·36	13·63	12·60	11·91
Tasmania ...	12·42	11·38	11·63	11·53	13·51	12·25	11·05	10·45	10·84	11·92	11·01
England and Wales	16·5	18·7	17·0	17·4	17·5	18·2	18.2	16·9	16·2	15·4	...
Scotland ...	17·1	19·4	16·6	18·4	18·0	18·1	18·5	18·0	17·2	16·6	...
Ireland ...	18·2	18·4	16·6	18·4	18·1	17·6	19·6	17·8	17·5	17·5	...
Denmark ...	17·4	16·8	15·6	16·5	15·5	17·3	16·9	15·8	14·6	14·6	...
Norway ...	16·9	15·7	15·2	15·3	15·3	16·9	15·9	14·9	13·9	14·8	...
Sweden ...	16·4	15·2	15·6	15·4	15·1	17·7	16·8	16·0	15·4	15·1	...
Austria ...	27·8	27·7	26·4	25·6	24·9	25·4	25·2	24·2	24·7	...	...
Hungary ...	30·5	29·7	28·9	28·5	28·0	27·2	26·9	25·4	27·0	26·1	...
Switzerland ...	19·9	19·1	17 7	17·6	18·2	17·6	19·3	18·0	17·2	17·6	...
German Empire ...	22·3	22·1	20·8	21·3	20·5	21·5	22·1	20·7	19·4	...	...
Netherlands ...	18·5	18·6	17·2	16·9	17·0	17·1	17·8	17·2	16·3	15·6	...
France ...	21·2	22·2	20·0	19·5	20·9	21·1	21·9	20·1	19·5	19·2	...
Italy	24·9	25·0	24·0	21·9	22·9	21·8	23·8	21·9	22·1	22·2	...

* Excluding the Northern Territory.

In this statement New Zealand is conspicuous as showing the lowest death-rate. The rates for the principal Australian States are a little higher, but, generally speaking, far below those for the United Kingdom or the European Continental States mentioned in the table.

Perfect accuracy in comparing one country or colony with another can only be attained by the use of what is termed an "index of mortality." The proportions of the living vary in regard to the different age-groups, and the ordinary death-rate—which is calculated on the population as a whole—does not afford a true means of judging of the relative healthiness of the places compared. But by taking a population like that of Sweden, and applying the percentage at each age-group to the death-rates, a standard of health or index of mortality can be arrived at. This has been done for New Zealand, in accordance with a resolution of the Statistical Conference held at Hobart in 1902, and the result is expressed in tabular form.

Index of Mortality in New Zealand for 1904.

Ages.	Estimated Mean Population, 1904.	Number of Deaths, 1904.	Death-rate per 1,000, 1904.	Percentage of Population of Sweden, 1890 (Standard).	Index of Mortality in New Zealand per 1,000.
Under 1 year	20,112	1,616	80·35	2·55	2·05
1 and under 20 years	354,740	897	2·53	39·80	1·01
20 and under 40 years ...	278,266	1,337	4·80	26·95	1·29
40 and under 60 years ...	134,781	1,389	10·31	19·23	1·98
60 years and upwards	57,123	2,848	49·86	11·46	5·71
Totals	845,022	8,087	9·57	100·00	12·04

A similar calculation for the States of the Australian Commonwealth has been made for 1903. The results, when compared with the actual rates, exhibit to what degree the age-constitution of the population affects the death-rate. The figures for New Zealand are also given.

	Year 1903.	
	Index.	Actual.
Queensland	16·22	12·38
New South Wales	15·06	11·59
Victoria	15·25	12·90
South Australia	13·89	10·71
Western Australia	15·75	12·60
Tasmania	14·86	11·92
New Zealand	12·88	10·40
" (1904)	12·04	9·57

Deaths and Death-rates of the Four Principal Cities and their Suburbs.

In the earlier annual reports on the vital statistics of the four chief towns the central boroughs alone were dealt with, particulars respecting the suburbs not having been obtained. But this omission was held to be a grave defect, as the suburban death-rate may differ much from the death-rate at the centre. Steps were therefore taken early in 1895 to collect statistics of the suburban boroughs as well as of the four chief cities. As regards Auckland and Christchurch, the whole of the area usually recognised as suburban has not yet been brought under municipal government, and the statistics given below do not deal with such portions as still remain in road districts. The omission, however, is not very important, for there are in either case quite enough suburbs included within borough boundaries to give a fair idea of the death-rate of greater Auckland and greater Christchurch. As further boroughs are formed the vital statistics will be made to include them.

The total number of deaths registered for the four centres in 1904 was 2,384—viz., 1,841 in the cities, and 543 in the suburbs.

By including the suburbs the death-rate for last year is lowered at each of the four centres. The rates for the year are:—

	Death-rates per 1,000 of Mean Population.	
Auckland City	11·11	
" and five suburban boroughs		10·20
Wellington City	10·75	
" and two suburban boroughs		10·43
Christchurch City	10·50	
" and one suburban borough		10·44
Dunedin City	13·59	
" and eight suburban boroughs		11·82

Mortality at Four Centres, including Suburbs.

If the suburbs are included, the death-rate is found to be highest in Dunedin and lowest in Auckland; Wellington and Christchurch taking second and third places respectively. The death-rate for the colony was 9.57 per 1,000 of mean population. The four centres might be expected to show a higher average than this.

If the number of deaths of infants under one year be excluded, the mortality amongst the rest of the population is found to have been for 1903 and 1904 in the following ratio to the 1,000 living:—

	1903.	1904.
Auckland (including suburbs)	8·57	8·11
Wellington "	8·27	7·89
Christchurch "	8·60	7·62
Dunedin "	11·11	9·60

The degree of infantile mortality is perhaps best shown in the proportion of deaths of children under one year of age to every 100 births. For 1903 and 1904 the proportions at the chief centres were,—

	1903.	1904.
Auckland (including suburbs)	12·15	7·01
Wellington "	9·27	9·53
Christchurch "	10·05	10·30
Dunedin "	6·23	9·30

Thus in 1904 the proportions for Auckland and Dunedin are less than those found at either of the other two chief cities.

Mortality at Four Centres, excluding Suburbs.

Excluding suburbs, and dealing with the deaths at all ages in the four cities or central boroughs only, the rates for 1904 are found to be lower than in the previous year. The figures for two years are given:—

	Deaths per 1,000 of Population.	
	1903.	1904.
Auckland (excluding suburbs)	12·97	11·11
Wellington "	11·30	10·75
Christchurch "	11·39	10·50
Dunedin "	14·77	13·59

Omitting the deaths of infants under one year, and calculating the rate on the population of one year of age and upwards, all the four boroughs again show lower rates for 1904 than in the previous year.

	Deaths per 1,000 of Population, excluding Infants (under One Year of Age).	
	1903.	1904.
Auckland (excluding suburbs)	9·45	9·24
Wellington "	8·84	8·42
Christchurch "	8·83	7·87
Dunedin "	13·61	11·90

Subjoined is a table showing the rates of infant mortality in the four cities for the past five years, together with the mean rates for the period.

	Deaths of Children under One Year to every 100 Births.					
	1900.	1901.	1902.	1903.	1904.	Mean of Five Years.
Auckland (excluding suburbs)	14·49	11·57	15·41	12·08	6·93	12·10
Wellington "	6·65	10·43	12·97	9·28	9·55	9·78
Christchurch "	11·99	11·35	13·32	10·49	10·36	11·50
Dunedin "	8·37	9·07	8·60	7·27	8·74	8·41

Causes of Death at Four Centres, including Suburbs.

While treating of the death-rates at the chief cities and surroundings, it is desirable to refer to the causes of mortality, which is done in the remarks that follow. The deaths for the whole colony, classified according to their cause, are treated of at length a little further on.

Specific Febrile and Zymotic Diseases (at Four Chief Centres).

The mortality from these diseases at Wellington, with its suburbs, was higher in 1904 than in the previous year, but for Auckland, Christchurch, and Dunedin much lower. The total deaths in this class were 256 for 1903 and 202 for 1904 at the four centres.

	Deaths from Febrile and Zymotic Diseases.	
	1903.	1904.
Auckland and suburbs	86	52
Wellington "	52	65
Christchurch "	58	36
Dunedin "	60	49
	256	202

Of the above, diarrhœal diseases caused most deaths in 1904 at the four centres taken together, the total number being 92. Influenza came next, with 26 deaths, typhoid fever 19, whooping-cough 3, measles 4, diphtheria 10, scarlet fever 4, bubonic plague 1, and other zymotic complaints 43.

Comparison of the deaths for each city, including suburbs, shows,—

Zymotic, &c., Diseases.	Auckland.		Wellington.		Christchurch.		Dunedin.	
	1903.	1904.	1903.	1904.	1903.	1904.	1903.	1904.
Diarrhœal diseases	42	24	22	30	10	21	4	17
Influenza	4	4	2	5	2	3	7	14
Typhoid fever	8	9	5	4	2	2	1	4
Measels	6	...	3	4	17	..	2	...
Scarlet fever	2	1	6	3	12	...	30	...
Bubonic plague	...	1	...	...	...	...	...	...
Diphtheria	...	3	2	5	...	2	3	...
Whooping-cough	17	...	5	...	7	1	...	2
Other zymotic diseases ...	7	10	7	14	8	7	13	12

Parasitic Diseases (at Four Chief Centres).

Hydatids were fatal at Auckland (1 death), at Wellington (2 deaths), at Christchurch (2 deaths), and at Dunedin (3 deaths). There were also 1 death at Wellington from aphthæ, and 1 from worms at Auckland.

Dietetic Diseases (at Four Chief Centres).

These numbered 15, 6 being due to want of breast-milk, or malnutrition, 8 to alcoholism, and 1 to delirium tremens.

Constitutional Diseases (at Four Chief Centres).

The deaths at the four cities numbered 496 in 1904. The first in importance of these diseases, and of all causes of death, is tubercle. The figures for 1903 and 1904 show 250 and 259 deaths for each year respectively.

Phthisis and other Tubercular Diseases (at Four Chief Centres.)

	1903.		1904.	
	Phthisis.	Other Tubercular Diseases.	Phthisis.	Other Tubercular Diseases.
Auckland and suburbs... ...	38	24	45	10
Wellington "	46	12	50	18
Christchurch "	37	11	42	16
Dunedin "	53	29	51	27
	174	76	188	71

The mortality from tubercular diseases for 1904 is 10.86 per cent. of the total deaths at the four cities and their suburbs from all causes.

Deaths from cancer rose at the chief towns from 179 in 1903 to 184 in 1904. The latter number is 7.72 per cent. of deaths for the year from all causes.

The number of deaths from cancer at the four chief towns and their suburbs for each of the last five years was as under:—

	1900.	1901.	1902.	1903.	1904.
Auckland and suburbs... ...	32	32	44	37	45
Wellington "	36	38	37	47	44
Christchurch "	32	41	25	33	38
Dunedin "	45	43	59	62	57
	145	154	165	179	184

Diabetes shows 24 deaths in 1904, against 25 in 1903.

Developmental Diseases (at Four Chief Centres).

There were 234 deaths in this class, of which 100 were from premature births, 119 from old age, and 15 from other causes.

Local Diseases (at Four Chief Centres).

Deaths in this class were 44 less than in 1903, the figures being 1,223, against 1,267. Diseases of the nervous system were the most fatal of this class, amounting to 273; this number includes 102 deaths from apoplexy, 33 from convulsions, and 47 from paralysis, including hemiplegia and paraplegia. Diseases of the circulatory system show 272 deaths from heart-disease and other allied complaints. Diseases of the respiratory system show 268 deaths for 1904, against 275 in the former year. Bronchitis, pneumonia, congestion of the lungs, pleurisy, and allied diseases form this group.

Under the head of "Diseases of the Digestive System" there were 255 deaths at the four centres, including 100 from enteritis; peritonitis, 11; gastritis, 14; cirrhosis of liver, 20; jaundice and liver-disease, 12; and dentition, 12. From appendicitis 16 deaths are particularly noted.

Diseases of the urinary system caused 102 deaths. The remaining deaths were: 2 of disease of organs of special sense, 8 of the lymphatic and 37 of the reproductive systems, 3 of the organs of locomotion, and 3 of the integumentary system.

Violent Deaths (at Four Chief Centres).

There were 124 violent deaths, 95 of which were classed as accidental. Nine of these latter were caused by fractures, and 17 by falls. In 6 cases deaths resulted from the deceased being run over by either a cart, tram, train, &c. Six deaths were from burns or scalds, 17 by drowning, 8 by suffocation, 3 by poisoning, 9 by injuries to spine, hip, &c.; besides 5 from accident at birth, and 15 others.

Two deaths were classified as murder. Of 27 suicides, 10 were by shooting, 7 by cutting throat, 4 by poison, 4 by hanging, 1 by drowning, and 1 by strangling.

VITAL STATISTICS OF AUSTRALASIAN CAPITALS, 1903.

The vital statistics of the chief cities, *with their suburbs*, of Australasia show that the death-rate in Wellington (N.Z.) for 1903 was lower than that of any other of the principal towns for the same year.

Capital Cities (including Suburbs).	Estimated Mean Population.	Births.		Deaths.		Excess of Births over Deaths.
		Total Number.	Rate per 1,000 of Population.	Total Number.	Rate per 1,000 of Population.	
Melbourne ...	502,060	12,012	23·93	7,217	14·37	4,795
Sydney	509,770	12,749	25·01	5,913	11·60	6,836
Adelaide... ...	166,895	3,788	22·70	2,114	12·67	1,674
Brisbane* ...	123,639	3,190	25·80	1,610	13·02	1,580
Perth	45,200	1,666	36·86	805	17·81	861
Hobart	34,789	947	27·22	581	16·70	366
Wellington ...	53,082	1,520	28·63	580	10·93	940

* Ten mile radius.

Deaths in the Whole Colony at various Age-periods

The average age at death of persons of either sex, in each of the nine years 1896-1904, was as follows:—

	Males.	Females.		Males.	Females.
1896	36·80 years	32·41 years.	1901	41·64 years	37·68 years.
1897	38·80 „	34·77 „	1902	41·07 „	34·88 „
1898	39·29 „	35·69 „	1903	39·56 „	35·43 „
1899	37·73 „	33·54 „	1904	41·47 „	38·44 „
1900	40·31 „	36·14 „			

The average expectation of life at each year of age has been compiled from a table given in a paper on the rates of mortality in New Zealand which was recently published by Mr. George Leslie, now Register of Friendly Societies. This is the best and most up-to-date information procurable, but it is not guaranteed by the authorities of the Government Life Insurance Department.

The table shows, on comparison with New South Wales figures (Coghlan's), that at birth the expectation of life to the male infant in New Zealand is considerably greater than in that State, the figures being 54.44 years (N.Z.), against 49.60 (N.S.W.), and for females 57.26 and 52.90.

At 21 years of age the expectation in New Zealand for males is 43.77 years, against 41.35 (N.S.W.), and for females 45.59, against 43.62.

At age 45 the comparison is, for males, 25.23 years (N.Z.), 23.27 (N.S.W.); females, 27.46 years (N.Z.), against 25.34 (N.S.W.)

At the age of 70, the limit of a normal life, the figures for New Zealand are—males 9.84 years, females 10.23, against 8.64 for both sexes in New South Wales.

Throughout the comparison is in favour of this country.

Expectation of Life in New Zealand.

Age.	Average Duration of Life: Years.		Age.	Average Duration of Life: Years.		Age.	Average Duration of Life: Years.	
	Male.	Female.		Male.	Female.		Male.	Female.
0	54·444	57·260	35	32·829	34·954	70	9·481	10·227
1	59·102	61·214	36	32·054	34·215	71	8·988	9·673
2	59·169	61·220	37	31 282	33·475	72	8·504	9·130
3	58·626	60·647	38	30·511	32·734	73	8·035	8·604
4	57·924	59·934	39	29·744	31·990	74	7·586	8·095
5	57·167	59·148	40	28·979	31·243	75	7·160	7·614
6	56·396	58·343	41	28·220	30·493	76	6·758	7·164
7	55·606	57·520	42	27·465	29·739	77	6·379	6·742
8	54·791	56·680	43	26·715	28·981	78	6·022	6·349
9	53·956	55·825	44	25·971	28·221	79	5·683	5·982
10	53·094	54·953	45	25·231	27·458	80	5·362	5·636
11	52·212	54·069	46	24·499	26·694	81	5·055	5·312
12	51·315	53·180	47	23·773	25·927	82	4·765	5·005
13	50·425	52·294	48	23·055	25·163	83	4·489	4·714
14	49·539	51·415	49	22·344	24·399	84	4·229	4·439
15	48·663	50·545	50	21·636	23·640	85	3·982	4·180
16	47·803	49·690	51	20·932	22·885	86	3·747	3·935
17	46·960	48·847	52	20·231	22·135	87	3·525	3·705
18	46·139	48·016	53	19·530	21·392	88	3·313	3·487
19	45·336	47·198	54	18·836	20·655	89	3·110	3·283
20	44·551	46·393	55	18·150	19·926	90	2·914	3·089
21	43·775	45·593	56	17·478	19·202	91	2·723	2·905
22	43·005	44·803	57	16·822	18·485	92	2·525	2·731
23	42·235	44·021	58	16·182	17·776	93	2·323	2·564
24	41·463	43·244	59	15·560	17·077	94	2·101	2·400
25	40·684	42·474	60	14·949	16·386	95	1·843	2·238
26	39·899	41·708	61	14·348	15·705	96	1·553	2·082
27	39·108	40·946	62	13·754	15·037	97	1·247	1·931
28	38·319	40·187	63	13·170	14·386	98	0·960	1·774
29	37·526	39·431	64	12·600	13·752	99	0·677	1·600
30	36·736	38·678	65	12·046	13·135	100	0·500	1·424
31	35·949	37·928	66	11·512	12·534	101	...	1·195
32	35·165	37·181	67	10·994	11·954	102	...	0·889
33	34·384	36·438	68	10·486	11·365	103	...	0·500
34	33·605	35·695	69	9·981	10·792			

Orphanhood of Children.

New Zealand statistics give detailed information on this subject, which appears to be unique. In a paper read by Mr. H. W. Manly, actuary of the Equitable Life Assurance Society, on the 27th

April, 1903, before the Institute of Actuaries at London, under the heading "Children's Benefits," he stated that in order to ascertain the ages and the number of children left by a married man at his death he had to go to the same source as Mr. King did when he constructed his table of "Family Annuities"—viz., the "Statistics of the Colony of New Zealand." And further, after announcing his intention of making very considerable use of the information, he gave the tables, grouping five ages together. ("Journal of the Institute of Actuaries," October, 1903.)

Although the subject is not one of general interest, as the Year-book is more often referred to than a statistical volume, it may be excusable to draw attention here to the tables published for the year 1904 and the experience of the quinquennial period, as shown in the "Statistics of New Zealand."

The first table shows, for the year 1904, the total number of men who died at each year of age from twenty upwards; the number of married men stated in the registers as having died (*a*) childless, (*b*) leaving children; and the number and ages of the children living at the time of the father's death. The next is a similar table, but giving five years' results for all ages of the fathers. A condensation of the table is shown.

New Zealand, 1900 to 1904.

Ages of Married Men at Death.	Number of Married Men who died		Number and Ages of Living Issue.					
	Childless.	Leaving Children.	Under 5.	5 to 10.	10 to 15.	15 to 21.	21 and over.	Not specified.
20 to 30 ...	65	150	218	34	1	...	...	12
30 „ 40 ...	120	651	725	693	318	55	...	88
40 „ 50 ...	148	950	606	992	1,095	976	345	151
50 „ 60 ...	199	1,419	267	659	1,127	1,991	3,199	353
60 „ 65 ...	149	1,018	63	176	397	979	4,014	277
65 and upwards	611	4,029	76	187	473	1,283	18,284	1,167

A table has also been prepared showing, for the year 1904, the number and ages of the youngest orphan children left.

Infantile Mortality.

Subjoined is a classified statement of the deaths of infants under one year during 1904, with the ratio of the deaths in each class to the 1,000 births during the year:—

Year.	Sex.	Under 1 Month.	1 and under 3 Months.	3 and under 6 Months.	6 and under 12 Months.	Total under 12 Months.
	Number of Deaths.					
1904 ...	Male	395	141	222	175	933
	Female	274	119	134	156	683
	Deaths to the 1,000 Births.					
1904 ...	Male	33·58	11·99	18·87	14·88	79·32
	Female	24·90	10·81	12·18	14·18	62·07

Seventy-nine out of every 1,000 of male children born, and 62 of every 1,000 females, are found to have died before attaining the age of one year. The mortality is thus one in thirteen of male children and one in sixteen of females, even in New Zealand, where conditions are far more favourable to infant life than in Australia, at least as far as relates to the cities.

It will be seen from the figures that the chances of living during the first year of age are far greater for female than for male infants. Thus, during the year 1904 there were—

100 deaths of males to 74 deaths of females under 1 month of age;
100 „ 90 „ from 1 to 3 months of age;
100 „ 65 „ from 3 to 6 months of age;
100 „ 95 „ from 6 to 12 months of age;
100 „ 78 „ under 12 months of age.

The rates of infantile mortality—that is, the proportion the deaths of children under one year of age bear to the births—are higher in the Australian States than in New Zealand.

Dealing with the results for ten years, the deaths of infants under one year are in the large proportion of three-fourths of the total deaths under five, as might be expected, the first year being the tenderest period. (See notes to tables.)

Deaths of Infants under One Year, and Proportion to Births.

Year.	Deaths of Infants under 1 Year of Age. (Totals for each Year, and Means of 10 Years.)					Total Births registered in each Year, and Mean of 10 Years.	Proportion of Deaths of Infants under 1 Year to every 1,000 Births.
	Under 1 Month.	1 Month and under 3 Months.	3 Months and under 6 Months.	6 Months and under 12 Months.	Total under 12 Months.		
1895	575	333	329	400	1,637	18,546	88·3
1896	566	229	304	340	1,439	18,612	77·3
1897	512	240	269	333	1,354	18,737	72·3
1898	573	289	306	342	1,510	18,955	79·7
1899	619	389	378	420	1,806	18,835	95·9
1900	607	288	293	281	1,469	19,546	75·2
1901	610	272	392	289	1,563	20,491	76·3
1902	665	344	313	390	1,712	20,655	82·9
1903	692	346	367	365	1,770	21,829	81·1
1904	669	260	356	331	1,616	22,766	71·0
Means of ten years ...	609	299	331	349	1,588	19,897	80·0

NOTE.—The total number of deaths of infants for the period included in the table is 15,876.

Deaths of Children under Five Years, and Proportion to Deaths at all Ages.

Year.	Deaths of Children under 1 to 5 Years of Age. (Totals for each Year, and Means of 10 Years.)						Total Deaths at all Ages for each Year, and Mean of 10 Years.	Deaths under 5 Years: Per Cent. of Mortality at all Ages.
	Under 1 Year.	1 Year and under 2 Years.	2 Years and under 3 Years.	3 Years and under 4 Years.	4 Years and under 5 Years.	Total Deaths under 5 Years.		
1895	1,637	555	102	88	57	2,139	6,863	31·17
1896	1,439	215	59	76	64	1,853	6,432	28·81
1897	1,354	187	84	69	38	1,732	6,595	26·26
1898	1,510	200	91	72	47	1,920	7,244	26·50
1899	1,806	291	111	74	56	2,338	7,680	30·44
1900	1,469	205	93	64	58	1,889	7,200	26·24
1901	1,563	208	185	68	52	1,976	7,634	25·88
1902	1,712	307	118	92	61	2,290	8,375	27·34
1903	1,770	275	126	111	64	2,346	8,528	27·51
1904	1,616	169	83	63	43	1,974	8,087	24·41
Means of ten years	1,588	231	95	78	54	2,046	7,464	27·46

NOTE.—The total number of deaths included in this table of children under 5 years is 20,457.

Although 15,876 infants (under one year) were lost to the colony by death during the decade, and 20,457 children under five, the third table shows much more satisfactory results for this colony than for New South Wales or Victoria in the matter of the preservation of infant life. Dealing with averages of five years, in New Zealand only 82 infants under one year are found to die out of every 1,000 born, against 109 in New South Wales and 105 in Victoria.

Year.	Proportion of Deaths of Infants under 1 Year of Age to every 1,000 Births.		
	New Zealand.	New South Wales.	Victoria.
1899	95·9	118·7	110·9
1900	75·2	103·3	95·3
1901	76·3	103·7	102·9
1902	82·9	109·7	108·6
1903	81·1	110·4	106·4
Means of five years	82·3	109·2	104·8

European countries show still higher mortality of infants than the principal Australian States: England and Wales, 162 (under one year) to every 1,000 births; France, 152; Italy, 167; Hungary, 214. Sweden (98) and Norway (91) are notable exceptions.

The principal causes of mortality in children under one year for New Zealand are given, with the number of deaths for five years from such causes. Premature birth stands first in order of importance, marasmus or debility coming next.*

New Zealand.—Deaths under One Year. Principal Causes.

Principal Causes of Deaths of Infants.	1900.	1901.	1902.	1903.	1904.
Miasmatic diseases	85	41	92	191	36
Diarrhœal diseases	152	95	176	122	152
Premature birth	276	264	303	301	291
Convulsions	106	91	82	103	95
Bronchitis, pneumonia, pleurisy	140	207	235	241	149
Enteritis	134	116	154	167	231
Marasmus, &c.	231	260	294	270	273

A table is added to show that higher mortality obtains in the large towns than in New Zealand as a whole and two States of Australia.

Year.	Wellington and Suburbs.			Sydney and Suburbs.			Melbourne and Suburbs.		
	Total Births.	Deaths of Infants under 1 Year.	Proportion of Deaths of Infants under 1 Year to 1,000 Births.	Total Births.	Deaths of Infants under 1 Year.	Proportion of Deaths of Infants under 1 Year to 1,000 Births.	Total Births.	Deaths of Infants under 1 Year.	Proportion of Deaths of Infants under 1 Year to 1,000 Births.
1899	1,187	140	117·9	12,239	1,473	120·4	12,435	1,552	124·8
1900	1,243	91	73·2	12,127	1,322	109·0	12,067	1,364	113·0
1901	1,326.	133	100·3	12,601	1,517	120·4	12,375	1,356	124·1
1902	1,321	172	130·2	13,002	1,457	112·1	12,498	1,590	127·2
1903	1,520	141	92·8	12,749	1,483	116·3	12,012	1,493	124·3
Means of five years	1,319	135	102·9	12,544	1,450	115·6	12,277	1,507	122·7

* The report of the Royal Commission on the decline of the birth-rate in New South Wales (1904), besides giving statistics of infantile mortality, describes *the conditions that operate in producing such mortality*. Recommendations are also made, and the subject of feeding and care of infants dealt with.

The causes which operate in producing infantile mortality, both among legitimates and illegitimates in New South Wales, are enumerated as under:—

1. Premature birth; defective viability consequent upon imperfections in the process of development; disease acquired before birth; injured and impaired viability arising before or in process of birth.
2. Defective care of the new-born by ignorant or careless midwives.
3. Ill health of mothers, and consequent inability to provide the natural nutrition of infants and requisite nursing.
4. A want of knowledge of the proper modes of rearing infants (exemplified under seven heads).
5. Injurious quality of proprietary and other artificial foods, often recklessly advertised.
6. Injurious quality of milk under the conditions in which it is commonly supplied and used.
7. Injurious effects of chemical preservatives in milk, and in preparations of milk used as infant-food.
8. Insufficient public maternity-hospital accommodation for the parturient women among the poorer classes.
9. Insufficient public-hospital accommodation for the treatment of sick infants.
10. The prevalence of epidemic preventable diseases in infants.
11. The undue incidence of "summer diarrhœa," or acute gastro-intestinal catarrh.

The causes tending to produce mortality in the illegitimate infants were found to be (in New South Wales):—

12. Maternal indifference, and the social and economic disabilities of the mothers.
13. Defective management of institutions and places where illegitimate infants are received.
14. Secret adoption of children for gain.
15. Separation of infants from their mothers.
16. Infanticide and fœticide of viable infants.

CAUSES OF DEATH (THE WHOLE COLONY).

The deaths registered in the colony during 1904, arranged in the several classes according to their assigned causes, give the rates as follows:—

Causes of Death.	Number of Deaths.			Proportion to Total Deaths.			Proportion per 10,000 living, 1904.	Proportion per 10,000 living, 1903.
	Males.	Females.	Total.	Males.	Females.	Total.		
Class I. Specific febrile or zymotic diseases,—				Per Cent.	Per Cent.	Per Cent.		
Order 1. Miasmatic diseases ...	150	123	273	3·16	3·69	3·38	3·24	7·58
" 2. Diarrhœal diseases ...	122	71	193	2·57	2·13	2·39	2·28	2·24
" 3. Malarial diseases ...	...	...	...	...	...	...	...	...
" 4. Zoogenous diseases ...	...	...	...	...	...	...	...	...
" 5. Venereal diseases ...	13	9	22	0·27	0·27	0·27	0·26	0·21
" 6. Septic diseases	32	48	80	0·67	1·44	0·98	0·94	1·14
Total Class I. ...	317	251	568	6·67	7·53	7·02	6·72	11·17
Class II. Parasitic diseases ...	17	6	23	0·36	0·18	0.29	0·27	0·12
Class III. Dietetic diseases	33	19	52	0·69	0·57	0·64	0·62	0·82
Class IV. Constitutional diseases ...	848	724	1,572	17·84	21·71	19·44	18·60	18·70
Class V. Developmental diseases ...	474	345	819	9·97	10·35	10·13	9·69	10·77
Class VI. Local diseases,—								
Order 1. Diseases of nervous system	490	375	864	10·31	11·22	10·68	10·22	10·75
" 2. Diseases of organs of special sense	5	5	10	0·11	0·15	0·12	0·12	0·07
" 3. Diseases of circulatory system	576	377	953	12·12	11·31	11·78	11·28	11·19
" 4. Diseases of respiratory system	547	370	917	11·51	11·10	11·34	10·85	11·94
" 5. Diseases of digestive system	453	353	806	9·53	10·59	9·97	9·54	9·17
" 6. Diseases of lymphatic system	13	17	30	0·27	0·51	0·38	0·36	0·47
" 7. Diseases of urinary system	196	107	303	4·12	3·21	3·75	3·59	4·04
" 8. Diseases of reproductive system,—								
(*a.*) Of organs of generation	1	28	29	0·02	0·84	0·36	0·34	0·34
(*b.*) Of parturition ..	...	85	85	...	2·54	1·05	1·01	1·22
" 9. Diseases of locomotive system	12	7	19	0·25	0·21	0·23	0·22	0·27
" 10. Diseases of integumentary system	6	7	13	0·13	0·21	0·16	0·15	0·27
Total Class VI. ...	2,299	1,730	4,029	48·37	51·89	49·82	47·68	49·73
Class VII. Violence,—								
Order 1. Accident or negligence ...	486	107	593	10·23	3·21	7·33	7·02	7·49
" 2. Homicide	3	2	5	0·06	0·06	0·06	0·06	0·03
" 3. Suicide...	85	15	100	1·79	0·45	1·24	1·18	1·28
" 4. Execution	...	...	...	...	...	...	..	...
Total Class VII. ...	574	124	698	12·08	3·72	8·63	8·26	8·80
Class VIII. Ill-defined and not-specified causes	191	135	326	4 02	0·45	4·03	3·86	3·86
Grand totals	4,753	3,334	8,087	100·00	100·00	100·00	95·70	103·97

The next table shows, for either sex, the number of deaths from each cause registered during the year 1904:—

Class.	Causes of Death. Order and Diseases.	Males.	Females.	Total.
I.—Specific Febrile or Zymotic Diseases.	**Order 1.—*Miasmatic.***			
	Small-pox	...	...	...
	Chicken-pox	...	...	...
	Measels	5	5	10
	Epedemic, rose-rash, rubeola	...	...	...
	Scarlet fever, scarlatina	6	7	13
	Typhus	...	...	...
	Bubonic plague	1	...	1
	Dengue	...	...	...
	Relapsing fever	...	...	...
	Influenza	58	55	113
	Whooping-cough	15	20	35
	Mumps	...	...	...
	Diphtheria	9	18	27
	Cerebro-spinal fever	...	...	...
	Simple and ill-defined fever	...	...	...
	Enteric fever, typhoid	55	18	73
	Other miasmatic diseases	1	...	1
	Total Order 1	150	123	273
	Order 2.—*Diarrhœal.*			
	Simple cholera	12	8	20
	Diarrhœa	108	60	168
	Dysentery	2	3	5
	Total Order 2	122	71	193
	Order 3.—*Malarial.*			
	Remittent fever	...		...
	Ague	...	...	...
	Beriberi	...	...	...
	Total Order 3	...	...	...
	Order 4.—*Zoogenous.*			
	Hydrophobia	...	...	...
	Glanders	...	...	...
	Splenic fever	...	...	...
	Cow-pox and other effects of vaccination	...	...	...
	Total Order 4	...	...	...
	Order 5.—*Venereal.*			
	Syphilis	11	9	20
	Gonorrhœa, stricture of urethra, ulcer of groin	2	...	2
	Total Order 5	13	9	22
	Order 6.—*Septic.*			
	Phagedæna	...	...	...
	Erysipelas	14	4	18
	Pyæmia, septicæmia	18	23	41
	Puerperal fever, pyæmia, septicæmia	...	21	21
	Total Order 6	32	48	80
	Total Class I.	317	251	568

Class.	Causes of Death. Orders and Diseases.	Males.	Females.	Total.
II.—Parasitic Disease.	Thrush	1	1	2
	Other diseases from vegetable parasites	...	...	...
	Hydatid disease	14	4	18
	Worms	2	1	3
	Other diseases from animal parasites	...	...	...
	Total Class II.	17	6	23
III.—Dietetic Disease.	Starvation, exposure	5	1	6
	Want of breast-milk	3	5	8
	Scurvy	...	...	...
	Intemperance—			
	Chronic alcoholism	18	6	24
	Delirium tremens	5	2	7
	Other dietetic diseases	2	5	7
	Total Class III.	33	19	52
IV.—Constitutional Diseases.	Rheumatic fever	16	18	34
	Rheumatism	3	4	7
	Gout	3	1	4
	Rickets	1	3	4
	Cancer	323	248	571
	Tabes mesenterica, tubercular peritonitis	20	15	35
	Tubercular meningitis, acute hydrocephalus	42	46	88
	Phthisis	328	270	598
	Other forms of tuberculosis, scrofula	44	34	78
	Pupura, hæmorrhagic diathesis	6	3	9
	Anæmia, chlorosis, leucocythæmia	18	26	44
	Diabetes mellitus	40	50	90
	Other constitutional diseases	4	6	10
	Total Class IV.	848	724	1,572
V.—Developmental Diseases.	Premature birth	171	120	291
	Atelectasis	10	10	20
	Cyanosis	2	3	5
	Spina bifida	4	4	8
	Imperforate anus	...	...	...
	Cleft palate, hare-lip	2	2	4
	Other congenital defects	12	9	21
	Old age	273	197	470
	Total Class V.	474	345	819
VI.—Local Diseases.	**Order 1.—*Diseases of Nervous System.***			
	Inflammation of the brain or its membranes	60	42	102
	Cerebro-spinal meningitis	4	...	4
	Apoplexy	155	137	292
	Softening of brain	13	12	25
	Hemiplegia, brain paralysis	21	13	34

Class.	Causes of Death. — Orders and Diseases.	Males.	Females.	Total.
VI.—Local Diseases—*continued.*	**Order 1.—*Diseases of Nervous System*—continued.**			
	Paralysis (undescribed)	56	30	86
	Paralysis agitans ...	...	...	...
	Insanity, general paralysis of insane	31	16	47
	Chorea	...	1	1
	Epilepsy	24	23	47
	Convulsions ...	60	57	117
	Laryngismus stridulus	...	...	...
	Idiopathic tetanus ...	2	2	4
	Paraplegia, diseases of spinal cord	9	11	20
	Locomotor ataxia ...	7	...	7
	Other diseases of nervous system	48	30	78
	Total Order 1 ...	490	374	864
	Order 2.—*Diseases of Organs of Special Sense.*			
	Otitis, otorrhœa ...	5	5	10
	Epistaxis, and diseases of nose	...	...	...
	Ophthalmia, and diseases of eye	...	...	...
	Total Order 2 ...	5	5	10
	Order 3.—*Diseases of Circulatory System.*			
	Endocarditis, valvular diseases	380	252	632
	Pericarditis... ...	2	4	6
	Hypertrophy of heart	9	6	15
	Fatty degeneration of heart	30	29	59
	Angina pectoris ...	26	9	35
	Syncope ...	80	45	125
	Aneurism	17	3	20
	Senile gangrene ...	9	6	15
	Embolism, thrombosis	16	19	35
	Phlebitis	...	2	2
	Varicose veins, piles ...	...	...	...
	Other diseases of circulatory system	7	2	9
	Total Order 3 ...	576	377	953
	Order 4.—*Diseases of Respiratory System.*			
	Laryngitis	14	3	17
	Croup	8	4	12
	Other diseases of larynx and trachea	2	2	4
	Asthma, emphysema	19	7	26
	Bronchitis	172	145	317
	Pneumonia... ...	246	160	406
	Pleurisy	34	22	56
	Other diseases of respiratory system	52	27	79
	Total Order 4 ...	547	370	917

Class.	Causes of Death. — Orders and Diseases.	Males.	Females.	Total.
VI.—Local Diseases—*continued.*	**Order 5.—*Diseases of Digestive System.***			
	Stomatitis, cancrum oris	5	5	10
	Dentition	12	16	28
	Sore throat, quinsy ...	2	1	3
	Dyspepsia	4	2	6
	Hæmatemesis ...	1	3	4
	Melæna	5	7	12
	Diseases of stomach, gastritis	40	54	94
	Enteritis	174	115	289
	Ulceration, perforation of intestine	12	4	16
	Ileus, obstruction of intestine	36	23	59
	Stricture or strangulation of intestine	2	...	2
	Intussusception of intestines	5	2	7
	Hernia	12	4	16
	Fistula	1	...	1
	Peritonitis	25	23	48
	Ascites	...	3	3
	Gall-stones	1	15	16
	Cirrhosis of liver ...	33	20	53
	Other diseases of liver, hepatitis, jaundice	32	25	57
	Other diseases of digestive system	51	31	82
	Total Order 5 ...	453	353	806
	Order 6.—*Diseases of Lymphatic System and Ductless Glands.*			
	Diseases of lymphatic system	8	1	9
	Diseases of spleen ...	1	1	2
	Bronchocele ...	2	11	13
	Addison's disease ...	2	4	6
	Total Order 6 ...	13	17	30
	Order 7.—*Diseases of Urinary System.*			
	Acute nephritis ...	24	19	43
	Bright's disease ...	83	74	157
	Uræmia	11	3	14
	Suppression of urine ...	4	...	4
	Calculus	2	1	3
	Hæmaturia... ...	1	3	4
	Diseases of bladder and prostate	39	...	39
	Other diseases of urinary system (kidney-diseases undescribed)	32	7	39
	Total Order 7 ...	196	107	303
	Order 8.—*Diseases of Reproductive System.*			
	(*a.*) Diseases of organs of generation,—			
	Ovarian disease ...	...	6	6

Class.	Causes of Death. Orders and Diseases.	Males.	Females.	Total.
VI.—Local Diseases—*continued.*	Order 8.—*Diseases of Reproductive System*—continued			
	(*a.*) Diseases of organs of generation—*ctd.*			
	Diseases of uterus and vagina	...	14	14
	Disorders of menstruation	...	...	...
	Pelvic abscess ...	1	5	6
	Perineal abscess ...	...	...	...
	Diseases of testes, penis, scrotum, &c. ...	...	...	...
	(*b.*) Diseases of parturition,—			
	Abortion, miscarriage	...	19	19
	Puerperal mania ...	...	2	2
	Puerperal metritis ...	...	...	...
	Puerperal convulsions	...	19	19
	Placenta prævia (flooding)	...	11	11
	Phlegmasia dolens ...	...	...	...
	Other accidents of child-birth	...	34	34
	Total Order 8 ...	1	113	114
	Order 9.—*Diseases of Organs of Locomotion.*			
	Caries, necrosis ...	3	3	6
	Arthritis, ostitis ...	3	2	5
	Other diseases of organs of locomotion	6	2	8
	Total Order 9 ...	12	7	19
	Order 10.—*Diseases of Integumentary System.*			
	Carbuncle	1	...	1
	Phlegmon, cellulitis ...	4	1	5
	Lupus	...	1	1
	Ulcer, bed-sore ...	...	...	...
	Eczema	...	4	4
	Pemphigus	...	1	1
	Other diseases of integumentary system	1	...	1
	Total Order 10 ...	6	7	13
	Total Class VI. ...	2,299	1,730	4,029
VII.—Violence.	Order 1.—*Accident or Negligence.*			
	Fractures, contusions	210	29	239
	Gunshot wounds ...	22	1	23
	Cut, stab	8	4	12
	Burn, scald ...	25	16	41
	Sunstroke	5	1	6
	Poison	9	6	15
	Drowning	143	28	171
	Suffocation	32	13	45
	Otherwise	32	9	41
	Total Order 1 ...	486	107	593
	Order 2.—*Homicide.*			
	Murder, manslaughter	3	2	5
	Wounds in battle ...	...	...	...
	Total Order 2 ...	3	2	5
	Order 3.—*Suicide.*			
	Gunshot wounds ...	26	6	29
	Cut, stab	13	2	15
	Poison	9	6	15
	Drowning	9	2	11
	Hanging	22	1	23
	Otherwise	6	1	7
	Total Order 3 ...	85	15	100
	Order 4.—*Execution.*			
	Hanging	...	...	...
	Total Class VII. ...	574	124	698
VIII.—Ill-defined and Not-specified Causes.	Dropsy	...	...	...
	Marasmus, &c. ...	173	130	303
	Mortification, gangrene	1	1	2
	Tumour	...	1	1
	Abscess	3	1	4
	Hæmorrhage ...	1	...	1
	Sudden (cause unascertained)	13	2	15
	Other ill-defined and not-specified causes	...	...	...
	Total Class VIII....	191	135	326
	General totals ...	4,753	3,334	8,087

Mortality from Febrile and Zymotic Diseases.

The deaths in 1904 from specific febrile or zymotic diseases amounted to 568, a proportion of 6.72 in every 10,000 persons living, and a decrease of 348 on the number of deaths in 1903, when the proportion was 11.17.

The feature of last year's mortality is the comparative freedom of the colony from some of the epidemic diseases most fatal to children—viz., measles, scarlet fever, scarlatina, and whooping-cough—the total deaths from these causes being only 58, against 478 in 1903.

The diseases in this class that have caused the greatest mortality during the past ten years are stated in the table that follows. Of these, diarrhœal complaints were by far the most fatal, causing 2,386 deaths in the decennial period. Influenza comes next, with 1,374 deaths; typhoid fever third, with 887 deaths; whooping-cough fourth, with 726 deaths; diphtheria fifth, with 513 deaths; measles next, 497 deaths; scarlet fever, with 218 deaths; and puerperal fever, with 212 deaths:—

Diseases.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.
Measles	...	1	1	56	137	9	6	134	143	10
Scarlet fever and scarlatina	...	4	2	2	...	10	17	39	131	13
Diphtheria	76	74	49	45	58	63	44	54	23	27
Whooping-cough ...	150	24	2	6	123	90	9	83	204	35
Influenza	125	89	120	219	135	181	219	117	56	113
Diarrhœal diseases ...	232	334	257	275	298	199	139	275	184	193
Enteric or typhoid fever...	94	124	106	120	93	68	95	53	61	73
Puerperal fever ...	32	10	18	19	15	24	20	25	28	21

The mortality from measles from 1895 to 1898 was not great, but rose to 137 deaths in 1899, falling again to 9 deaths in 1900 and 6 deaths in 1901, again rising to 134 in 1902, and further to 143 deaths in 1903. Last year this disease was not epidemic in the colony, and caused only ten deaths. From scarlet fever and scarlatina there were only 13 deaths last year, as compared with 131 in 1903. The mortality from diphtheria, which was 76 deaths in 1895, fell to 27 deaths in 1904, the figures for the intervening years not presenting any striking features.

Whooping-cough in 1895 destroyed 150 lives, but was in 1896, 1897, and 1898 much less fatal. In 1899 the mortality sprang up again to a total of 123 deaths, against 90 in 1900, 9 in 1901, and 83 in 1902. In 1903 the mortality was heavy, the number of deaths being 204, but last year only 35 deaths are recorded from this complaint.

The deaths from influenza numbered 113 in 1904, as against 56 in the previous year. The figures for the eight previous years ranged from 89 to 219, the last being for the years 1898 and 1901.

From diarrhœal complaints the deaths in 1904 were 193, against 184 in 1903; while in 1896 the mortality reached the height of 334 deaths, and in 1889 was even higher (355), with a much smaller population than in 1904.

Enteric or typhoid fever was slightly more fatal in 1904 than in 1903, the figures being 73 deaths, against 61. The highest mortality during the decennium was in 1896, when the deaths numbered 124 for the colony.

Vaccination.

The vaccinations registered for the last ten years are as under:—

Year.	Total Vaccinations registered of Children under 14 Years of Age.	Vaccinations of Children under 1 Year of Age.	Number of Births registered.	Proportion of Successful Vaccinations of	
				Children under 14 Years of Age to Total Births. Per Cent.	Children under 1 Year of Age to Total Births. Per Cent.
1904 ...	18,368	2,323	22,766	80·68	10.20
1903 ...	11,683	5,566	21,829	53·52	25·50
1902 ...	8,763	2,611	20,655	42·43	12·64
1901 ...	3,768	1,984	20,491	18·39	9·68
1900 ...	4,525	3,151	19,546	23·15	16·12
1899 ...	5,133	3,379	18,835	27·25	17·94
1898 ...	10,349	5,507	18,955	54·60	29·05
1897 ...	12,440	6,162	18,733	66·41	32·89
1896 ...	11,917	5,727	18,612	64·03	30·78
1895 ...	8,523	5,882	18,546	44·34	31·72

The number of successful vaccinations of children registered in 1904 was 18,368, against 11,683 in 1903. The fall prior to 1902 was consequent on the alteration of the law relative to vaccination in England, and subsequently in this colony, while the increase shown for the three years was no doubt due to a slight visitation of smallpox from abroad, which caused one death in 1903.

One child in every ten born in 1904 is shown to have been successfully vaccinated in that year. This is a falling-back to the position, or nearly so, which obtained in 1901 as regards vaccination of infants. The exemptions taken out will also be found from the subsequent remarks to have fallen in number.

Eleven thousand two hundred and thirteen exemption certificates were issued from the 13th October, 1900, when the Act came into force, to the end of the year 1904. Of these 2,625 belong to the year 1904, when, as before stated, the successful vaccination of children under one year of age amounted to 2,323, or 10 per cent. of births.

The figures given above do not include Maoris vaccinated, nor vaccinations of adult persons other than Natives.

Parasitic Diseases.

There were 23 deaths from parasitic diseases, the proportion per 10,000 living being 0.27. Deaths from hydatids numbered 18 in 1904.

Dietetic Diseases.

Under the class "Dietetic diseases" are included 31 deaths from intemperance. But these cannot be said to represent the full extent of the mortality really caused by the abuse of alcoholic liquors. Many deaths of intemperate persons are attributed to disease of the liver, kidneys, &c., in the medical certificates.

Constitutional Diseases: Phthisis, Cancer, etc.

The deaths from constitutional diseases in 1904 numbered 1,572, or 18.60 per 10,000 of population, and 19 out of every 100 deaths from all causes. This class of disease is more fatal than any

other except that defined as "Local diseases," on account of the great numbers of deaths from cancer and phthisis, with other tubercular complaints, which are classed as "Constitutional."

The number of deaths from phthisis was 598 in 1904. The deaths in 1904 were in the proportion of 7.08 in every 10,000 persons living, against 6.95 in the previous year.

Figures for ten years are quoted, showing that the total number of deaths from this disease in 1902 was the highest recorded during the decennium, though the rate has been higher in some of the previous years.

Year.	Deaths from Phthisis.	Rate per 10,000.
1895	553	7·99
1896	523	7·40
1897	596	8·26
1898	597	8·11
1899	593	7·91
1900	577	7·56
1901	596	7·66
1902	617	7·73
1903	570	6·95
1904	598	7·08

Of the persons dying from phthisis in New Zealand during 1904, more than one-half were born in the colony. The numbers are: total of deaths from phthisis, 598; 345 of them having been New-Zealand-born. The proportion is 55 per cent.

At the census of 1901 the New-Zealand-born were shown to be 67 per cent. of the population, which would give the approximate number of the same in 1904 as 566,000. The death-rate from phthisis amongst these persons was, judging from the numbers in the table annexed, exactly 6 per 10,000 living.

The death-rate from phthisis in the United Kingdom is stated by the Registrar-General to be at the rate of 12.03 per 10,000 living for the year.

Deaths from Phthisis, 1904.

TABLE showing the Number of Persons who died from Phthisis in the Colony during the Year 1904, classified according to Age, Sex, and Length of Residence in the Colony.

Length of Residence in the Colony.	Age at Death.										
	Under 5 Years.	5 to 10.	10 to 15.	15 to 25.	25 to 35.	35 to 45.	45 to 55.	55 to 65.	65 to 75.	75 and upwards.	Total.
MALES.											
Under 1 month	...	...	...	...	1	...	...	...	...	...	1
1 to 6 months	...	...	...	2	2	...	1	...	...	...	5
6 to 12 months	...	...	...	...	...	...	...	...	...	...	...
1 to 2 years	...	...	...	1	2	...	...	1	..	...	4
2 to 3 years	...	...	...	...	3	2	...	...	...	...	5
3 to 4 years	...	..	...	...	3	2	...	...	...	...	5
4 to 5 years	...	...	...	...	2	1	...	...	...	...	3
5 to 10 years	...	...	...	...	3	3	3	...	...	...	9
10 to 15 years	...	...	...	1	1	1	2	...	...	...	5
15 to 20 years	...	...	...	1	2	3	2	1	...	...	9
20 to 25 years	...	...	...	...	2	5	5	3	2	...	17
25 years and upwards	...	...	...	...	5	9	22	18	22	1	77
Not known	...	...	...	1	9	4	5	1	3	...	23
Born in colony	3	...	5	53	70	28	5	1	...	...	165
Totals	3		5	59	105	58	45	25	27	1	328
FEMALES.											
Under 1 month	...	...	...	...	...	...	...	...	...	...	...
1 to 6 months	...	...	...	1	1	...	...	...	..	...	2
6 to 12 months	...	...	...	...	1	1	...	...	...	...	2
1 to 2 years	...	...	...	...	...	...	...	...	...	...	...
2 to 3 years	...	...	...	1	...	...	...	...	...	...	1
3 to 4 years	...	...	...	2	1	3	...	...	...	...	6
4 to 5 years	...	...	...	...	...	...	...	...	...	...	...
5 to 10 years	...	...	...	3	1	4	1	...	1	...	10
10 to 15 years	...	...	...	...	...	...	1	...	...	...	1
15 to 20 years	...	...	...	4	2	2	1	...	...	...	9
20 to 25 years	...	...	...	...	6	4	3	...	1	...	14
25 years and upwards	...	...	...	...	2	10	12	8	7	...	39
Not known	...	...	...	...	1	2	...	2	1	...	6
Born in colony	2	1	7	83	63	20	2	1	1	...	180
Totals	2	1	7	94	78	46	20	11	11	...	270
Totals of both sexes	5	1	12	153	183	104	65	36	38	1	598

In Australasia the rate is materially increased by the deaths of persons who have come from other countries either already suffering from phthisis or predisposed thereto. There is no reason for believing that this circumstance has more effect on the death-rate in Australia than in New Zealand; so that the lower rate referred to in previous issues of this work as obtaining in this colony may be taken as proof of the superiority of its climate for withstanding consumptive tendencies.

From other forms of tuberculosis the deaths in 1904 were 201, or 2.38 per 10,000 of population. Thus a large addition has to be made to the deaths from phthisis to appreciate the full mischief done by tubercular disease.

Deaths from all Tubercular Diseases.

The mortality from all forms of tubercular disease, taken together, has been at the average rate of about 10¼ persons per 10,000 living for the last ten years. This rate is far lower than that which obtained in England during the year 1903, when the proportion was 17.42 per 10,000 living.

A table is supplied showing the results for each of ten years in New Zealand. Besides the death-rate from tubercular diseases, it also shows the percentage of deaths by tubercle to those from all causes, which was from 9.02 to 11.57 per cent. for the decennial period 1895-1904.

DECENNIAL TABLE, 1895-1904, showing the Death-rate from Tubercle per 10,000 Living and Percentage of Total Deaths.

Year.	Mean Population.	Number of Deaths from Tubercular Diseases.	Rate per 10,000.	Percentage of Total Deaths from all Causes.
1895	692,417	761	10·99	11·09
1896	706,846	680	9·62	10·57
1897	721,609	763	10·57	11·57
1898	736,260	769	10·44	10·62
1899	749,984	795	10·60	10·35
1900	763,594	752	9·85	10·44
1901	777,968	775	9·96	10·15
1902	797,793	802	10·05	9·58
1903	820,217	769	9·38	9·02
1904	845,022	799	9·46	9·88

DECENNIAL TABLE, 1895-1904.—Deaths from various Tubercular Diseases registered in New Zealand, specifying the Number under and over Five Years of Age.

Year.	Tabes Mesenterica, Tubercular Peritonitis.		Tubercular Meningitis, Acute Hydrocephalus.		Phthisis.		Other Forms of Tuberculosis, Scrofula.		Total Deaths from Tuberculosis.		Total of all Ages.
	Under 5 Years.	Over 5 Years.	Under 5 Years.	Over 5 Years.	Under 5 Years.	Over 5 Years.	Under 5 Years.	Over 5 Years.	Under 5 Years.	Over 5 Years.	
1895	47	15	25	37	5	548	28	56	105	656	761
1896	36	11	30	28	5	518	19	33	90	590	680
1897	35	9	33	32	7	589	13	45	88	675	763
1898	37	12	37	38	10	587	11	37	95	674	769
1899	43	19	32	40	10	583	12	56	97	698	795
1900	20	20	24	55	13	564	9	47	66	686	752
1901	30	22	30	31	10	586	14	52	84	691	775
1902	26	19	36	30	5	612	8	66	75	727	802
1903	22	28	39	35	9	561	11	64	81	688	769
1904	17	18	44	44	5	593	12	66	78	721	799

Nine deaths from "lupus" recorded during the decennium have not been included in the above table. They were all deaths of adult persons (4 males and 5 females). One death, that of a female, aged 76, was registered as from this disease in 1904.

It will be seen that the term "tubercular diseases" includes "phthisis," "tabes mesenterica," "tubercular peritonitis," "tubercular meningitis," "acute hydrocephalus," with other forms of tuberculosis (scrofula, &c.). Of these the mortality from phthisis forms by far the greatest part of the whole. Thus, in 1904 there were 598 deaths from phthisis out of a total of 799 deaths from all tubercular complaints. Of 598 deaths by phthisis, only 5 were of persons under 5 years of age.

Examination of the next table, giving the full series of ages of persons who died from tubercular disease during the year 1904, shows that of 35 deaths from tabes mesenterica, with tubercular peritonitis, 17 were of children under 5 years. Also that, of 88 deaths from tubercular meningitis, with acute hydrocephalus, 44 were of persons under 5 years, and 42 from 5 to 20 years. Under "other forms of tuberculosis" (excepting phthisis) the greater numbers of deaths are at ages under 30 years.

The mortality from phthisis is heaviest at 20-30 years, being 205 deaths out of 598 of all ages; but large numbers are found in the columns as far as that for the advanced term of 65 to 70 years, at which the deaths for 1904 were 25, and 14 deaths from this cause are of persons of 70 years and upwards.

TABLE showing the Number of Deaths from Tubercular Diseases registered in New Zealand during the Year 1904, arranged in Groups of Ages.

—	Under 1 Year.	Under 5 Years.	5 to 10.	10 to 15.	15 to 20.	20 to 25.	25 to 30.	30 to 35.	35 to 40.	40 to 45.	45 to 50.	50 to 55.	55 to 60.	60 to 65.	65 to 70.	70 to 75.	75 to 80.	80 and upwards.	Total, 5 Years and over.	All Ages.
Tabes mesenterica, tubercular peritonitis	11	17	1	3	3	1	2	3	4	...	1	...	...	...	...	...	...	...	18	35
Tubercular meningitis, acute hydrocephalus	14	44	15	8	9	3	2	2	3	...	1	1	...	...	...	...	...	...	44	88
Phthisis	2	5	1	12	57	96	109	74	61	43	36	29	21	15	25	13	...	1	593	598
Other forms of tuberculosis, scrofula	6	12	3	6	7	13	12	6	5	3	1	6	1	1	2	...	...	...	66	78
Totals ...	33	78	20	29	76	113	125	85	73	46	39	36	22	16	27	13	...	1	721	799

To show the mortality from tuberculosis in various parts of the colony, a table giving the deaths in the various provincial districts is added, which, however, only shows that the mortality is distributed very much according to population. The deaths in the North Island are, however, found to be 57 fewer than those for the South Island, or 371 deaths and 428 deaths for those divisons respectively:—

TABLE showing the Number of Deaths from Tubercular Disease registered in each Provincial District of New Zealand during the Year 1904.

Provincial District.	Tabes Mesenterica, Tubercular Peritonitis.	Tubercular Meningitis, Acute Hydrocephalus.	Phthisis.	Other Forms of Tuberculosis, Scrofula.	Total Deaths from Tuberculosis.
Auckland ...	7	6	127	16	156
Taranaki ...	3	5	17	1	26
Hawke's Bay ...	...	5	31	4	40
Wellington ...	4	16	114	15	149
Marlborough ...	...	1	4	2	7
Nelson ...	3	6	26	3	38
Westland ...	...	1	14	...	15
Canterbury ...	8	21	127	11	167
Otago ...	10	27	138	26	201
Totals ...	35	88	598	78	799

Cancer.

The deaths from cancer during the year 1904 were 571. There were more deaths of males than of females, the numbers being—males 323, females 248. The rate of mortality per 10,000 living was 6.76. The apparent increase in deaths from this disease is shown further on and compared with that of England. But the increase is not believed by all authorities to be a fact to the extent represented, but partly the result of more careful certification of the causes of death, and of improved diagnosis in cases of what is termed inaccessible cancer.

It is certain, however, that out of a total of 8,087 deaths from all causes in New Zealand during 1904, 571, or 7.06 per cent., were caused by cancer.

The death-rate by cancer is not so great as that from tubercular diseases, but is nevertheless a most alarming matter, not only on account of the number of deaths, but because of its progressive increase.

A decennial table shows that the deaths from cancer per 10,000 persons living rose from 5.53 in 1895 to 7.10 in 1903, and 6.76 in 1904; and that whereas 5.58 out of every 100 deaths were attributable to cancer ten years ago, the proportion had grown to 7.06 last year.

TABLE showing for each of the Ten Years 1895 to 1904 the Number of Persons registered as having died from Cancer, the Proportion of Deaths from Cancer per 10,000 living, and the Percentage of all Deaths attributed to Cancer.

Year.	Estimated Mean Population.	Deaths from Cancer.	Total Deaths, all Causes.	Deaths from Cancer per 10,000 of Living Persons.	Percentage of Total Deaths due to Cancer.
1895	692,417	383	6,863	5·53	5·58
1896	706,846	389	6,432	5·50	6·05
1897	721,609	395	6,595	5·47	5·99
1898	736,260	471	7,244	6·40	6·50
1899	749,984	468	7,680	6·24	6·09
1900	763,594	430	7,200	5·63	5·97
1901	777,968	515	7,634	6·62	6·75
1902	797,793	536	8,375	6·72	6·40
1903	820,217	582	8,528	7·10	6·82
1904	845,022	571	8,087	6·76	7·06

To exhibit how cancer affects the different parts of the human body in respect of each sex, the experience of five years (1900 to 1904) is shown in a succeeding table. Of any single organ affected, the stomach is the one most liable to be the seat of cancer among males, although with this sex the disease was for the year 1904 apparently to about the same extent located in the mouth, lips, tongue, and throat, taking these parts all together. Next to the stomach, the liver is with males the part which is most often attacked, to judge by mortality records, and next in order come the intestines and rectum. Afterwards, but at a considerable distance, follow the kidneys, bladder, and urethra.

Amongst the females, the organs of generation—ovaries, uterus, and vagina—as a group, show most cases of mortality from cancer; but, as with the males, the stomach is, of any single organ, the one most affected, the liver coming next, then the breast, and then the intestines and rectum. Females do not contract cancer in the mouth (judging by the returns of deaths), tongue, lips, and throat to nearly the same extent as prevails among males. Whatever may be the cause, the figures are remarkable, being only 6 out of every 100 deaths from cancer among females, against 29 out of every 100 of males dying from the same cause; or, expressed in numbers, 61 deaths of females occurred against 389 of males from cancer in the mouth, &c., in a five years' experience of mortality.

Deaths from Cancer, 1900, 1901, 1902, 1903, and 1904.

TABLE showing the Number of Deaths of Males and Females from Cancer during the Years 1900 to 1904, classified according to the Part of the Body affected.

Part affected.	1900.		1901.		1902.		1903.		1904.	
	Number of Deaths.	Proportion of Specified.	Number of Deaths.	Proportion of Specified.	Number of Deaths.	Proportion of Specified.	Number of Deaths.	Proportion of Specified.	Number of Deaths.	Proportion of Specified.
Males.										
		Per Cent.		Per Cent.		Per Cent.		Per Cent.		Per Cent.
Mouth, lip, tongue, throat, neck, &c.	68	31·78	60	22·69	63	24·14	99	33·56	99	32·46
Stomach	80	37.38	97	39·92	112	42·91	96	32·54	107	35·08
Intestines, rectum	26	12·15	32	13·17	32	12·26	35	11·87	34	11·15
Liver	25	11·68	37	15·23	38	14·56	35	11·87	42	13·77
Kidneys, bladder, urethra, &c.	9	4·21	13	5·35	12	4·60	17	5·76	13	4·26
Leg, foot, &c.	4	1·87	...	...	...	...	4	1·35	7	2·30
Lung	2	0·93	4	1·64	4	1·53	9	3·05	3	0·98
	214	100·00	243	100·00	261	100·00	295	100·00	305	100·00
Not specified	32	...	22	...	35	...	30	...	18	...
Totals	246	...	265	...	296	...	325	...	323	...

TABLE showing the Number of Deaths of Males and Females from Cancer, &c.—*continued.*

Part affected.	1900.		1901.		1902.		1903.		1904.	
	Number of Deaths.	Proportion of Specified.	Number of Deaths.	Proportion of Specified.	Number of Deaths.	Proportion of Specified.	Number of Deaths.	Proportion of Specified.	Number of Deaths.	Proportion of Specified.
Females.										
		Per Cent.		Per Cent.		Per Cent.		Per Cent.		Per Cent.
Mouth, tongue, throat, &c. ...	6	3·73	6	2·77	16	7·44	21	9·05	12	5·17
Breast	17	10·56	38	17·51	33	15·35	33	14·23	25	10·78
Stomach	28	17·39	61	28·11	43	20·00	51	21·98	55	23·71
Intestines, rectum	21	13·04	19	8·76	33	15·35	28	12·07	32	13·79
Kidneys, bladder	5	3·11	2	0·92	8	3·72	5	2·16	4	1·72
Ovary, uterus, vagina ...	54	33·54	55	25·35	44	20·46	48	20·69	58	25·00
Liver	25	15·53	29	13·36	33	15·35	38	16·38	35	15·09
Gall-bladder, spleen, pancreas...	2	1·24	2	0·92	3	1·40	4	1·72	1	0·43
Lung, spine, thigh, shoulder ...	3	1·86	5	2·30	2	0·93	4	1·72	10	4·31
	161	100·00	217	100·00	215	100·00	232	100·00	232	100·00
Not specified	23	...	33	...	25	...	25	...	16	...
Totals	184	...	250	...	240	...	257	..	248	...

Considering the number of persons dying at the different age-periods, the following table of ten years' results shows the age of 30 years to be the time of life at which deaths from cancer begin to be numerous (it is really 35 for males and 30 for females). The maximum of deaths is reached at the period 60 to 65 for males, and 55 to 60 for females. These remarks are given without reference to the numbers of persons living at the various ages.

Deaths from cancer, it will be observed, are very rare among children under 5 years, and not frequent in those above that age.

Deaths from Cancer.—Decennial Return.

TABLE showing the Number of Persons (Males and Females) at Different Ages registered as having died from Cancer in New Zealand during the Ten Years 1895 to 1904.

Year.	Under 1 Year.				Total under 1 Year.	1 to 2.	2 to 3.	3 to 4.	4 to 5.	Total under 5 Years.	5 to 10.	10 to 15.	15 to 20.	20 to 25.	25 to 30.	30 to 35.	35 to 40.	40 to 45.	45 to 50.	50 to 55.	55 to 60.	60 to 65.	65 to 70.	70 to 75.	75 to 80.	80 and upwards.	Total 5 Years and over.	All Ages.
	Under 1 Month.	1 to 3 Months.	3 to 6 Months.	6 to 12 Months.																								
1895	..	..	..	..	..	....	..	..	..	..	2	..	..	3	1	6	11	25	47	61	64	63	38	37	19	6	383	383
1896	..	..	..	..	..	....	..	2	..	2	2	1	1	2	5	6	14	21	36	59	74	67	49	29	14	7	387	389
1897	..	1	..	..	1	.. 1	..	1	..	3	..	2	1	1	..	7	10	22	41	42	71	74	49	35	29	8	392	395
1898	..	..	..	..	..	....	2	..	..	2	1	2	2	5	5	8	17	36	47	47	77	79	69	35	30	9	469	471
1899	..	..	..	..	..	....	1	..	..	1	3	3	..	1	4	6	15	21	42	48	82	64	87	45	27	19	467	468
1900	..	1	..	..	1	....	1	..	..	2	..	..	6	2	2	6	7	16	40	35	75	78	59	51	31	20	428	430
1901	..	..	1	..	1	....	..	..	..	1	2	..	4	5	5	8	20	31	53	60	65	80	74	63	33	11	514	515
1902	..	..	..	..	..	....	..	..	..	..	1	..	3	5	5	7	22	35	49	50	72	88	86	67	31	15	536	536
1903	1	..	..	..	1	....	..	..	..	1	4	1	2	6	10	9	20	37	47	68	69	87	96	72	38	15	581	582
1904	..	..	..	1	1	....	..	1	..	2	3	1	3	2	9	6	15	25	35	57	72	99	99	79	31	33	569	571

The number of deaths of persons from cancer in each provincial district are given in another table, according to age-groups, but the result merely shows the disease to be one found everywhere throughout the colony—at least, there is no sufficient evidence of climatic conditions affecting the mortality to a great extent in any particular part of the country.

TABLE showing the Number of Deaths from Cancer registered in each Provincial District of the Colony of New Zealand during the Years 1901–4.

Provincial Districts.	1901.			1902.			1903.			1904.		
	Under 5 Years.	Over 5 Years.	Total.	Under 5 Years.	Over 5 Years.	Total.	Under 5 Years.	Over 5 Years.	Total.	Under 5 Years.	Over 5 Years.	Total.
Auckland ...	1	91	92	...	115	115	...	117	117	1	114	115
Taranaki ...	...	24	24	...	24	24	...	21	21	...	21	21
Hawke's Bay	...	16	16	...	15	15	...	26	26	...	25	25
Wellington ...	...	83	83	...	95	95	1	107	108	...	113	113
Marlborough	...	7	7	...	7	7	...	6	6	...	5	5
Nelson ...	...	34	34	...	33	33	...	28	28	...	32	32
Westland ...	...	26	26	...	19	19	...	35	35	...	16	16
Canterbury ...	...	98	98	...	98	98	...	105	105	...	109	109
Otago ...	...	135	135	...	130	130	...	136	136	1	134	135
Totals ...	1	514	515	...	536	536	1	581	582	2	569	571

The death-rates for cancer in respect of each sex are given for each of ten years, selected to show the position as from 1886 to 1904:—

Deaths from Cancer in every 10,000 Persons of each Sex living in New Zealand.

Year.	Males.	Females.	Year.	Males.	Females.
1886	3·69	3·67	1900	6·12	5·09
1890	4·72	4·79	1901	6·48	6·77
1894	6·65	5·27	1902	7·05	6·35
1898	6·77	5·98	1903	7·51	6·63
1899	6·85	5·56	1904	7·23	6·23

The mortality was higher among the males than among the females (with the exception of 1890 and 1901), which is the reverse of English experience, where the rate was 7.32 per 10,000 of males and 10.03 of females for the year 1903. In the United Kingdom, however, the rate of increase is so much higher among males than with females that the Registrar-General calculates equilibrium will be reached in about the year 1932, and thereafter the rate among males would exceed the rate among females.

The increase in the numbers for the sexes together for England and New Zealand is represented in the proportions below:—

Deaths from Cancer in every 10,000 Persons living.

Year.	New Zealand.	England.	Year.	New Zealand.	England.
1881	2·69	5·20	1899	6·24	8·29
1886	3·68	5·90	1900	5·63	8·28
1891	4·68	6·92	1903	7·10	8·71
1896	5·50	7·64			

The actual number of deaths of persons of either sex and all ages registered in New Zealand during the last fourteen years was:—

	Males.	Females.	Totals.
1891	154	141	295
1892	173	134	307
1893	188	144	332
1894	240	168	408
1895	208	175	383
1896	205	184	389
1897	210	185	395
1898	263	208	471
1899	271	197	468
1900	246	184	430
1901	265	250	515
1902	296	240	536
1903	325	257	582
1904	323	248	571
Totals	3,367	2,715	6,082

Mortality from Developmental Diseases.

The total of deaths from developmental diseases was 819, or 9.69 per 10,000 persons living. The mortality from premature birth comprised 291 deaths, and that from atelectasis, cyanosis, and other congenital defects 58 deaths. The proportion of deaths from premature births varies from 11 to 15 out of every 1,000 births, and that from congenital defects from 2 to 4 per 1,000 births. Particulars for nine years exhibit the annual rates:—

Number and Proportions per 1,000 Births.

Year.	Deaths from Premature Birth.		Deaths from Congenital Defects.	
	Number.	Proportion per 1,000.	Number.	Proportion per 1,000.
1896	230	12·36	46	2·47
1897	211	11·26	52	2·78
1898	251	13·24	54	2·85
1899	261	13·86	47	2·50
1900	276	14·12	55	2·81
1901	264	12·88	63	3·07
1902	303	14·66	79	3·82
1903	301	13·79	67	3·07
1904	291	12·78	58	2·54

Stating the result in another way, there was one death from premature birth to every 78 births in 1904, and one death from congenital defect to every 393 births. In England the proportion of deaths from premature birth to every 1,000 births was as high as 19.93 in the year 1900.

Old Age.

Deaths from old age in 1904 numered 470, against 515 in 1903.

Mortality from Local Diseases.

Deaths by diseases of the nervous system were 864, or 10.68 out of every 100 deaths from all causes, and 10.22 out of every 10,000 persons living. Of the 864 deaths, 292 were credited to apoplexy, 117 to convulsions, and 102 to inflammation of the brain and its membranes. Paralysis, including hemiplegia and paralysis of the insane, caused 167 deaths, and locomotor ataxia 7 deaths. Paraplegia, with diseases of the spinal cord, caused 20 deaths. Deaths from nervous diseases (excluding convulsions of children) numbered 747, or 8.84 per 10,000 persons living.

Diseases of the circulatory system resulted in 953 deaths, being 11.78 out of every 100 from all causes, and 11.28 per 10,000 persons living. Of the total number in this order, endocarditis and valvular disease of the heart contributed 632 deaths. From angina pectoris there were 35 deaths, from syncope 125, from aneurism 20, and from other forms of heart-disease (hypertrophy, fatty degeneration, and pericarditis) 80.

Diseases of the respiratory system show 917 deaths, of which 723 were attributable to bronchitis and pneumonia. Taken together, these two complaints were the cause of more deaths than was phthisis; and adding 56 from pleurisy, 12 from croup, 17 from laryngitis, and 109 from other respiratory diseases, the mortality in the order is found to be 11.34 per cent. of the total deaths, and 10.85 per 10,000 of the population.

Deaths from diseases of the digestive system also formed a large proportion of the whole (9.97 per cent.), the number being 806. Enteritis was most fatal, showing 289 deaths, liver-diseases (110) and gastritis (94) coming next.

Of 303 deaths from diseases of the urinary system in 1904, the deaths from Bright's disease of the kidneys (albuminuria) numbered 157.

Of the groups (*a*) and (*b*), constituting the order styled "Diseases of the reproductive system," the greater mortality is found under (*b*), "Diseases of parturition." In considering the deaths of women in childbirth the number from Order 6, Class I., under the designation "Puerperal fever, pyæmia, septicæmia," have also to be dealt with.

As the figures are highly important, a special comparative statement has been made out, giving besides the number of deaths of mothers the proportions in every 10,000 children born. These proportions, taken over ten years' comparison, fluctuate irregularly, the extreme limits being 38.37 per 10,000 births in the year 1900, and 58.64 for the year 1903.

Women dying in Childbirth.

Year.	Death of Women in each Year.			Deaths of Mothers to every 10,000 Children Born.*
	In Childbirth.	From Puerperal Fever, &c.	Total.	
1895	69	32	101	54·46
1896	77	10	87	46·74
1897	64	18	82	43·76
1898	72	19	91	48·01
1899	71	15	86	45·66
1900	51	24	75	38·37
1901	70	20	90	43·92
1902	85	25	110	53.26
1903	100	28	128	58.64
1904	85	21	106	49.56

* Stillbirths are not registered.

But any conclusion drawn from the above figures must be held as qualified by the remarks on page 230 touching the matter of diminished fertility of wives at the child-bearing ages.

Violent Deaths.

Deaths by violence form a large item in the total mortality. In 1904 the proportion per 10,000 of persons living was 8.26, the total number of deaths having been 698.

Of 574 males who died violent deaths 85 were suicides. The deaths of females by violence were far fewer than those of males, amounting to 124, and out of these only 15 committed suicide. A table given previously states the full list of deaths from external or violent causes for the year 1904.

Accidental deaths numbered 593—males 486 and females 107. Of the total male deaths, 210 resulted from fractures or contusions, and 143 from drowning. Of the female deaths, 28 were due to drowning.

Health of School-children.

In a paper read at a recent conference of dentists by Mr. Thompson, of Christchurch, he advocated the periodical examination and treatment of all children attending the State schools. With this and the regular examination of their eyes I am in complete accord. A very great deal of suffering and consequent ill health undoubtedly results from the want of care of the teeth during the early and school life of children, and a system of inspection by qualified dentists would do much to mitigate this. The only difficulty in the way is that of finance. It is not to

be expected that men will give their time and work for nothing. The scattered nature of our school population would make any general scheme very expensive, but an attempt might be made with respect to the schools in the larger cities. While I am convinced that good would result, I am not prepared to advise that any large sum should be spent in this direction at present. Mr. Thompson's paper, by your direction, was printed and circulated as a parliamentary paper.

Consumption.

Undesirable Immigrant's Restriction.

We have been accused more than once of undue severity towards those suffering from consumption coming from oversea. I am certain this accusation is the result of want of knowledge of the procedure adopted. As I said in a previous report, while it would be unfair and inhuman to deny any sufferer the benefit of our excellent climate, we at the same time have a duty towards ourselves. The indigent sufferer from this or any other disease immediately becomes a charge upon the Charitable Aid Board of the district within which he happens to land; and now, while we do not go so far as to require the immigrant to possess wealth, we do ask him if he is suffering from any disease which will preclude him from being a serviceable and self-supporting unit in the social organism. Only the other day a man suffering from sarcoma of the jaw was landed in Wellington. He was sent to the General Hospital, and died in the course of a week or ten days. Under the procedure we adopt the poor man was allowed to land after the shippers had agreed to undertake the cost of his keep, and undertook to take him back to his own country by the next boat if that were possible. No one surely could accuse us of having dealt hardly with this poor man. We adopt the same attitude to the indigent sufferer from consumption, and for the same just reason. All the shipping companies were notified that they shipped persons suffering from consumption at the risk of having to take them back. The result of this was that a more than formal examination of intending passengers to New Zealand is made at the port of departure. Not only is this to the advantage of the colony, but it undoubtedly lessens the dangers of "those who go down to the sea in ships." Only those who have had to share a cabin for some weeks with a man who spends his spare moments in inhaling creasote and performing the many things usually suggested by the practitioner who undertakes to "cure" consumption can understand the value of our regulation. The ordinary cubic space allowed by shippers to passengers is rarely half as much as one would receive in an ordinary gaol, and when one has to share this with a man exhaling the mephitic aromas of a consumptive undergoing a *cure*, not forgetting the danger which comes from a careless disposal of the sputum, there is reason for his wondering whether a "sea voyage" has all the health-bringing influences which he imagined and was told it would have. Most other countries, with the exception of Great Britain, insist upon intending citizens being not only healthy, but possessed of some money. We hear of hundreds being turned back from America because of their physical disabilities. A glance at the appended table would seem to show that our inspections are not sufficiently severe. Out of a total of 190 patients who have been treated at the Sanatorium at Cambridge sixteen are set down as belonging to other countries than New Zealand. Most of these were unable to pay anything towards the cost of their keep.

It will be seen therefore that New Zealand practically relieved Great Britain and other countries to this extent. This is wrong. At the same time we must guard against setting up too strict a barrier. High Customs duties have always been the forerunner of smuggling, and to offer any unfair bar to admission to the colony because of ill health would simply result in evasion of the regulation. It has to be borne in mind that shippers are the natural enemies of a Health Department. I say this in no captious spirit; but it cannot be denied that in nearly all instances where an infectious disease has been introduced into a hitherto clean country it has gained admittance because of the natural desire of the shipper to escape quarantine and hindrance. The relationship between our Department and the shipping world is excellent. The shippers here do everything in their power to facilitate examination and inspection, and an excellent give-and-take policy has been established between us. Still, all semblance of reason for charging us with heartlessness in respect to consumption would be obviated if a stricter examination were made at the port of departure.

To exclude all persons suffering from tuberculosis in any shape or form would be as unfair as it would be difficult to enforce. A working-rule must therefore be made, and I think the one we use is as good as any. With greater candour on the part of the shippers and the surgeons responsible for the accuracy of the "bill of health" our rule would, I consider, be not only the best practicable, but absolutely good. Only those obviously ill are set aside for more detailed examination by the inspecting Port Health Officer, and inquiry is then made into their circum-

stances, and if it is found that they are unable to work and likely within the next year or so to become chargeable to the State, the ship is asked to enter into a bond for five years, or reship them back to the port of despatch. It need hardly be said that no New-Zealander returning home is denied admission because of the state of his health; the Colonial Secretary has power to exempt such from the regulation.

Private Hospitals.

The recent most regrettable accident which took place in a Christchurch hospital licensed under the amending Act of 1903 has rightly exercised the minds of the public, and has drawn attention to the regulations under which private hospitals generally are conducted. Until you obtained the alteration in the Health Act there was no power given for the inspection or control of such institutions. In virtue of the amending Act the following regulations were issued:—

Interpretation: "Private hospital" shall mean any house, building, tent, or place other than an institution in receipt of aid from the State, in which persons (hereinafter called "patients") are received and lodged, or in which it is intended that they shall be received and lodged, for medical or surgical treatment or care, and a charge is made for such treatment, attendance, or care.

1. From and after the coming into operation of these regulations no private hospital shall be carried on, used, or conducted except under authority of a license duly granted under regulations.

2. Every such license shall be a yearly license, terminating on the 31st day of December in each year.

3. Every application for a license shall contain the name of the applicant and manager. The applicant shall deposit with the District Health Officer complete plans, showing the number of rooms and the dimensions of each, and the number of beds available for patients, the drainage, the water-supply, means of ventilation, and the positions of the closets and the lavatory conveniences. These must be approved by the Minister of Public Health before any license be granted, and no alteration from the plans so deposited shall be made in any licensed building without his written consent. The applicant shall also produce with his application such proof of character and fitness as the Minister of Public Health may prescribe from time to time.

4. The fee for registration shall be 5s., payable on the 1st day of January in each year: Provided that where application for a license is first made after the 1st day of January in any year a license may be issued for the unexpired portion of that year.

5. Every manager of a licensed hospital shall keep a register, which shall be open to the inspection of the Chief Health Officer, District Health Officer, or other officer which the Governor may direct, in which shall be recorded:—

(*a.*) The full name, age, and usual residence of every patient admitted, and the date of admission;

(*b.*) The nature of the ailment or disease, the nature of any operation which has been performed;

(*c.*) The date when the patient left the hospital, or, in the event of death, the date of such death.

6. No part of a licensed hospital in which patients are suffering from any infectious disease (excepting enteric fever) shall be used for the reception of patients during or immediately after childbirth.

7. Whenever a case of puerperal fever (including all puerperal conditions depending on infection) occurs, or is admitted to a hospital, no lying-in patient shall be admitted until the Officer of Health certify that, in his opinion, there is no risk of further infection.

8. Complete disinfection of every room which has been occupied by any case of infectious disease shall be performed immediately the patient leaves the same.

9. Every licensed hospital which has provision for more than twenty patients shall have a mortuary, constructed of stone or brick, with cement floors, separate from the main building.

10. Every private hospital shall be open to inspection by the Chief Health Officer, District Health Officer, or other officer whom the Governor may direct.

11. If any person shall commit a breach of, or fail to observe, the provisions of these regulations, he shall be liable on conviction to a penalty not exceeding £20.

The occasion of the introduction of the amendment was the occurrence of some accidents in what may be termed homes for the reception of lying-in women. With the exception of those houses, where the woman from the country was taken in until her confinement took place, our private hospitals generally were well constructed and managed. In addition to the information required from the applicant before a license is granted, the District Health Officer or an official of the Department visits the place and satisfies himself that the building is suitable for the purposes of a hospital; further, a certificate is required from two medical men that the applicant is a fit and proper person to hold a license.

A register of all patients, operations, &c., is required to be kept by the licensee, and at frequent intervals the place is visited by the District Health Officer, and the register, among other things, is examined. In view of the fact that a large amount of capital had been invested prior to the regulation coming into force, and that many women had been engaged in nursing anterior to the passing of the Nurses' Registration Act, it was decided that the requirements of

the amending Act should be interpreted liberally and in such a manner as would not bear unfairly upon those who had been engaged in the work for some time. I suggest, however, that the time has now come when it should be insisted upon that every one holding a license should either be a medical man or a registered nurse, or that a medical man or registered nurse should be in charge; further, if mental cases are to be allowed to be treated in private hospitals, that special regulations should be made for such institutions. There is a natural reluctance, both on the part of the medical man and the patient's friends, to send a case which is likely to recover soon to any of the public or private hospitals for mental diseases; but this should not be allowed to operate unfairly against the patient's welfare. No system of inspection short of an actual residence in the hospital would have averted the untimely death of the young lady in Christchurch; but if it were required that all holders of a license were of the character I have indicated, such an accident could hardly happen.

Provision for Ex-patients of Sanatorium.

As the result of our work in connection with the treatment of consumption it has gradually been borne in upon me that to get the best results we must set up some sort of an after-treatment. Many of those who have gone through a course of treatment at Cambridge have left the institution to all intents "cured," but they are still unable to take up ordinary work, or if they do a relapse will be the consequence. The difficulty of finding these "cured" patients work is a daily anxiety and cause of worry. It has to be remembered that a person "cured" of consumption is somewhat in the same position as a person whom the surgeon has cured of sarcoma by amputating the limb. He cannot in many instances take up his ordinary work again, and unless all the beneficial results of a course at Cambridge or any other open-air sanatorium are to be stultified, something must be done to obtain for them work in the open air. When annexes have been put up by the several Hospital Boards, occupation might be got for a small number of the "cured" in connection with them, but this at best will only provide for a few. If some scheme whereby they could be employed on a State farm, vinery, nursery, or poultry-farm could be arranged for, these poor maimed but willing workers might be able to do some good for themselves, and at the same time advance the economic weal of the colony. Pending the setting-up of some such farm, employers of labour in the country could help greatly if they would give these poor fellows a chance. One thing which occasionally deters a farmer or employer of outdoor labour from taking the "cured" person on is the fear of infection. We have tried in every way possible to dispel this fear, but still it remains.

Consumption is—at least among grown-up people—mainly spread by means of the material coughed up by the sufferer. Apart from the fact that most of the "cured" have ceased to spit up an infective material before they are discharged, the education they have received at the Sanatorium is such as to entirely free them from causing any harm. They are there told of the danger which lies in the sputum, and are taught that in their own and every one else's interest all matter coughed up must be destroyed by fire. They are in this way not only harmless to produce evil themselves, but they exhibit a striking object-lesson to the careless, if healthy, expectorator. Many are able to take up their old work, but a goodly number must for ever live and work in the open. Till adequate provision is made by the State will employers of outdoor labour lend us their aid?

Leave of Officers.

Looking to the nature of the work which the scientific members of the Department are called upon to perform, bearing in mind the ever-changing nature of medical and sanitary science, I strongly recommend that each at regular periods should be permitted leave of absence in order to visit the laboratories of the older countries. A month's leave on full pay is usually granted to responsible officers in other Departments every year. If it could be arranged that each District Health Officer could "pool" his yearly leave, and, say, once in five years be permitted to take a five months' holiday I am sure it would make for the mental satisfaction of the officers, and at the same time the interests of the colony would be greatly advanced. "Things seen are ever greater than things heard," and no amount of private study can compensate for a prolonged absence from the scientific workshops of the Empire, or equal the seeing at first hand the later methods of sanitary work.

The questions which the District Health Officers are called upon to answer are as many as they are varied—from the construction of a privy to a septic-tank installation; from the diagnosis of chicket-pox to that of small-pox; the disinfection of a house to the establishment of a hospital

for infectious diseases. On all these and many more important matters he is very often the final court of appeal. To enable him to carry out this work it is absolutely necessary that he should travel and see for himself what other countries and States are doing. Though they have all passed special examinations and hold diplomas in the preventative branch of medicine, it would help them greatly if this system of combined leave could be arranged for.

Inspection of Vessels.

In view of the occurrence of cases of plague on the other side, all intercolonial passengers are still examined at their port of arrival, and much of the freedom from infectious disease is due to this inspection and the careful manner in which the Port Health Officers have carried out these irksome but necessary duties.

The Quarantine Regulations have been, with your consent, modified, and but little interference with traffic now results. Now and again we come across the sapient passenger who is willing to describe the examination as needless and farcical. He imagines that it consists of the feeling of the pulse and the look at the tongue. He forgets that the Port Health Officer at his first examination is merely ascertaining who are well and who are ill. This to a trained eye is only a matter of a moment or so, but should any passenger show signs of sickness a more detailed examination is made subsequently.

I am glad to say the shipping people help in every way, and the recalcitrant voyager is now almost extinct.

Some idea of the work done by the Port Health Officers can be gathered from the subjoined tables.

Immigration.—1904–5.

Month.	Total Number.	Males.	Females.	Adults.	Children.	Numbers from United Kingdom.	New South Wales.	Victoria.	Tasmania.	Fiji.	Other British Possessions.	Foreign Ports.	Chinese (included previously).
1904.													
April... ...	2,368	1,628	740	2,120	248	182	1,320	657	151	26	...	32	11
May... ...	2,454	1,684	770	2,169	205	224	1,449	440	188	33	69	51	19
June... ...	1,886	1,274	612	1,656	230	222	1,108	319	97	21	65	54	22
July... ...	1,777	1,186	591	1,535	242	350	863	271	115	30	42	106	18
August ...	2,235	1,532	703	1,997	238	353	1,236	413	129	35	32	37	20
September ...	2,334	1,607	727	2,081	253	527	1,167	329	124	20	66	101	6
October ...	3,013	1,941	1,072	2,664	349	404	1,694	478	264	42	22	109	33
November ...	3,677	2,406	1,271	3,299	378	838	2,013	432	106	79	79	130	46
December ...	3,531	2,157	1,374	3,185	346	556	2,001	646	160	63	21	84	36
1905.													
January ...	4,277	2,898	1,379	3,882	395	571	2,241	997	241	54	74	99	18
February ...	3,294	2,219	1,075	2,956	338	523	1,608	682	262	50	94	75	4
March ...	2,678	1,776	902	2,389	289	265	1,637	469	176	38	36	57	1
Totals ...	33,524	22,308	11,216	29,933	3,591	5,015	18,337	6,133	2,013	491	600	935	234

One other matter to which attention has been drawn on several occasions is again referred to by Dr. Ogston in his report. In the laying-off of new townships it would, I am sure, make for the future healthfulness of the residents if the officers of this Department were consulted. There are many points upon which our experts might be able to throw some valuable light.

I have, &c.,

J. Malcolm Mason, M.D., F.C.S., D.P.H., Cambridge,
Chief Health Officer for the Colony.

Hon. Sir J. G. Ward, K.C.M.G., Minister of Public Health, Wellington.

APPENDIX.

REPORTS OF DISTRICT HEALTH OFFICERS.

AUCKLAND DISTRICT.

J. Malcolm Mason, Esq., M.D., &c., Chief Health Officer.

Department of Public Health, Auckland, 1905.

I HAVE the honour to submit to you the fifth annual report of the Auckland Health District, that for the year from the 1st April, 1904, to the 31st March, 1905.

In previous reports, Dr. Makgill, my predecessor, has deplored the absence of some tangible evidence that the expenditure of much energy in the interest of the public health of this district had not been without avail. The statistics of this period show a remarkable diminution in the incidence of infectious diseases. To what extent this favourable evidence results from an enlivened interest amongst the public and the various local authorities in the welfare of the public health; how much is due to the departmental efforts; and how much the unusual meteorological conditions of the past year have influenced or inhibited the growth of pathogenic organisms can only be judged when in the succession of years a long series of these statistics is obtainable for comparison. It will suffice at present to say that no one will deny that, using the word in its widest hygienic sense, Auckland and suburbs are "cleaner" now than at the time surveyed in the first annual report. No one, however, but the officer in charge of the district can be more fully aware that much, very much, has yet to be done to gain a few more steps on the approach to that bridge which leads from the past decadent stage in matters hygienic to a future wherein the Auckland Health District can claim superiority over others. Having in mind vital statistics favourable in character, and that the growth of that better feeling towards health legislation to which Dr. Makgill referred in his previous report still continues, it can hardly be said that the "bridge" may be one of "sighs."

VITAL STATISTICS.

BIRTH-RATE.

The Registrar-General's returns for 1904 give a mean for the four chief centres of 26·88 per 1,000 of population, Auckland being the highest with 29·80, thus maintaining the satisfactory increase noted with respect to the previous year. The position of Auckland City compares most favourably with the other cities:—

	Birth-rate per 1,000.
Auckland City	31·08
Wellington	26·77
Christchurch	27·53
Dunedin	22·40

The birth-rate for the whole colony was 26·94 per 1,000.

DEATH-RATE.

The returns for 1904 show a mean death-rate for the whole colony of 9·57, and for the four chief centres (including their suburbs) of 10·73, the latter being over 1 per 1,000 lower than last year, which in its turn was nearly 1 per 1,000 lower than its predecessor.

Auckland City and Suburbs.

Comparing Auckland City and Auckland and its suburbs with the average of the four centres of population for the past five years, we get the following result:—

	Auckland City.	Auckland and Suburbs.	Average of Four Centres.
1900	13·60	11·81	10·71
1901	13·10	11·80	11·50
1902	17·21	15·27	12 74
1903	12·97	12·23	11·73
1904	11·11	10·20	10·73
Mean for five years	13·60	12·26	11·48

The following are the death-rates, excluding the deaths of children under one year:—

	Auckland and Suburbs.	Average of Four Centres.
1900	8·26	8·27
1901	8·65	8·96
1902	11·10	9·56
1903	8·57	9·14
1904	8·11	8 30
Mean of five years	8·94	8·85

Infant Mortality.

The deaths in Auckland in 1904 of infants under one year to every 100 births are 6·93, being a remarkably low rate. For the past five years, the comparative table of deaths under one year to every 100 births, is as follows :—

	Auckland City.	Auckland and Suburbs.	Mean in other Three Centres.
1900	14·49	12·78	8·70
1901	11·57	9·88	9·65
1902	15·41	14·07	11·62
1903	12·08	12·15	9·01
1904	6·93	7·01	9·71
Mean of five years	12·09	11·18	9·74

The percentage of deaths under five years to the total deaths is as follows :—

	Auckland and Suburbs.	Mean in other Three Centres.
1900	36·22	24·01
1901	30·15	26·51
1902	38·47	30·37
1903	36·38	22·24
1904	24·61	27·40

It was pointed out in former reports that the infant mortality in the Auckland District compared very unfavourably with that of the other chief centres of the colony. This year's returns reveal the fact that while the birth-rate has been more than 4 per 1,000 higher in Auckland than the mean for the whole colony, and 5·5 per 1000 higher than the mean of the other three chief cities ; and while at the same time the death-rate of Auckland and its suburbs (10·20) is lower than the mean death-rate of the three other centres, (10·90) the deaths of children under one year are 2·70 below, and those of children under five years, 2·79 below, the mean of the other three centres.

The atmospheric conditions to note in this connection are that there was a heavy rainfall in March and April, 1904, accompanied by low temperature (that of March being 2.6° below the average), and this coming at the end of the summer probably had the effect of purifying the watercourses and reducing the tendency to zymotic complaints at that season of the year. The rainfall thereafter to the end of the year was fairly equally distributed, and coincided with the average of the past thirty-five years, while the temperature was uniformly below the average. The actual figures for the whole year are as follows : Rainfall, 1904, 45·50 in. ; average of thirty-five years, 42·83 in. ; temperature (mean), 57·8° Fahr. ; mean of thirty-five years, 59·4° Fahr.

The effect upon the death-rate in the case of zymotic diseases is exemplified thus : Diarrhœal diseases, lower than in 1903 by 42 to 24 = 18 ; measles, lower than in 1903 by 6 to 0 = 6 ; whooping-cough, lower than in 1903 by 17 to 0 = 17. (Other zymotic diseases showed an increase of 7, but left a balance of 34 in the total in favour of 1904.)

Causes of Deaths.

Zymotic Death-rate.

The last report noted an improved record in respect to the death-rate from this cause during 1903, and still further improvement during the period 1st April, 1903, to 31st March, 1904. This improvement has been well maintained, as shown by the following table :—

	Deaths in Auckland and Suburbs.	Total of Four Centres.	Proportion of Deaths in Auckland per Cent.
1900	93	214	42
1901	70	209	33
1902	165	356	46
1903	86	256	33
1904	52	202	26
Mean for five years	93	247	28

[Note.—All the foregoing figures are those for the year 1904 (1st January to 31st December), being required for purposes of comparison with the rest of the colony, for which the Registrar-General's returns are the only available basis. The figures following and the deductions therefrom relate to the Department's year, 1st April, 1904, to 31st March, 1905, unless where otherwise noted.]

In 1904 the causes of zymotic mortality were,—

Diarrhœal.—Twenty-four deaths only occurred in Auckland and suburbs ; the total in the four centres being 92 (26 per cent.). Twenty of these cases were of children under five years of age. As before remarked, this is a great improvement over last year, and a still greater improvement compared with the year before. The exceptional atmospheric conditions before alluded to are probably responsible for some part of these exceptional returns, but there can be no doubt that the efforts made by Auckland City and some of the suburbs in the direction of sanitation are bearing fruit.

Measles.—There have been no deaths from measles during the year.

Whooping-cough.—No deaths occurred in Auckland and suburbs, and only 3 within the four centres.

Diphtheria was responsible for 3 deaths in Auckland and suburbs, against 10 for the four centres ; the cases being 56 (for 1904) in the first-named area.

Typhoid.—There were 9 deaths in Auckland and suburbs, bearing about the same proportion as last year to the total for the four centres (47 per cent.), though the cases were fewer, 87 in 1904–5 to 148 in 1903–4.

Scarlet Fever.—But 1 death from this cause occurred in this centre.

Influenza.—In this centre 4 deaths occurred out of a total of 20 in the four centres.

Plague.—Two cases occurred, and 1 case died.

Tubercular Diseases of all kinds caused 55 deaths out of a total of 258 in the four centres, or 21 per cent. Again Auckland exhibits a favourable return in respect to death-rate from these diseases, more especially when it is considered that many consumptives are directed to the genial climate of Auckland.

Cancer.—Forty-five deaths out of 184, or 24 per cent., again a favourable comparison.

Nervous System.—Fifty-nine deaths out of 273.

Circulatory System.—Sixty-four out of 272, both favourable to Auckland centre.

Septic Diseases.—Auckland centre, 8 deaths, to 27 in the four centres.

INFECTIOUS-DISEASE NOTIFICATIONS.

In all 620 notifications were received during the year, these being 157 fewer than during the preceding twelve months Thus :—

	1904–5.	1903–4.	Increase or Decrease, Present Year.
Enteric	180	231	— 51
Scarlet fever	273	367	— 94
Diphtheria	63	71	— 8
Tuberculosis	86	92	— 6
Blood-poisoning	16	15	+ 1
Plague	2	1	+ 1
	620	777	— 157 dec.

The following table indicates the distribution of the cases :—

SUMMARY OF INFECTIOUS DISEASES NOTIFIED FROM THE 1ST APRIL, 1904, TO THE 31ST MARCH, 1905.

City, Suburb, or County.	Enteric.	Scarlet Fever.	Diphtheria.	Tuberculosis.	Blood-poisoning.	Plague.	Totals.
Auckland City	49	68	28	23	4	2	174
Birkenhead Borough	1	3	..	1	..	..	5
Devonport Borough	2	7	1	..	1	..	11
Grey Lynn Borough	7	8	4	2	4	..	25
Newmarket Borough	..	9	2	..	..	..	11
Onehunga Borough	5	9	1	..	..	..	15
Parnell Borough	..	12	2	4	1	..	19
Arch Hill Road District	..	4	1	1	1	..	7
Avondale Road District	2	2	..	1	..	..	5
Eden Terrace Road District ..	1	5	..	4	..	..	10
Epsom Road District	1	4	..	2	..	..	7
Mount Albert Road District ..	5	7	4	..	1	..	17
Mount Eden Road District ..	5	11	6	2	..	..	24
Mount Roskill Road District ..	2	..	..	..	..	..	2
One-tree Hill Road District ..	..	3	..	..	..	..	3
Point Chevalier Road District ..	7	2	..	..	..	..	9
Remuera Road District	..	7	3	1	..	..	11
Bay of Islands County	3	12	..	6	1	..	22
Coromandel County	..	16	..	2	..	..	18
Eden County	2	3	..	2	..	..	7
Hobson County	21	..	1	..	2	..	24
Hokianga County	..	..	..	1	..	..	1
Kawhia County	9	..	..	..	..	..	9
Manukau County	6	18	4	4	..	..	32
Mongonui County	15	..	..	1	1	..	17
Marsden County	2	..	..	..	..	..	2
Ohinemuri County	10	1	..	8	..	..	19
Opotiki County	..	..	..	..	..	..	..
Otamatea County	..	2	..	..	..	..	2
Piako County	..	..	..	3	..	..	3
Raglan County	..	..	..	..	..	..	..
Rodney County	..	..	1	..	..	..	1
Rotorua County	..	..	..	1	..	..	1
Thames County	10	10	1	4	..	..	25
Tauranga County	2	..	..	1	..	..	3
Taupo County	..	..	..	2	..	..	2
Waikato County	..	16	1	1	..	..	18
Waipa County	2	2	..	1	..	..	5
Waitemata County	..	2	..	2	..	..	4
Whangarei County	1	3	..	2	..	..	6
Whangaroa County	..	3	..	1	..	..	4
Cambridge Borough	..	6	..	..	..	..	6
Hamilton Borough	3	3	1	1	..	..	8
Thames Borough	2	2	1	..	..	..	5
Waihi Borough	1	9	1	..	..	..	11
Rotorua Town	4	4	..	1	..	..	9
Steamer trading with Auckland ..	..	..	..	1		..	1
Totals	180	273	63	86	16	2	620
City of Auckland	49	68	28	23	4	2	174
Suburban districts	38	93	24	18	8	..	181
Country districts	83	112	11	45	4	..	275
Totals	180	273	63	86	16	2	620

Monthly Analysis of same Notifications 1904–5.

—	Enteric.	Scarlet Fever.	Diphtheria.	Tuberculosis.	Blood-poisoning.	Plague.	Totals.
1904.							
April	20	33	1	7	..	2	63
May	12	33	9	5	4	..	63
June	22	27	7	3	..	..	59
July	7	32	7	11	2	..	59
August	10	22	6	6	4	..	48
September	13	20	5	8	1	..	47
October	15	21	5	8	..	..	49
November	8	9	7	9	..	..	33
December	5	16	4	17	1	..	43
1905.							
January	12	20	2	4	1	..	39
February	13	19	5	4	2	..	43
March	43	21	5	4	1	..	74
Totals	180	273	63	86	16	2	620

Enteric Fever.

There were 180 notifications of enteric fever, against 231 last year. This is a very favourable record, to be accounted for both by the atmospheric and social conditions before alluded to in regard to Auckland and its suburbs. Otherwise the features to be remarked are that the dry weather of May, 1904, was followed by an increase in the typhoid returns, and again, the exceptionally dry February, 1905, was followed by a similar increase. Though the figures available do not at present extend over a sufficiently long period to admit of the establishment of a standard monthly average, yet we now have records for four complete years, and the comparison of the typhoid notifications for 1904–5 bear the proportion to the average so obtained, as is graphically shown in Charts A and B.

A chart again accompanies this portion of the report, exhibiting as in the previous years curves presented by the rainfall, the temperature, and the cases of typhoid fever reported monthly in the Auckland Health District, and this year there is added a curve which represents the average number of typhoid cases per month during the past four years. (Chart C.)

Distribution of cases according to locality.

The City and Suburbs.

The notifications were 87, the deaths 6—a case-rate of 7 per cent., which is still a low case-rate.

The death-rate to the population of this area was 0·125 per 1,000 living, being below several preceding years, and below that for England and Wales (0·175).

In the city 49 cases were notified—or, 1·29 cases per 1,000 to the city population. The marked improvement in Devonport, referred to in last report, has been maintained. In Parnell the reduction of from 17 to 8 cases, commented upon last year, has been more than maintained, no cases having been reported during the year. Grey Lynn returns 7 cases, against 13 the previous year. Onehunga returns to its normal condition, with 5 cases, no special spot having given rise to trouble, as in the previous year. Arch Hill has escaped altogether. Point Chevalier is credited with 7 cases, all of which occurred at the Hospital for Mental Diseases, and contributed to the great rise to be noted in Chart A in March, 1905.

Country Districts.

The country districts record almost exactly the same number of cases as in last year—83.

Hobson County has the large number of 21 cases: 16 of these occurred among Natives resident near the banks of Kaihu River above Dargaville.

Kawhia County has 9 cases, against last year's nil; 7 of these were Maori cases.

Mongonui County has 15 cases, against nil in the previous year. Almost all of these occurred in the township of Mangonui. The special circumstances of this outbreak are referred to later on.

Ohinemuri shows a satisfactory decrease of from 15 to 10 cases.

Thames County has 10 cases, against 4 last year.

Hamilton Borough has 3 cases only, against 11 last year. None of the other country districts have records calling for special remark.

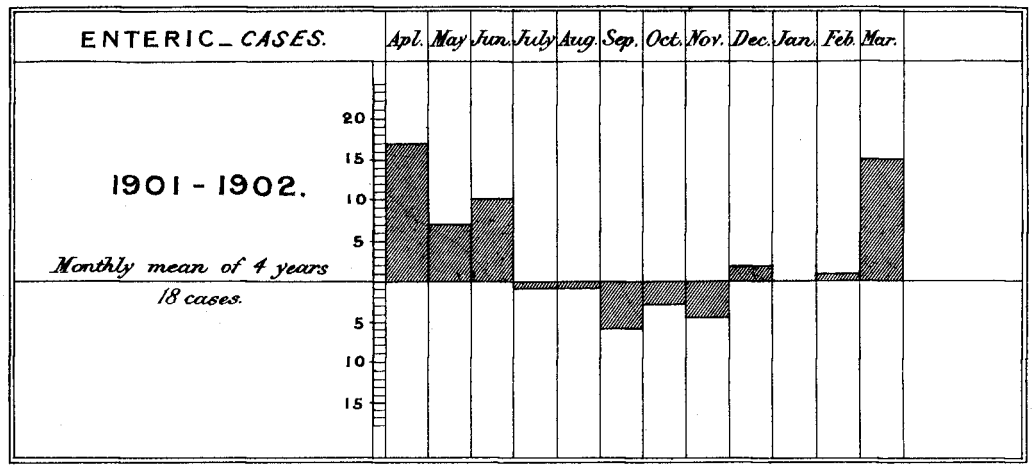
Scarlet Fever.

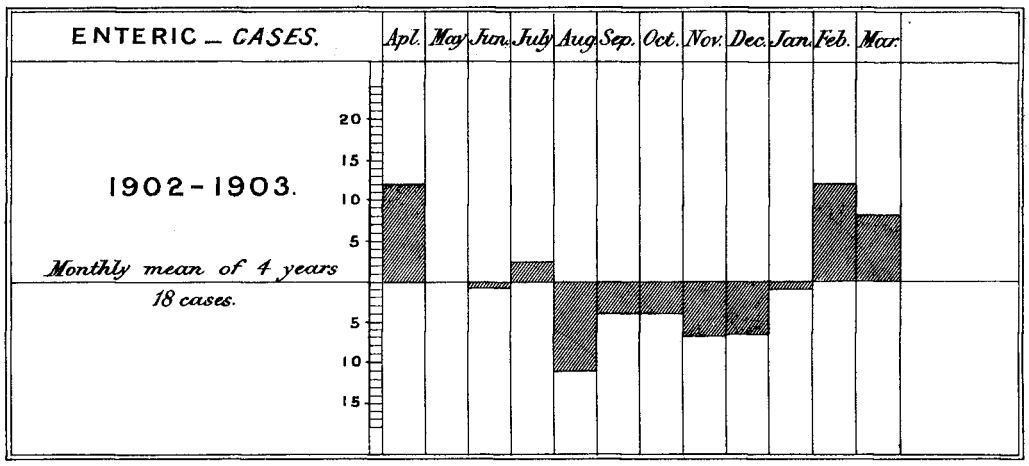
The epidemic of scarlet fever referred to in the last two reports cannot be said to have been maintained, the returns from city, suburbs, and country districts exhibiting more favourable figures. A comparison of the figures for the past four annual periods shows however that the epidemic has left a legacy of contagion which has to be contended with.

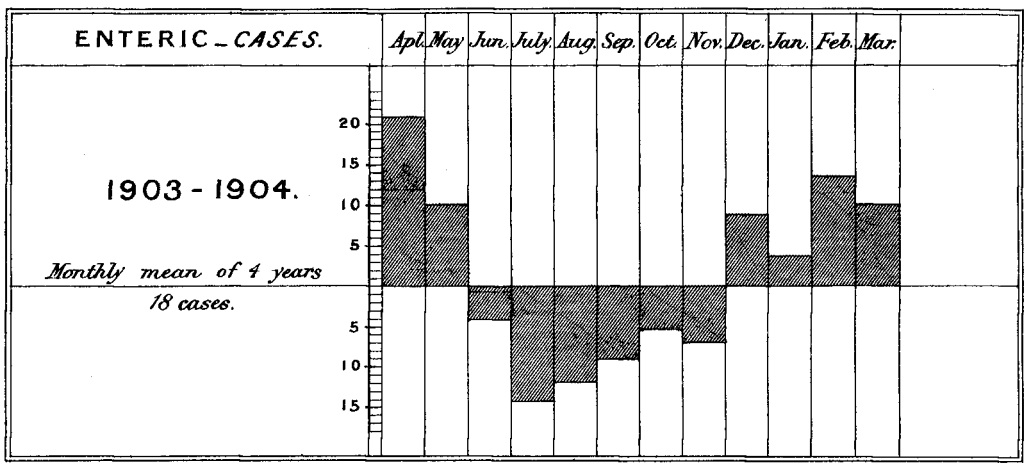
Scarlet-fever Cases.

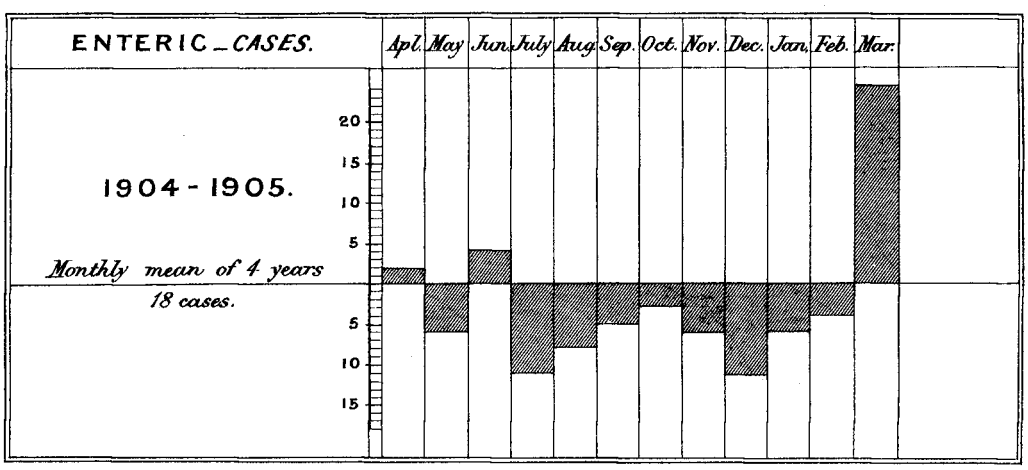
	Auckland City.	Suburbs.	Country Districts.	Total.
1901–2	35	33	49	117
1902–3	86	94	138	318
1903–4	110	112	145	367
1904–5	68	93	112	273

The localities which may be referred to as having an undue number of cases are: Newmarket, 9 cases; Onehunga, 9 cases; Parnell, 12 cases; Mount Eden, 11 cases; Coromandel, 16 cases; Cambridge, 6 cases; Waihi, 9 cases.



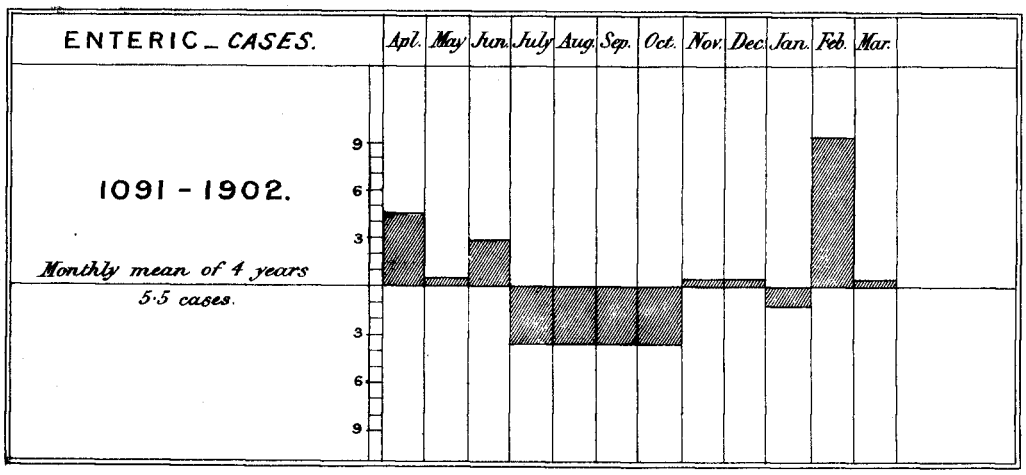


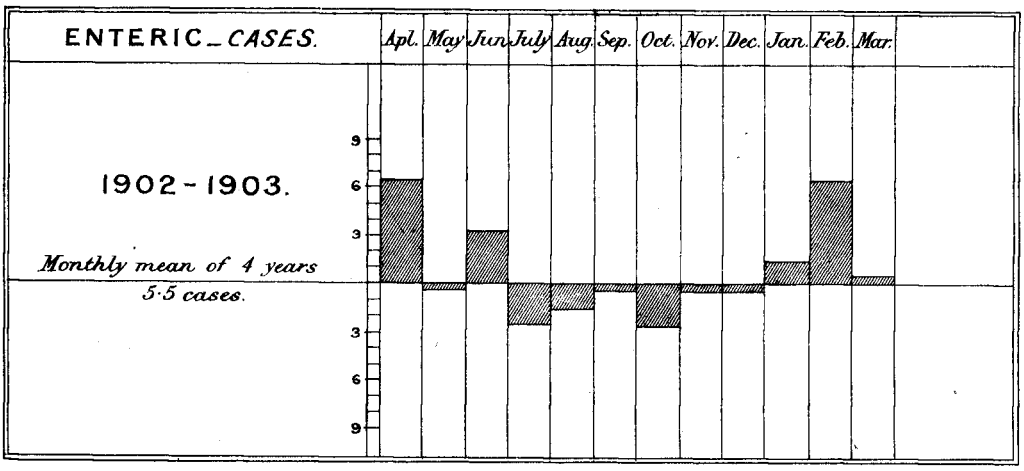


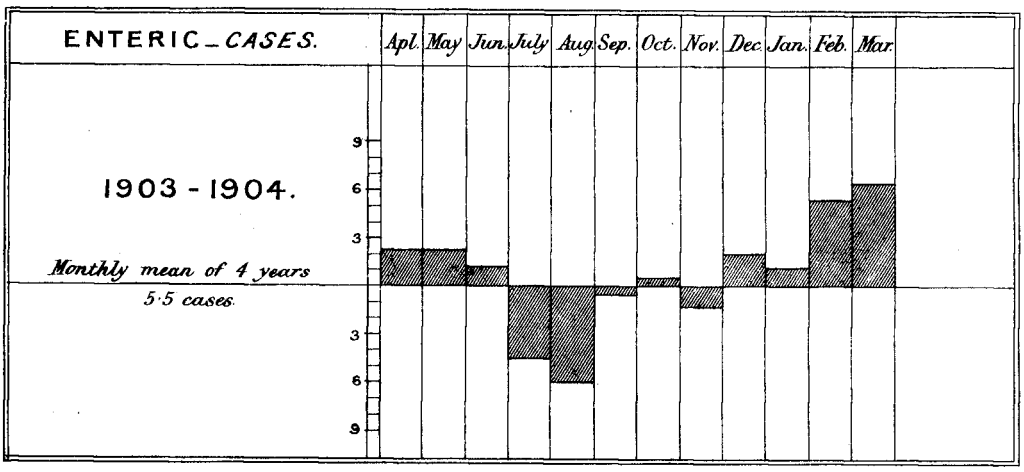


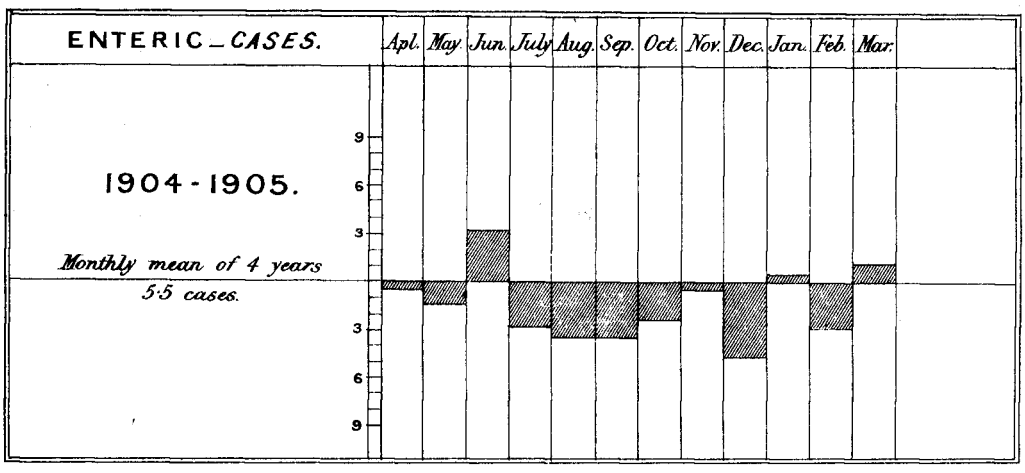
AUCKLAND HEALTH DISTRICT.—ENTERIC FEVER.

CHART A.—Comparative Tables for four years, showing cases per month above or below a calculated mean throughout four years, of eighteen cases per month.









AUCKLAND CITY.—ENTERIC FEVER.

CHART B.—Comparative Tables for four years, showing cases per month above or below a calculated mean throughout four years, of five and a half cases per month.

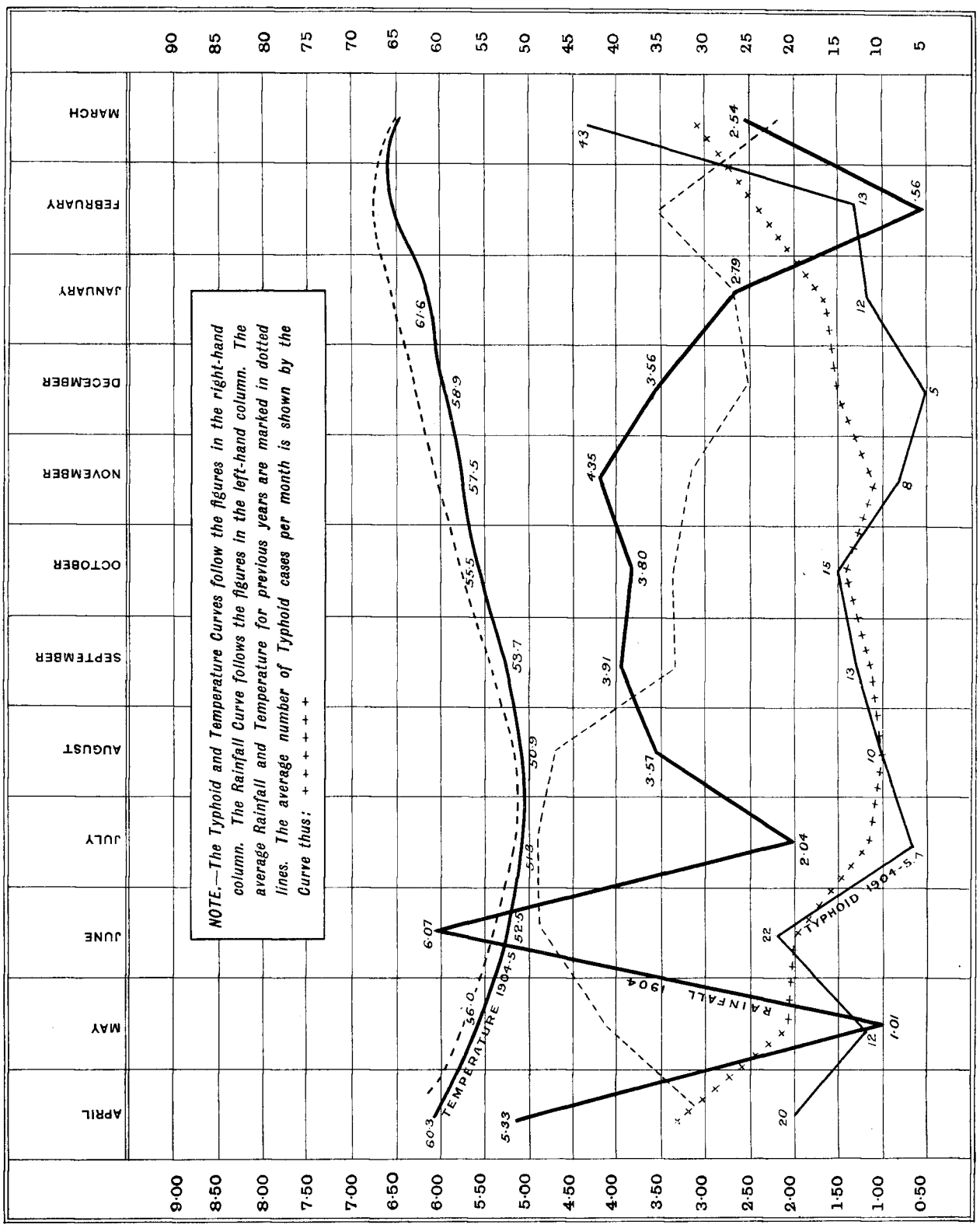


CHART C.—Showing Typhoid, Temperature and Rainfall Curves, April, 1904, to March, 1905.

Diphtheria.

Sixty-three cases have been notified, being 8 fewer than in the previous year. A comparison of last year with the three previous annual periods is of interest.

Diphtheria Cases.

	Auckland City.	Suburbs.	Country Districts.	Total.
1901–2	27	15	9	51
1902–3	68	49	34	151
1903–4	18	24	29	71
1904–5	28	24	11	63

Devonport has greatly improved. Mount Eden has 6 cases—2 of these, one fatal, were traceable to the polluted state of a neighbour's back premises. A prosecution in this instance was instituted, and the offender was fined the sum of £5. At least 3 cases in Auckland City are traceable to infection *ex* s.s. "Corinthic," which reached Wellington in November, after having experienced a serious outbreak *en voyage*.

Plague.

Four cases of suspected plague were notified. Of these two were diagnosed as bubonic plague; one of the patients died.

On the 25th April, 1904, I was suddenly informed by telephone that a young man, R. S., had died from plague at the Auckland Hospital. A *post-mortem* made immediately after death by Dr. Constance Frost, honorary bacteriologist to the Hospital, revealed the presence of the plague bacillus. Further bacteriological investigation at Wellington and this office upheld the correctness of the diagnosis. All precautions were taken at the Hospital. The body was cremated. The occupants of the house where the patient had lived were quarantined in their own home, and disinfection proceeded with. A contact was removed to Point Chevalier, where the Hospital Board had, with commendable readiness, put up temporary and sufficient accommodation.

Investigation showed that the deceased had helped to removed sixteen to twenty dead rats from the cellar of a Queen Street warehouse. The cause of death in these rats had not been suspected. R. S. suffered from the "abdominal" form of the disease, the virus having probably gained primary entrance by the gastro-intestinal tract; that the patient had eaten his food with unwashed hands after handling these rats supports this opinion.

On the 26th April a man presented himself at the Auckland Hospital for examination. He possessed all the symptoms of simple bubonic plague, and was isolated. His recovery was slow. This patient was a storeman, and he informed me he had, about a fortnight before, helped to remove about sixty rats which he found dead in the store after the few days' closing at Easter. Examination of one of the dead rats displayed a most typical instance of a plague-infected rat.

The store-rooms concerned in these instances are both on the west side of Queen Street, but far removed from one another. Inquiries being instituted it was found that almost every occupier along that side of Queen Street lately noticed numbers of dead rats on his premises. On being asked why he had not reported such an unusual state of things the invariable answer in each instance was "Oh, I thought some one was poisoning them." I need only note here that there is—and it is to be regretted—no known poison on the Auckland market which will kill twenty to sixty rats in one place at one time—and that place, too, where it had not been laid. When addressing the Auckland City Council upon these two cases and the need for precautions against rats I instanced the futility of hoping to diminish their numbers at payment of so-much—3d. or 4d.—per head. As an alternative, I urged "intense" cleanliness, which in other words amounts to the removal of the food-supply of the forager. Rats are but the effect of the accumulation of filth, not the cause. Subsequently, the Auckland City Council instituted a rubbish-collection service.

During the year, and subsequent to the examinations made in relation to these two cases, systematic examinations of dead rats have been engaged upon in the laboratory attached to this office. In all 232 rats were examined bacteriologically. While many exhibited matters of interest and some more or less doubtfully indicated the *Bacillus pestis*, only one was found which contained the typical bacilli and had undoubtedly died of plague. Due precautions were instituted at the establishment where this rat was found. The effort has always been to ascertain whence the dead rat came. Obviously it is little or no use examining for plague-rats which may have been studiously culled from the unsavoury precincts of the Auckland City abattoirs, for instance.

Small-pox.

Investigation and the subsequent history proved that a patient suspected to have small-pox did not really suffer from that disease.

Tuberculosis.

Notifications of tuberculosis do not present any considerable variation from previous years. Auckland City has fifteen fewer, and the remainder of the cases are widely and evenly distributed. It is certain, however, that, so far, no even approximately accurate estimation can be made of the number of phthisical persons in the district from the notification-list alone.

Blood-poisoning.

The sixteen cases notified are—with exemption of the four credited to Grey Lynn—widely scattered, are of various forms, and by reason of the uncertainty as to what should be so notified under this heading

the figures obtained are of no statistical value. The local interest of two of the Grey Lynn cases is dependent upon the fact that the house in question was situated in close proximity to the Auckland Sanitary Company's depot, and in the line of the prevailing wind. This depot has now been abolished.

Ptomaine Poisoning.

On the 30th December I was advised " of the many cases of ptomaine poisoning of visitors and others who lunched at the stewards' and adjoining booth " at the Auckland Agricultural Show, held on the 28th of the previous month. My informant was the husband of one of the partakers of lunch thereat, who had been seriously ill for over a month. At such a late date investigation was of little use. The police had no knowledge of the occurrence. What results were obtainable tended to show that a very large number of the persons concerned had suffered from more or less severe diarrhœa subsequent to the show. An effort to locate the infected articles of food was unsuccessful.

Local Sanitation.

Auckland City.

Concerning the 160 houses declared unfit for habitation, *vide* last report, 59 certificates were issued requiring that they be pulled down. 22 of that number have been thus treated. Many others included in the 160 have been demolished by their owners without further action on the part of the Department, as a consequence of the publicity given to their condition by Dr. Makgill's reports. There is a regrettable delay in enforcing the requirements of the Act against those persons who are defiant or unwilling to remove their dilapidated and insanitary buildings—much too frequent features of Auckland City. The answer to my letters on the subject always concluded to the effect that the matter is being placed in the hands of the City Solicitor. The real cause of the corporation's hesitation would seem to be a fear to enter upon the matter of the housing of the less fortunate in a whole-hearted and systematic manner, whatever the solution of the problem may be. Happily the advent and convenience of the electric tramway service has solved some features of the housing question without awaiting the slow awakening of vigorous action by the Council. Undoubtedly, and for reasons set forth in previous reports, it is advisable that the demolition of these landmarks of Auckland's past indifference to the want of decent habitations for her poorer classes should not be instantaneous in fulfilment; yet it is quite impossible to contend that the need for houses at reasonable rentals is a sufficient argument for the perpetuation of dilapidated hovels. This is the plea of at least one well-to-do owner of a bundle of four of these unhealthy homes, condemned by the Council but still marked " nothing done." One cannot help thinking that if the term " unfit for habitation " concerned the housing of some pampered poodle, its eloquence would appeal to many more than when poor, oft non-erring, humanity is at stake.

Early in the year a new contract was let for the removal of nightsoil from the city. A sealed-pan service was required. The implied intention of the early negotiations upon the disposal of the collected material was that the pans and contents were to be taken by steamer to Harkin's Point, below Riverhead, in the Waitemata County, and there all excreta were to be passed through a desiccator, by which a manurial poudrette was to be obtained. This has not been done—so-called disposal by ploughing into the land is supposed to be carried out. The contractor has admitted and has been prosecuted for tipping the pan-contents into the Auckland Harbour. Stringent conditions were entered in the Council's contract. Nine months almost have passed, and yet the contractor has not fulfilled these conditions in their entirety, how much has really been done properly it is hard to tell. If the old contract was " indescribably bad " it is to be hoped that the present is not appreciably worse. That the pans were to be cleansed by steaming is a condition of the contract, but the plant for doing so has not even been erected. I have in a report to the Council described their action as " lenient." It is the least that may be said, yet it was indignantly resented. The concluding lines of last year's report seem almost prophetic, " . . . . so that if this service becomes as bad as the former one it will be through criminal neglect on the part of the Council to enforce those conditions." The Council have threatened to, but have not yet enforced the full conditions.

That the Council should have been guided by this Department and not have let the removal of nightsoil to a contractor is well exemplified by the satisfactory result of the inauguration of a rubbish-removal service conducted by their own officials. Had the destructor been available, the essential triad of a modern scavenging service would have been put in hand at once—proper rubbish-receptacles, covered collecting-carts, destruction by fire. The necessary carts have been provided. A destructor was advocated by this Department four years ago; it is not yet completed, and will not likely be in working-order before the spring of this year.

The disposal of the collected refuse was a matter of difficulty. My consent was sought for many sites within the city; subsequent history showed that refusal was justified, for at a late date the use of the least objectionable of these, that at the bottom of Grafton Road, was stopped by a Supreme Court injunction, which citizens were compelled to obtain against the City Council. The only site that could be consented to was on a future road-line, on railway property, in Mechanic's Bay, and under strict conditions as to covering and manner of depositing the rubbish. For a time all went well, but as the " tip " extended, and its weight increased, the unforeseen squeezing of " Thames mud " gases from the sewage accumulated for forty or more years past in the bed of the bay rendered it impossible to do otherwise than recommend that the rubbish be taken out to sea. The Council accepted the advantage of the obvious weakness of section 53 *et seq.* of the Public Health Act of 1900, and only after much popular indignation was aroused did that recommendation receive fulfilment. Conveyance to and dumping beyond harbour limits is to be continued in operation till the destructor is in working-order. Its expense is its only objectionable feature.

How much the sections quoted are wanting in intrinsic worth is again shown by the inability to prevent the adoption of a scheme to eke out the scanty water-supply for street-watering by the use of sea-water. Every one admits that the inner-harbour waters are polluted to an unenviable extent, yet it is proposed to pump up this dilute sewage, and diligently spread it on the streets by water-carts in time of drought. A recommendation under this section, that instead of pumping up the sea-water from a point near the Auckland Dock, the influent pipe should be taken to the end of one of the wharves, and that pumping should be done at high tide, only drew the reply that " . . . . after giving the matter careful consideration, the Council has referred the whole question of obtaining salt water for street-watering and baths to the incoming Council, with a strong recommendation that the report of the City and Waterworks Engineers thereon be adopted. In the meantime, however, the water required will be taken from the dock entrance." It is to be sincerely hoped that no such scheme will be adopted, unless, if at all, under the conditions above specified.

The Waitakerei water scheme is now well under way. Your report in 1901 says, in regard to the Western Springs: " In respect to the water supplied, she (Auckland) is unquestionably far behind all other large centres. It is neither adequate in quantity nor is the quality above suspicion," and again, " An absolutely new source of supply must at once be obtained to insure that the people of Auckland may be provided with an ample supply of pure and wholesome water."

The contemplation of what becomes of all the disintegrated and liquid sewage which falls upon the surface of the County of Eden and does not reach the harbours loses some of its uncanniness as the eventful day approaches when the Western Springs water, of so doubtful an origin, shall be no longer available for drinking purposes or for the dilution of milk.

Analyses of city water in connection with the manufacture of mineral waters make it evident that he Nihotupu supply cannot well be continued unless sufficient filtration is provided.

No longer can Auckland be reproached for the present production of plumbing samples which, for example, twenty years ago were made impossible under the Christchurch Drainage Board. Though at first opposed by many, both plumbers and public, through lack of being educated to a modern standard, the sanitary by-laws now in force are being well received. Sound plumbing and drain-laying is now noticeable on all sides. The influence of the classes at the Technical School is making itself felt towards this desirable and none too early result.

The Council for the year have had a slight passage of arms with Mr. Gilruth, Chief Veterinarian, as to with whom lies the fault of the failure to provide proper abattoirs. It suffices to say that the matter stands at the end of the year much in the same position as at the beginning. There is no doubt that many of the butchers would prefer to continue at the present abattoirs, but from the food-supply standpoint, the statistics of condemned animals at the present city abattoirs, as far as I can learn, allow only of either of two conclusions—(1) that the animals slaughtered there are freer from disease than any others in the whole of New Zealand, aye, even in the whole world; (2) that carcases of diseased animals are permitted to pass on for human consumption, which under other and proper conditions of inspection would be numbered amongst the condemned.

Mr. R. L. Mestayer, M.Inst.C.E., has laid before the Council a comprehensive scheme of sewerage for the city. At the end of the year the Council are " obtaining a further report from Mr. C. Midgley Taylor, of London, who has been recommended by the Agent-General for New Zealand, on the advice of his consulting engineer, as a high authority on the subject of drainage."

Auckland Suburbs.

The greater Auckland movement would seem to be as far from realisation as ever, and that is very far. Last year amongst suburban bodies an effort was made to combine to secure a Sewerage Bill for the settlement of the Arch Hill Gully open sewer. That project was " ignominiously wrecked." This year it was my scheme for a sanitarily conducted nightsoil service: success was not mine. Next year the annual combination event would seem to be likely to take the form of placing a septic tank somewhere near the above-mentioned gully, and the partners to the scheme may be the Arch Hill, Eden Terrace, and Mount Albert Road Boards.

To return to this year's abortive effort. By means of their new by-laws to regulate the conduct of the nightsoil services, the Point Chevalier Road Board have at last succeeded in preventing their district being made a dumping-ground for the convenience of the various suburban bodies. The local bodies had had ample warning from this Department, but the shutting of the Point Chevalier outlet found them still unprepared For a time the services were in abeyance. It was proposed by the Department that a uniform sealed-pan service should be adopted, with conveyance by rail to the disposal ground. With the exception of that of the Grey Lynn Council, no live effort was made to render the conference effectual. Each local body seemed interested rather in ascertaining how to temporarily slip out of a pressing difficulty than in seriously entering into amicable combination to permanently safeguard the public health of their own and their neighbours' ratepayers. The nightsoil services for the suburbs are therefore as bad, in some cases worse, than last year, and the suburban bodies, generally speaking, will not move. If the glorified phœnix of a Greater Auckland is to arise from the ashes of inept suburban bodies, it is at least certain no one of these bodies will start the conflagration to provide the rejuvenating ashes.

Grey Lynn Borough.

It is remarkable that in this borough, the most progressive of suburban districts, the desire to further the Greater Auckland scheme would seem strongest.

The Council were forced to make provision for the disposal of nightsoil within the borough precincts. The work has been done so satisfactorily that no exemption can be taken to the procedure as a temporary measure. It is now proposed to instal a septic tank at the termination of the present borough sewer

near Cox's Creek bridge; to take the effluent-pipe well out into the tide; and, pending the completed installation of water-closets throughout the borough, to empty and flush down the contents of the present collecting-carts through the grit-chamber into the tank. The depot of the Auckland Sanitary Company was relinquished, to the great satisfaction of the immediate residents. A requisition was issued to cause the premises to be put in a sanitary condition.

The offal-treating works at the City Abattoirs were shut down mainly from commercial reasons. A good work was being done by them, though, as usual, people in the neighbourhood preferred the evil they knew not of—meat prepared amidst foul surroundings rather than accept without complaint the lesser evil of the odour incidental to all such works—and that too produced by the efficient destruction of much that goes to make up those objectionable conditions.

Intermittently recurrent cases of enteric fever in two houses at different parts of the borough called for drastic remedying of the drainage systems. A report upon one of these houses, from which two cases had been notified, both fatal in termination, contains the following: "Certainly I do not wonder at the unfavourable opinion held in regard to past drainage-work in and around Auckland if the drain I saw be a sample. From the yard gully-trap to the street can be seen the following: The spigots of some of the 4 in. pipes are damaged, it is doubtful if they were ever sound; a 3 in. pipe has been jockeyed in between two 4 in. pipes, neither here nor elsewhere has cement been used to form sound joints; all the joints are open, no packing whatever; straght pipes are used to get round a sharp bend, with the result that the unpacked joints become still more open, sewage, of course, must have escaped at these joints, thus polluting the whole track of the drain. A junction-pipe is laid to run slighty up-hill, and into one 4 in. limb it has the 3 in. spigot of the next house-drain pipe simply inserted, no packing or cementing. The whole work is a disgraceful example of criminally bad drain-laying. Your Council have ample justification for regarding this case as one of emergency, and I recommend the procedure in pursuance of section 50 of 'The Public Health Act, 1900.'" With commendable and unhesitating vigour both premises above referred to were attended to by the Council. It is worthy of notice that I am given to understand this drainage-work had been carried out in the past under a borough contract.

Parnell Borough.

Sanitary by-laws in Parnell are "popular." The reason is not far to seek. Burgesses, councillors, officials of the Council, pay no heed to such trifling things as standards for local government. Last year it was found necessary to inform the Council that one by-law was being disregarded, even by members of the Council. This year I wrote reporting the result of one short inspection, and instancing the breaking of not fewer than six by-laws under the very eyes of the Council and their inspector. No refutation has yet been received, nor have the Council asked their officers to explain their action. There is much that tends to detract from the virtues of municipal government in these few facts. To get over the difficulty of the nightsoil service already alluded to, the Council have by by-law required the fixing of water-closets throughout their borough. In the early future it will be necessary to place sewage-disintegration or "septic" tanks at the terminal of each sewer-line to prevent the pollution of the harbour.

Devonport Borough.

The Stanley Point drainage scheme has been submitted to a poll of ratepayers, carried, and is now being completed. With a view to improving the condition of stables throughout the borough, the Council desired me to inspect thirteen of these and to submit recommendations. These were forwarded in pursuance of section 72 of the Public Health Act. The Council now propose taking legal proceedings against all who have not abated the nuisance in the manner specified in the requisition. The result of such action will be of inestimable value as a guide on future occasions. Amongst Auckland local authorities the Devonport Borough Council has taken the lead in this matter. Two certificates relating to dilapidated buildings have been issued.

Newmarket Borough.

The Council having obtained the recommendation of the District Health Officer, and the approval of the Hon. the Minister, are obtaining a loan for £2,000 to be spent on an extension of the sewerage system of the borough. It ought to be soon in course of construction.

Having infringed the open-space sections of the Municipal Corporations Act a builder was called upon to alter his buildings. As he readily complied with the request the Council did not proceed with the enforcement of the penalty "not exceeding £20" for such infringement. The nightsoil service is here a source of great complaining. All Newmarket's troubles, and they are many, would be simplified by union with the city.

Onehunga Borough.

Failing to receive amicable consideration from the Council, the Mount Roskill Road Board were forced to take action under their new by-laws against the Onehunga nightsoil contractor. At the first trial judgment was given for the contractor; a second prosecution before Mr. R. M. Dyer, S.M., ended in the contractor being fined and ordered to pay the costs, and the Magistrate held that the by-laws were not unreasonable—the point upon which the first action had failed. The sewerage scheme is hung up through inability to raise the large sum of money required under the loans to Local Bodies Act. I addressed the Council upon the advisability of ending the nightsoil-service trouble and starting the sewerage scheme in one move by putting in the sewerage-tank so that the nightsoil-carts might be emptied thereinto, as proposed already for Grey Lynn. Later the sewers might be extended from the tank throughout the borough. No action was taken. Certificates condemning three buildings were issued. One has been removed.

Arch Hill and Eden Terrace Road Districts.

Since the 13th August, 1902, these Boards have had before them the need for the more efficient conduct of the nightsoil-removal service. Little has been ventured—nothing done. On the 6th February, 1905, the Arch Hill Road Board gave notice to the City Council " to discontinue the discharge of their sewage into the district "—that is, into the Arch Hill Gully.

Mount Eden Road District.

I do not think there is any local authority in the Auckland Health District whose responsibilities are so great, from a population and geographical standpoint, that treats public-health matters with equal indifference. A nightsoil service is being paid for by the ratepayers, in which sealed pans disinfected by steam is a specification in the contract; it is to terminate next year. Inspection of the steaming plant showed that it had probably never been used, in fact, the firebars were festooned with cobwebs. No steps have as yet been taken to provide a new service. So called " septic tanks "—really an old enemy, the overflowing cesspool, but with a glorified name—are being permitted without comment by the Board. No effort is made to fulfil section 50 of " The Public Health Act, 1900," little or no attention has been given to my predecessor's or my own recommendations on sanitary matters. Since the Road Board would seem unable to effect the necessary hygienic requirements of a rapidly growing district, it is to be hoped union with the city or some alternative will suggest itself to the Board or to the ratepayers.

Mount Roskill Road District.

The Road Board of this district is to be congratulated on its successful efforts to prevent the district being made a nightsoil-disposal ground for various local bodies, except under such stringent conditions as would insure the residents against being subjected to the obnoxious conditions which so long prevailed at Point Chevalier.

Point Chevalier Road District.

The Board of this district took legal proceedings against the suburban nightsoil contractor under their new by-laws, as a result of which their district is now free from such contractors and their insanitary ways.

Mount Albert Road District.

The question of the erection of second-hand houses has cropped up here. I have advised the Board that the only way to circumvent such inroads is by the making of a by-law to regulate the erection of buildings. In this instance an old house was removed from the city and re-erected in the district. As with others an efficient sanitary service or a sewerage scheme is badly needed here.

One-tree Hill Road District.

The Board have, in response to a recommendation from Dr. Makgill, passed a set of by-laws to prevent overcrowding. Sections 1, 2, and 3 read—

" 1. No new dwellinghouse shall be erected in the One-tree Hill Road District upon a site of less area than $\frac{1}{4}$ acre.

" 2. No new dwellinghouse shall be erected in the One-tree Hill Road District upon a site not having a frontage of at least 66 ft. to a public or private road.

" 3. Every person who erects a new dwellinghouse in the One-tree Hill Road District shall provide at the side or at the rear thereof an open space, exclusively belonging to such house, and of an aggregate area of not less than 600 square feet."

There seems to be some doubt as to whether such a by-law can stand legally; it is to be hoped it will, more especially in view of the possibility of the acceptance of the Rating on Unimproved Values Act. The establishment of a boiling-down works was consented to at a site on the Manukau Harbour. The position and surrounding circumstances are such that I believe no offence will be caused. The Onehunga Borough Council were a deputation to ask this Board to reconsider the matter. The works are now in course of erection.

Remuera Road District.

Mr. Mestayer has laid before the Board a sewerage scheme to cost £15,575, providing for a population of ten thousand. He proposes to divide the whole district into separate areas, each individual area of sewerage to have its termination in a septic tank; the effluent of the latter is to run into tidal waters, and purification thereby effected by the " aeration by dilution," as distinguished from the " aeration by filter-bed " method.

Country Districts.

An attempt was made to inaugurate " the scheme, now working so admirably in the Wellington Province, of combining for the purpose of inspection." A start was made with Manukau County. Here local public-health matters are in the hands of twenty-eight Road Boards, having a total population of 12,306. Each local body believes itself well provided with its own local sanitary expert, whoever he may be. The impossibility of getting any systematic work done under such a multiplicity of experts must be quite manifest. My proposal was to have one Sanitary Inspector for the county, whose salary and travelling-expenses were to be contributed to on a population basis by these local authorities. The cost was worked out at a fraction over 3d. per head per annum. It will be observed that neither the Auckland suburban bodies nor many of the county authorities have yet learnt the value of that ancient precept, " United we stand, divided we fall." Twice has the proposal been deferred for six months.

Mongonui County.—A serious outbreak of enteric fever occurred in Mangonui in May, 1904. In 1901 typhoid had been here, and no doubt gave rise to this recrudescence. Fifteen cases were notified, three of these ended fatally. Inspector Winstanley had the whole matter in hand, and with the local constable succeeded in having many insanitary features altered or removed.

Hobson County.—In all twenty cases of typhoid occurred, pakeha and Maori, mainly the latter, among the Kaihu River settlements, beginning from Kaihu itself at the upper end. The causation of this outbreak was undoubtedly by case-contacts. Ignorance of the most common-sense principles of the prevention of the spreading of infectious disease was widely evident. Dr. Pomare made a detailed investigation of the outbreak. Having regard to the reason for the many persons affected, it was not deemed necessary to go to the many extremes advocated by some of the inhabitants for the preventing of such an outbreak in the future.

Dargaville is now a progressive and growing town, and it is the intention to urge the initiation of the various sanitary systems necessitated by the increase of population. Much local jealousy exists between the several towns on the Wairoa River, and this renders it difficult to advise the course to be adopted. For though it is obvious what is needed in Dargaville may never be required in Aratapu, yet for the reason above stated all these towns expect to be dealt with on similar lines, otherwise little is likely to be accomplished. One way out of the difficulty would be that Dargaville be constituted a local authority separate from the Hobson County Council. The Hobson County Council is the sole authority in the county; there are no Road Boards; the population is about five thousand. This may be contrasted with Manukau County and its twenty-eight struggling units for a population of about 12,500.

Whangarei Borough.—The drainage scheme has not been proceeded with. I have hopes that if this be attempted in sections, it may be possible to report greater progress next year.

Thames Borough.—The older part of this town is in a very dilapidated state. Most of these buildings are unused. It is only in the event of a "boom" that they may be suddenly desired for human habitation. Steps will be taken to prevent their being used unless the most thorough repairs have been previously made.

Waihi Borough.—The population is rapidly increasing here. A new water-supply has been obtained, and reticulation is almost completed. The sanitary services are not satisfactory. A report on the sewerage of the town is being prepared. Plans have been prepared for the municipal abattoirs, the question of the disposal of offal is a matter for much consideration.

Ohinemuri County.—Much time has been given to an endeavour to solve the problem of a more than usually offensive boiling-down works on the Paeroa–Karangahake Road. The owner having purchased a larger allotment it will now be possible to move his works to a site less objectionable to his neighbour and the users of the road.

Paeroa.—It is anticipated that this town's population will remain stagnant once the railway runs through to Waihi. It has appeared to me wiser therefore to postpone any recommendation to the Council to engage upon a necessarily expensive drainage scheme for the town.

Te Aroha.—An extension of the drainage scheme is being proceeded with under the superintendence of the Department of Public Works.

Hamilton Borough.—Mr. Boylan, C.E., has been instructed by the Council to prepare a drainage scheme for a portion of the borough. The amount to be spent has been limited to £2,000. A "separate" system of sewerage is to be constructed, terminating in a centrally placed septic tank, the effluent of which shall discharge in the Waikato River at a point 3 ft. below lowest summer flow. The amount of tank-effluent to be discharged in proportion to the volume of fresh water in the Waikato at this point is comparatively trifling; "aeration by dilution" in such a large volume will be complete in a very short course of the river; nevertheless, I have advised the Council that the tank and effluent-pipe pipe shall be built in such a position that, at any future time should it be thought desirable, the effluent can be taken in a pipe-line farther down the river and there subjected to natural or artificial filtration before being consigned to the Waikato River for final purifying and disposal. A nightsoil service by contract was attempted; owing to inefficient by-laws and an early defeat in the law-court in an endeavour to compel the acceptance of the service, the system has completely failed. The inauguration of the service will be again attempted, when it is to be hoped the Council will concur with the Departments' advice—not to leave the performance of the work to a contractor.

Cambridge Borough.—This year a nightsoil service was installed. Mainly as the result of the attention to the minutest detail by His Worship the Mayor, Mr. Wells, this service has been satisfactory from the very beginning, a noticeable fact being that many householders accepted the service who were not otherwise compelled to do so. I have not yet seen anywhere in the colony, Rotorua excepted, a sanitary service so well performed as here. It has become stock advice with me to urge other local authorities to "see Cambridge" before they propose to enter upon a similar municipal enterprise.

Many consumptives, and in all stages and with varying symptoms of the disease, come to this town by reason of the celebrity it has held for years past as possessing meteorological conditions well suited to produce permanent improvement in those subject to tubercular ailments. Something is necessary to prevent a continuation of the present slipshod way in virtue of which one sees the unfortunate sufferers lodged indiscriminately in all parts of the town, even in hotels and boardinghouses. Unfortunately the Cambridge people have emphatically indicated they prefer either of two manifest extremes to any fair and human mean. These extremes are: (1) the past and present routine by which the consumptive is housed anywhere and under any conditions; (2) that asked for in a petition from the borough—namely, that all and every consumptive who desires the comfort and care of a properly conducted home must seek such beyond the confines of the borough. The first extreme is unfair to the healthy members of the community, and is undoubtedly damaging the reputation of Cambridge as a holiday resort; the second is uncharitable, inhumanly selfish, and quite unwarranted, since consumption is not an intensely infectious disease, and is one which does not affect the unfortunate sufferer for a day or a week but mayhap for years. The happy mean in my judgment, proposed by

myself in an address to the Council, was that the consumptives, who *will* come and must be allowed to enter and live in Cambridge Borough, should be housed in recognised homes under conditions which would give them the best possible chance of deriving some benefit from their stay, and, on the other hand, would protect the inhabitants from uncomfortableness or infection. The middle way was avoided, not because of any logical unsoundness, but on account of a preponderance of that feeling towards less fortunate and less happy human beings which measures itself only at " per foot on the frontage."

Rotorua Town.—The principal outcome this year has been that a set of by-laws is being drawn up for the Town Council by the Department to regulate sanitary matters in their entirety; and, because of Rotorua being a resort for tourists accustomed to the best of sanitary methods, it is intended that these by-laws shall not err on the side of wanting strictness and up-to-dateness.

It has not been my lot before to see sewerage-work done in this colony with such care and attention and subjected to such severe tests as the work now being constructed under the personal charge of Mr. Hanna, of the Public Works Department.

A new water-supply for the town has been authorised by the Government. With this new supply, good sewerage, and good house-drainage, Rotorua may claim to be really a health resort.

GENERAL MATTERS.

Quarantine Regulations.

During the year there has been no inspection of passengers other than that by the Port Health Officer on arrival of the ship and issuing of certificates for further examination under these regulations. Dr. Sharman, Port Health Officer, desired consultations with me on two occasions before granting pratique. During my absence in the country on another occasion Dr. F. W. Gordon acted for me.

Owing to the new harbour-works the shed for the fumigation of mails had to be moved to the Hobson Street Wharf. No fumigation has been performed in the shed so far.

Harbour-pollution.

Most of the sewers in Auckland, even those lately constructed, have been designed on the old-fashioned " combined system "—they carry both sewage and storm-water. These contents are conveyed in the raw untreated condition as far as the foreshore of the harbour. It is admitted by all that the inner harbour—that in the immediate neighbourhood of the wharves—already seriously polluted, is becoming increasingly foul day by day, as population and consequently sewer-contents increase.

Surrounded with difficulties on all sides and of varying characters in carrying out the removal of nightsoil by the pan or " conservancy " system, most of the suburban bodies have turned their thoughts to the " water-carriage " system. In all such systems the Waitemata or Manukau Harbour-waters are the natural final disposal-grounds—always excepting those small systems in Mount Eden and elsewhere, where volcanic caves, natural or artificial, are ostensibly the receptacles of the sewage, the final disposal of which, however, is most likely explained by the excess of nitrates in the city water-supply. The position as to sewage-disposal in harbour-waters is perhaps best here stated in the form of an extract from a letter addressed by me to the Auckland Harbour Board, a copy of which was sent to the local bodies interested.

" In continuance of my letter of the 6th July [1904], and your Board's subsequent action in notifying the local authorities concerned that they must discontinue the discharge of offensive sewage into the harbour, may I suggest the need of defining under what conditions sewage may be permitted to mix with harbour-waters. It is not practicable to cause all sewage to be discharged into deep water outside harbour-limits. The various local governing bodies would, I think, be better able to direct future efforts to carry out your Board's requisition if some standard were fixed. Some local authorities have expressed it to me that they hesitate to act fearing your Board may in the future refuse to continue to sanction such works as may be to-day engaged upon with a view of fulfilling—to the best of present-day knowledge—the requirement that sewage must be discharged into the harbour so as not to be offensive. I respectfully suggest a standard on the following lines for your Board's consideration :—

" 1. Definition of word ' sewage ' : Sewage shall include solid and liquid excreta of man, the liquid excreta of animals; waste waters from sinks, lavatories, baths, &c., waste water resulting from trade processes.

" 2. That no sewage be permitted to be discharged in the raw or untreated condition into the harbour at any point within the area controlled by your Board.

" 3. The treatment to which raw sewage must be submitted before discharge into the harbour shall be such as to insure the fulfilment of the requirements of section 72, subsection (9), of " The Public Health Act, 1900," and section 283 of " The Municipal Corporations Act, 1900.'

" 4. No sewage, be it in the raw or untreated condition or an effluent after subjection to the treatment required by clause 3 shall be permitted to be discharged within the limits defining the future inner harbour, that between the east and west breakwaters of your Engineer's permanent harbour scheme.

" 5. That, elsewhere than specified in clause 4, the point of discharge of treated sewage, or effluents, shall be below low water, or where the length of foreshore is great—that is, the distance between H.W.S.T. and L.W.S.T.—then discharge shall be at such distance from the H.W.S.T. mark as your Board shall decide upon in each individual case."

Sewage-Disposal.

As during last year a very great amount of time has necessarily been given to persons seeking advice upon " septic tanks." I use the word " necessarily " for the reason that, convinced of the need of the greatest caution where such installations are proposed, I have, as far as possible, declined to take the responsibility of advising unless I have personally examined the proposed site and all the surround-

ing circumstances. I need not reiterate the reasons for these precautions, they are to be found in the reports of my colleagues in the Department during the past years. At Waihi and Paeroa Schools septic tanks with subsurface-filtration and subsoil-irrigation systems have been installed by Mr. Mitchell, architect to the Education Board. Some suggestions from this Department were accepted in these installations. The results are agreeably satisfactory. It is my intention to report at length next year on the modes of disposal of sewage in the Auckland Health District.

Law Points.

The reader of section 53 of "The Public Health Act, 1900," could not but be impressed with the powers of the District Health Officer when these words catch his eye: "shall, when the District Health Officer so recommends." Unfortunately, the section loses all its value from the administrative point of view, because there is no actual power given to any one to compel the local authority concerned to carry out what the District Health Officer may have recommended, however reasonable or sound that recommendation may have been. The section as it stands is therefore worthless, and, when it suits a local authority's mood, it is possible for it to use the section *aut tempores aut mores*. We have these concrete instances. For rubbish-disposal in Auckland City a destructor has long been recommended—four years have passed and it is not yet in use. When the Mechanics' Bay nuisance was at its worst the City Council declined to "shall" when recommended to take the material out to sea, while at the same time and almost in the same breath, some Councillors desired to shift the responsibility by plaintively pleading they were compelled to go to Mechanics' Bay because the District Health Officer had recommended that site. In this connection I have referred above to the watering of streets with sea-water.

It seems to me that to make this section satisfactory to all concerned something in the nature of the Local Government Board inquiry of the Old Country is needed. Out here a Magisterial inquiry might be held after a certain time had elapsed from the date of the District Health Officer's recommendation; at such inquiry evidence might be produced on both sides to show why the work recommended shall be carried out, or, to the contrary, as the case may be.

"Removing nightsoil" has been declared to be an offensive trade. It is difficult to ascertain how much of the ordinary nightsoil-removal service is comprised in the term "removing nightsoil."

The Newmarket Borough Council did not obtain a poll of ratepayers for the extension of their drainage scheme. They received the recommendation of the District Health Officer and the approval of the Hon. the Minister under section 66 *et seq*, of the Public Health Act, and then proceeded to obtain the necessary money under the Loans to Local Bodies Act; the loan was declined. Acting on the advice of their solicitors they decided to borrow the money from a source outside Government circles. Though the section of the Act allows of this construction, I do not think it is generally known that the money may be so obtained.

Hospitals for Infectious Diseases.

Reporting to the Auckland Hospital and Charitable Aid Board under date 4th July, 1904, I stated that I had found that diphtheria and scarlet-fever cases were being nursed in the one building and by the same nurses. The Board readily complied with my request for separate accommodation, as a result of which a temporary diphtheria ward, containing six beds, was erected. In terms of a resolution of the City Council, 21st July, 1904, granting permission for the use of the Domain site for a period not exceeding two years, the Board promised the City Council that within that time the Hospital buildings would be removed off the Domain.

The position as regards future proceedings is best put in the form of the summary which I submitted to the Hospital and Charitable Aid Board on the 24th October, 1904: "That the accommodation for scarlet fever and diphtheria on the Domain is temporary, and must be removed within two years. That at least as much provision as now exists—viz., twelve beds—be within that time made for scarlet fever at Point Chevalier Hospital, because there is no available space on the real Hospital grounds. That, as soon as Point Chevalier is quite ready, no plague suspects will be treated in the existing "plague observation cottage" on the Hospital grounds. That, when the "plague observation cottage" shall have been released, this cottage will be altered so as to take cases of diphtheria. That, provision having thus been made for scarlet fever and diphtheria, the buildings on the Domain will cease to be occupied, and thus the City Council may see their hopes realised by the immediate disappearance of these buildings. That the existing provision for plague at Point Chevalier must be extended so as to be ready to withstand a possible small-pox outbreak—technically, such a provision will be termed that for dangerous infectious disease. That adequate and proper provision must be made for two classes of consumptives—(*a*) those who are awaiting their turn for admission to Cambridge Sanatorium; (*b*) those for whom the Sanatorium treatment unhappily will not avail.'

The next step is that the Hospital Board will put before Parliament this year a short Bill enabling them to borrow a sum of £25,000, on the security of the Hospital endowments, for the purposes, *inter alia*, of building, and the better equipment of their hospitals.

I offered to deliver a public lecture on the "Need for the more Equitable Treatment of Consumptives in the Auckland Health District." The Chairman of the Board, Mr. McLeod, however, informed me that he believed sufficient money would be obtainable under the new Act, rendering a direct appeal to the public unnecessary.

In progressing Waihi, accommodation for infectious diseases and consumptives is absolutely necessary. The local Board of Trustees are negotiating for a site.

The country hospitals in the district need ample provision for the consumptive, but I do not hope for any satisfactory effort being made until Auckland and suburbs are fully provided for. These hospitals look with suspicion upon any recommendation to build annexes, they fear that Auckland may propose to get rid of her cases by sending them to such country hospitals, where accommodation may be provided. This objection will disappear when the proposed buildings at Point Chevalier are completed and occupied.

Private Hospitals.

Thirty-three applications for licenses have been lodged. One of these has been rejected, two have been withdrawn, and two were informed that they need not obtain a license. Eighteen inspections have been made, and six licenses issued. I have given and intend to give this work my individual attention; it is difficult to find time for extra work in addition to the general routine of this large district; for these reasons the numbers dealt with to date are small. Once the initial inspections have been performed and licenses granted, reinspection work will not occupy so much time.

Midwives Act.

Many inquiries are made at the office as to the conditions for registration under this Act. It is, I think, a matter for regret that it has not been made a requirement for a license to conduct a maternity private hospital or home that the applicant should have gained admission to the Midwives' Register under this Act.

The Office.

Remembering that the offices are none too healthily situated—as a police-station they were abandoned by the Police Department—negotiations were entered upon for a very suitable suite of rooms. The present finds us still in the old police barracks, but with many renovations; these have added to the comfort, appearance, and sanitary conditions of the office. An additional room has been brought into use as the clerks' office, the former one having been found too small for the constantly increasing work of the Department.

Office Work.

In addition to dealing with large amounts of correspondence and details connected therewith, the keeping of statistics, the compilation of by-laws, and general office administration, 518 notices *re* disinfection in connection with infectious diseases were issued to local authorities. Seven hundred and twelve tubes of vaccine lymph were distributed to medical men and public vaccinators.

Medical and physical examinations were made as under:—Prisons Department, 2; Public Works Department, 2; Post Office Department, 8; Marine Department, 2; Tourist Department, 1.

Fifty-eight applications have been received for admission to the Cambridge Sanatorium, and many examinations have been made in these cases.

Mr. Leplastrier has, with great care and much labour, instituted a general filing system, which has worked well; he has also acted as local agent, as it were, for the Cambridge Sanatorium, work to which he has willingly given much extra time. It has been quite a pleasure to work with the clerks, Mr. Leplastrier and Mr. Symons; not only have they done their work well, but in their ways of doing it they have tended to lighten my own.

I have initiated Mr. Symons into the mysteries of laboratory work, and have had the greatest possible assistance from him in the examination of the specimens below-mentioned.

Laboratory.

The following are details respecting specimens submitted to this office for bacteriological or other examination:—

Date.	Specimen.	Suspected Condition.	Result of Examination or Disposal.
1904.			
April 8	Sputum	Tubercular	Positive.
,, 8	,,	,,	,,
,, 20	Ileocæcal valve	Carcinoma	Wellington Report: Positive.
,, 20	Gland of axilla	Open	,, Simple hypertrophy.
,, 20	Mamma	,,	,, Ademo-carcinoma.
,, 21	Swab	Diphtheric	Negative.
May 6	Pus	Gonorrhœal	,,
,, 10	Sputum	Tubercular	,,
,, 30	Urine	Sugar	Positive.
July 4	Swab	Diphtheric	Negative.
,, 4	Sputum	Tubercular	,,
,, 4	,,	,,	,,
,, 14	,,	,,	Positive.
,, 14	Mamma	Myoma	Wellington report: Myomatous carcinomatous.
,, 25	Tissue from hand	Epithelioma	Wellington report: Epithelioma.
August 20	Urine	Uric acid	
,, 27	Sputam	Tubercular	Too far advanced for examination.
,, 23	Sections alveola growth	Fibroma, &c.	Wellington report: Papilioma.
Sept. 7	Urine	Tubercle	Negative.
,, 3	Sputum	,,	,,
,, 23	Pus	Open	Nil. Decomposed.
,, 29	Mamma	Carcinoma	Wellington report: Carcinoma.
,, 30	Sputum	Tubercular	Negative.
,, 30	,,	,,	,,
Oct. 3	,,	,,	,,
,, 4	,,	,,	,,
,, 5	,,	,,	,,
,, 6	Fragment of finger	Malignancy	Wellington report: No malignancy.
,, 11	Sputum	Tubercular	Positive.
,, 13	,,	,,	Negative.
,, 13	,,	,,	,,
,, 14	,,	,,	Positive.
,, 19	Urine	Pus and tube-casts	Pus-cells; negative for tube-casts.
,, 23	,,	,,	,,
,, 24	Sputum	Tubercular	Negative.
,, 25	,,	,,	,,
,, 25	Vomit	Hydrochloric acid and sarcenæ	,,
Nov. 1	Glands	Malignancy	
,, 3	Sputum	Tubercular	Negative.
,, 3	Seminal	Spermatozoa	

Date.	Specimen.	Suspected Condition.	Result of Examination or Disposal.
Nov. 19	Sputum	Tubercular	Positive.
„ 22	„	„	„
„ 22	„	„	Negative.
„ 23	„		Positive.
„ 23	„	„	„
„ 26	Human hand	Malignancy	Wellington report.
„ 27	Blood from cat	Open	Negative.
Dec. 1	Pleuritic effusion	Tubercle or pus cells	Pus-cells only.
„ 7	Sputum	Tubercle	Positive.
„ 7	Septic-tank effluent	Open	Wellington report.
„ 16	Sputum	Tubercular	Positive.
„ 24	„	„	Negative.
1905.			
Jan. 4	„	„	„
„ 4	Cream	Adulterant	Colonial Analyst's report.
„ 3	Urine	Bright's disease	Not traced.
„ 15	Sputum	Tubercular	Negative.
„ 12	„	„	Positive.
„ 28	Urine	Uric acid and tube-casts	Tube-casts present.
Feb. 1	Sputum	Tubercular	Negative.
„ 3	„		„
„ 4	„		„
„ 6	Vomit	Cancerous	Wellington report.
„ 6	Olive-oil	Adulterant	Colonial Analyst's report: Watery only.
„ 17	Smear	Gonorrhœal	Negative.
„ 28	Urine	Sugar and albumen	„
Mar. 3	Sputum	Tubercular	Specimen decomposed.
„ 3	Smear	Gonorrhœal	Negative.
„ 11	Nodule from breast		Wellington report.
„ 20	Sputum	Tubercular	Negative.
„ 23	Urine	Sugar and albumen	„
„ 23	Ham	Ptomaine	Colonial Analyst's report.
„ 27	Urine	Sugar and albumen	Negative.
„ 29	Smear	Gonorrhœal	Indefinite.
„ 31	„	„	Negative.
„ 31	Sputum	Tubercular	„

Work of Inspector Winstanley.

Inspector Winstanley has accomplished much work throughout the year, and with accustomed zeal. I subjoin his report. I am glad to learn that a second Inspector is to be located in this extensive district. It is little or no use for an Inspector to make recommendations unless he shall have an opportunity of seeing if these have been carried out; it has been almost impossible for Mr. Winstanley to keep himself *au courant* with the after-history of the various inspections made by him during the year.

Report by Inspector Winstanley.

I have the honour to hand you a tabulated report of my work during the past year:—

Nature of Inspection.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March.	Totals.
Infectious-disease investigations	40	45	46	34	36	32	35	19	24	24	30	54	419
House-premises inspected	51	100	63	71	92	85	120	41	53	75	55	120	926
Hotels inspected	10	..	13	9	6	5	7	3	6	2	4	6	71
Schools inspected	2	..	..	3	2	4	5	7	3	1	2	2	31
Boardinghouses inspected	4	..	..	..	3	5	2	3	5	..	..	..	22
Fruit-shops inspected	13	8	..	10	7	4	10	5	8	..	10	5	80
Meat-shops inspected	15	11	6	15	12	6	8	10	31	6	9	7	136
Bakehouses inspected	..	2	4	6	8	6	5	8	9	7	5	3	63
Fish-shops inspected	3	6	8	7	6	2	3	6	5	..	6	8	60
Oyster-saloons inspected	12	7	3	4	3	1	2	5	3	..	..	2	42
Milk-shops inspected	..	5	..	..	7	9	7	10	7	5	8	10	68
Dairies inspected	..	1	2	5	9	7	10	8	5	6	..	..	53
Cowsheds inspected	..	..	5	3	1	15	15	3	2	..	..	..	44
Stables inspected	5	3	3	2	6	10	10	8	6	..	2	5	60
Cordial and mineral water manufactories	..	2	..	3	1	1	3	..	3	..	4	..	17
Bacon-factories inspected	..	..	1	..	1	..	1	..	2	..	..	..	5
Jam-factories inspected	..	6	..	2	3	4	..	1	2	4	..	6	28
Butter-factories inspected	..	2	..	..	..	..	2	1	..	..	..	..	5
Creameries inspected	..	..	..	..	..	..	..	..	2	..	..	1	3
Cheese-factories inspected	..	..	..	..	..	..	..	..	..	..	..	1	1
Nuisances abated	12	8	20	18	17	9	15	19	18	12	10	9	167
Houses referred to D.H.O. for condemnation	..	..	5	..	1	..	..	..	2	1	..	..	9
Outbuildings, ditto	..	..	..	..	..	..	..	..	1	..	1	..	2
Houses disinfected	4	..	..	11	1	1	2	..	3	1	2	..	25
Water-samples collected	..	..	..	..	..	..	..	..	2	..	..	..	2
Complaints received	11	17	6	4	3	5	6	3	4	3	6	4	72
„ attention	10	16	6	4	3	5	6	3	4	3	6	4	70
Offensive trades inspected	..	..	..	..	3	1	2	..	..	1	1	..	8
Smoke nuisances inspected	..	..	..	..	..	..	3	..	..	1	1	..	5
General inspections, country districts	1	6	3	3	4	5	4	3	4	5	4	6	48
Infectious-disease outbreaks investigated	1	1	1	..	..	..	1	..	1	..	..	1	6
Vehicles disinfected	1	..	..	..	..	..	..	..	..	..	..	..	1
Maori settlements inspected	..	1	1	1	..	1	1	..	..	1	..	7	13

As before, Mr. Symons has compiled the statistical figures in this report; I have to express my sincere thanks for these and for the careful production of the Charts A and B made by him upon my suggesting the statistical value of a mean-line chart.

Our Department is in its most effective *role* an educational body. Certainly in the Auckland Province, before its advent, little or no attempt had been made to inculcate even the simplest rudiments of sanitation. The " infant-school stage "—if I may term it, has now been passed ; but we recognise that there are many " standards " yet ahead of the Auckland people before they can claim to be well educated in the worship of the goddess Hygeia. To a large proportion of the community the preservation of human life by the prevention of disease is still a matter of little consequence. That it " pays " is not clear to them. An Irish ditty has it,—

" Fourteen children, Pat," says she,
" Heaven to me has sint."
" But children are not pigs," says he :
" They do not pay the rint."

Thanks to the skill and able work of my colleague and predecessor, Dr. Makgill, the field for public-health activity in the Auckland Health District has been well cleared, it now but remains for me to plough along the lines he has so carefully marked out.

Jos. P. Frengley, M.D., F.R.C.S.I., Department Public Health,
District Health Officer.

HAWKE'S BAY DISTRICT.

Sir,— Department of Public Health, District Office, Napier, 1st April, 1905.

I have the honour to lay before you the fourth annual report of the Hawke's Bay Health District.

I am pleased to be able to report an advance in sanitation in the whole district, especially in the more important centres. The number of deaths from all causes in the district is rather in excess of last year, but less than when I framed my report for 1903, and the district has an augmented population. I do not propose to give the vital statistics in this report, as the increase of population, which I am unable to accurately determine, would render the calculations fallacious. The notification of infectious diseases shows a marked diminution since last year, and the deaths from these diseases have been fewer, though tuberculosis is somewhat higher, and the deaths from cancer have decreased. The notifications of typhoid are rather more than half—forty-three this year as against fifty-seven last—and the deaths are exactly half.

I am pleased to report that many of the local bodies in the smaller centres are waking up to their responsibilities, and are more ready to give effect to the requirements of the Department than was the case in former years. I repeat what I stated in my former report : " The numerous small local bodies that exist, from the confusion that they create in the mind of the District Health Officer, tend rather to clog than to aid him in his efforts to conserve the public health " ; and I reiterate that " It would tend to efficiency and smoother working of the Act if in the country and outside the boroughs and Town Boards the County Councils were the only local bodies that the District Health Officer had to approach."

The diseases notified in the principal centres during the year are :—

Scarlatina.—Woodville, 6 ; Dannevirke, 8 ; Gisborne, 12 ; Napier, 1 ; other districts, 11 : total, 38.

Diphtheria.—Woodville, 4 ; Hastings, 19 ; Gisborne, 9 ; Dannevirke, 2 ; Napier, 7 ; other districts, 3 : total, 44.

Measles.—Hastings, 1 ; Napier, 2 ; Woodville, 2 ; other districts, 1 : total, 6.

Blood-poisoning and Erysipelas.—Gisborne, 3 ; other districts, 3 : total, 6.

Typhoid Fever.—Hastings, 2 ; Gisborne, 12 ; Dannevirke, 5 ; Napier, 6 ; Woodville, 2 ; other districts, 16 : total, 43.

Tuberculosis.—Gisborne, 4 ; Woodville, 1 ; Dannevirke, 2 ; Napier, 5 ; Hastings, 2 ; other districts (of which 49 are accounted for by Wairoa, chiefly amongst the Maoris), 53 : total, 67.

The deaths registered during the year are :—

The whole of the District.—Total from all causes, 432, against 414 in 1904, and 452 in 1903 : tuberculosis, 56 ; cancer, 26 ; septicæmia and erysipelas, 3 ; typhoid, 2 ; other zymotic diseases, nil.

Napier.—Total from all causes, 140—one more than last year. Tuberculosis, 20 ; cancer, 14 ; septicæmia, typhoid, and other zymotic diseases, nil.

Hastings.—Total from all causes, 61, as against 65 in 1904 ; tuberculosis, 8 ; cancer, 3.

Dannevirke.—Total from all causes 31, as against 38 last year, and the population has increased : cancer, 1 ; tuberculosis, 1 ; septicæmia and erysipelas, 1.

Woodville.—Total from all causes, 15, as against 23 in 1904 ; the population remaining about stationary : cancer, 2.

Gisborne.—From all causes 115, as against 91 in 1904, but the population has increased : cancer, 6 ; tuberculosis, 22 ; septicæmia and erysipelas, 2 ; typhoid (the only deaths in the district from this cause), 2.

During the past year the district has been fairly free from zymotic disease, only 38 cases of scarlatina have been reported in the whole district, and most of these cases must have been mild, as is evidenced by the fact that there have been no deaths. The prevalence of scarlatina depends rather on segregation than absence of sanitation ; but it is a fact that as a rule this complaint is more virulent in insanitary localities, and the absence of mortality from this complaint in the district is evidence of healthy surroundings. After the widespread epidemic two years ago, we are not likely to have many cases

for some time to come; most are now immune from previous attack, and therefore there is not likely to be another widespread epidemic till new pabulum in the shape of a fresh crop of children are on the scene.

There have been 44 cases of diptheria notified in the district during the year. In some cases I have been able to trace the source of the infection, and remedy the insanitary condition that predisposed to the complaint; but as is too often the case in this disease I have been unable to put my finger on the evil spot. Hastings is in the van with its 19 cases, and Woodville with its 4 cases is about on a par with Hastings in proportion to its population. Gisborne has 9 cases, and Napier with a much larger population than either of these three towns has only 7 There is an augmentation of the number of cases notified of 10—increase of rather less than one-third over those notified last year. This is not only an aggregate but a proportional increase, for though we have a larger population to draw upon it has not increased 33 per cent. I would like to point out that out of the 44 cases notified there has not been a single death. Such favourable results would have been impossible very few years ago. I consider the results now obtained one of the many instances that can be cited of the triumphs of our art through the advance of medical knowledge.

The number of cases of typhoid fever notified in the district during the year is 43 with two deaths, as against 57 with four deaths last year. From this it is fair to assume that the cases were of a less severe type. Gisborne leads the van with 12 cases, but Dannekirke with 5 has about an equal number in proportion to the population. Napier, with twice the population of Gisborne, has only half the number of cases notified, and the number of cases in Napier are less than one-third of those notified last year, 6 and 19.

I regret to have to record a greater number of deaths from tuberculosis, 56 this year as against 41 in 1904. The probability is that the majority of the cases are importations, the result of the deservedly high reputation that the climate of Hawke's Bay enjoys. The number of cases notified from Wairoa, 49, chiefly among the Maoris, is deplorable. I trust that the efforts that are now being made to improve the sanitary conditions under which the Natives live will have the effect of checking the spread of this fell disease, which at present bids fair to exterminate this noble race at no great distant date.

During the year the district has sustained a loss in the removal of Inspector Kershaw to Christchurch. During his term of office in Hawke's Bay he did excellent work; and both the Department and the district are indebted to his work in having placed sanitary plumbing on a sound foundation. The instruction he gave to the members of the trade in his evening classes was most valuable, and is bearing good fruit. I found him a most efficient and capable officer. In his successor, Inspector Munro, I have an officer who is conscientious, painstaking, takes an interest in his work, and gives me every satisfaction.

Particulars as to the Condition of Various Centres in the District.

Napier (population, 8,774).—This town, which enjoys the reputation throughout New Zealand of being a model of cleanliness, continues to advance in sanitary matters in a most satisfactory manner. There are still some sanitary blots which are being steadily improved out of existence; but, notwithstanding these, I maintain that Napier compares favourably with any town in the Australasian Colonies. I record with appreciation the interest which is displayed by the Mayor and Councillors of the borough in everything that relates to the sanitary welfare of the town, and the loyal manner in which they invariably assist me in carrying out my duties. The Council is happy in the choice and appointment of Mr. Pickering to the post of sanitary surveyor, which position he has held for upwards of two years, and has proved himself methodical, capable, tactful, and energetic.

I congratulate the inhabitants of Napier, and state with pride that this year the town has had fewer cases of typhoid fever than in any year since the first outbreak occurred—upwards of thirty years ago.

In my last annual report I wrote, ' I hope to be able to state in my next annual report that the nightcart in Napier has ceased to be " ; I now find that I was too optimistic. The undesirable vehicle is less in evidence, but is not yet quite improved off the face of the streets of Napier. On this head I have received the following valuable and interesting information from Mr. Pickering, under date 7th April, 1905: " The number of water-closets fitted up from the 1st April, 1904, to the 31st March, 1905, was 367." The number of earth-closets remaining in use on the 31st March, 1905, was 360. Taking the lowest average of conversion at thirty closets per month, this year should finish the use of the nightsoil-carts; but, owing to the number of lengthy sewer-extensions being necessary to connect outlying properties, it is impossible to estimate the time of completion to a month.

The Reclamation of the Swamp.

A movement which cannot fail to have a beneficial effect on the sanitary condition of Napier has been in progress during the last five years, and is now so far advanced towards completion to enable the non-professional eye to grasp the details and judge of the benefits that have accrued up to the present and are likely to take place in the near future.

Some forty years ago the swamp had a stream running along its eastern border of sufficient size and depth to be navigable by large boats laden with wool, and much of the wool for export was brought to Napier by this means of transit. Many years ago this stream silted up and became useless for navigation. I am not able to discover when the stream ceased to be used, nor what the condition of the swamp was at the time the stream was navigable, as there is so much conflicting evidence on the matter and most of the old residents who remember it in its initial stage have joined the majority.

When I arrived in Napier rather more than twenty-eight years ago the swamp was an eyesore—an abomination to the nostrils—and I believe it was responsible for much of the dysentery that proved

such a scourge to infantile life generally, and for much general sickness as well. About the time of my arrival the Borough Council took steps to reclaim that portion of the swamp which was contained within the town boundary, consisting of about 200 acres, a hill standing where the recreation-ground is now situated being utilised for the purpose of filling in. Up till 1900 nothing effectual was done towards the reclamation of the swamp, consisting of about 2,800 acres. Several schemes were at different times suggested and some were put in hand, but either they were not followed up or were ineffectual. When the harbour-works were initiated the Engineer, Mr. Goodall, was instructed to prepare a scheme for the reclamation of the swamp, and on his suggestion much work was done, the *raison d'être* of which it is difficult for the non-professional mind to grasp; but the work was never completed, and no benefit resulted from the expenditure of capital.

In February, 1900, terms were concluded with a syndiacte for the reclamation of the portion of the swamp extending to the south of Napier as far as Awatoto, and westward as far as Meeanee, consisting of about 1,800 acres. The remaining portions, consisting of about 1,000 acres, were left in abeyance for the present, no active steps being taken for their reclamation. The reclamation of the northern portion of the swamp is being carried out—first, by means of sand-pumps, which are employed in digging water-ways and channels and pumping the sand and silt from the bottom on to the land, thus deepening the one and raising the other; secondly, during floods and freshes leading the silt-carrying waters on to the low-lying lands, there inducing a deposit of mud and sand. The result has been, up to date, that about 700 acres of land have been reclaimed, 500 acres of which have been brought into cultivation, and the swamp as a swamp has ceased to exist. This land has been reclaimed to a depth of from 1 ft. to 7 ft., and is of the richest description. Large quantities of asparagus and other vegetables, as well as good crops of lucerne hay, are being produced on the land that has been brought under cultivation. To prevent the flooding of the land that is being reclaimed, a bank was constructed from Awatoto to Meeanee at the level of the flood of 1897, the highest on record in Hawkes' Bay. This bank cannot fail to have a beneficial effect on the reclamation of the remaining portion of the swamp. The bank will hold the silt-laden water in flood-times, and favour the deposition of the silt upon the ooze, thus raising the land and hastening the work of reclamation. When the land of the swamp is fully reclaimed it is proposed to devote about 20 acres of a portion adjacent to Napier to be utilised as a park; another portion will be cut up into building-sites of a fair area of from 1- to 2-acre sections. The balance of the land will be devoted to market-gardens and dairy-farms. The immediate result of this reclamation will be to relieve the congestion on Scinde Island, which is fast becoming acute. Open spaces are quickly disappearing altogether or contracting in size over both the hills and flats of Napier; and without some outlet such as this, as the population of Napier increased, the lungs of the 640 acres that comprise Scinde Island would soon become a negligible quantity. Unproductive land is generally unhealthy, as instance the Campagna round Rome; the sandy plains of Holland; Lincolnshire in England, which enjoyed a similar evil repute before efficient drainage was brought about by skilful engineers and the cultivation of the soil became possible. Much the same kind of work as was done in Lincolnshire has been, and is being done with the swamp round Napier; and I feel confident that equal benefit will result when the land is fully reclaimed and the whole of it brought under cultivation. Les Landes on the western coast of France is still another instance of unproductive land being unhealthy. Pellagra and other diseases were prevalent in the locality till the reclamation outlined and commenced by Bremontier had advanced. The diseases then prevalent have receded with the advance of reclamation and cultivation, and when the work is completed we confidently prophesy that malaria and pellagra, which were the scourges of these districts, will have passed into history. "Cultivation" and "sanitation" are convertible terms, husbandry and disease are sworn foes, and the pursuit of agriculture is generally the pursuit of health. As stated by the late Dr. Vivian Poore, "the cultivator of the soil must always be the right-hand man of the sanitarian."

I am indebted to Mr. C. D. Kennedy, the engineer of the syndicate, for his trouble in accompanying me over the ground, and the clearness of his description of the details of the work.

Clive, Meeanee, and Taradale.—The two first-named townships have progressed slightly since last year. Some old ramshackle buildings have been pulled down and replaced with better structures. The last-named is budding into a fairly large township and is with its suburb, Greenmeadows, becoming of some importance. Many sections have been taken up during the last year, and comfortable residences built on them. Nearly every house has its artesian well, and the water is of good quality for drinking and household purposes. There is no public water-supply, nor is there any need of it with the excellent individual supply. It will be some years before a drainage system will be needed, and at present many of the residents and the owner of one of the hotels have provided themselves with septic tanks. Taradale, Meeanee, and Greenmeadows will share with Napier the benefits of the reclamation of the swamp.

Havelock is in *statu quo*. The water and draninage scheme is still in abeyance, the local authority, the Hawke's Bay County Council, having taken no steps towards striking a rate to provide the means for these desirable ends.

Hastings Borough (population, 3,650).—During the past year more houses situated within the sewer area have been connected, and the connections of some others which were of faulty construction have been brought up to date. There are still too many pan-closets within the sewer area, but they are gradually being replaced by water-closets. There has been no extension of the sewer during the past year, and its extension in some places is urgently needed. I have represented this to the Council, and will do so again. The sanitation of the outskirts of the borough where the expense of sewers will not be justified for some time to come is needing attention, and I propose advising the Borough Council upon this matter at an early date. I regret to have to report that there is a great deal within the sewered area of the borough that will claim my attention during the coming year.

Kaikora North (population, 268).—This is a scattered township. None of the houses are old, and most of them are well-built and comfortable. There is no congestion and nothing that claims my attention.

Waipawa (population, 669).—Further connections with the sewer have taken place during the past year. A water scheme was in contemplation by the Town Board, and in company with the Chairman and some other members of the Board I visited a stream from which it appeared that a sufficient supply of excellent water could be obtained, but no further movement has been made up to the present. Perhaps a drought, with its accompanying water-famine, will have the effect of whetting the "almost blunted purpose."

Waipukurau (population, 565).—Nothing has been done to improve the defective conditions of the sewers—happily there is no sickness. As Wellington said to his soldiers that they would fight their officers through any mistakes, so the climate of Waipukurau will counteract many sanitary defects; and though two blacks do not make a white, it must be allowed that Waipukurau is better off in sanitary matters than many more populous and wealthy communities. I will endeavour during the coming year to effect some reforms in the sewerage system of the township.

Takapau (population, 150).—This township remains as it was. The local authority, the Ruatanihwa Road Board, has not acted on the plans and estimates that it obtained from Mr. Kennedy some two years back. I shall again move in the matter shortly.

Ormondville (population, 459).—The Town Board has not yet actively moved in the direction of water-supply and drainage. The township is not congested in any way, and there is not much sickness.

Dannevirke Borough (population, 2,315).—The drainage scheme will be put in hand shortly, and owing to the congested portion of the central part of the borough is urgently needed. The cause of the delay in commencing the work does not reflect on the inhabitants of the borough. The land that was required to receive the effluent of the septic tank belonged to the Natives, and considerable delay was experienced in acquiring it. The need of drainage is shown by the presence of typhoid and diphtheria in the town, which were previously unknown. When the drainage scheme is an accomplished fact I trust and believe that these diseases will disappear.

Woodville Borough (population, 926).—There have been both typhoid and diphtheria in this little town, which were strangers to it previously, and it is difficult to account for the causes. The water-supply is one of the best in the world, but it must be admitted that the drainage is not what it should be. Nothing has yet been done to give effect to Mr. Metcalf's plans and recommendations on this head, but I propose interviewing the Mayor and Councillors shortly, and will endeavour to galvanise them into action.

Gisborne Borough (population, 2,337).—During the year the suburbs of Kaiti and Whataupoko have been incorporated with the borough, largely increasing both its area and population. The money is now available for carrying out the scheme for water-supply recommended by Mr. Hay. It is estimated that the supply will be equal to the needs of Gisborne for many years to come. The work is to be commenced very shortly, and I hope to be able to report next year the progress that has been made. When the water-supply is an accomplished fact, drainage must follow quickly. From the size of Gisborne and the congested condition of the central portion of the town it is impossible that matters can go on much longer in their present condition without some serious outbreak, and I can only attribute the delay of a serious epidemic to broad sunny streets permeated as they are by the fresh sea-breeze, the general excellence of the plan that was adopted in laying out the town, and the excellence of the climate. Gisborne has more than its share of typhoid this year, and was the only place where any cases ended fatally. Gisborne had a fair share of diphtheria, and more than it should have if its sanitation was only moderately good. I hope that the works that are now in contemplation will be pushed on rapidly that a catastrophe may be averted. A new cemetery is badly needed in Gisborne—the present fills the needs of neither sanitation nor decency. A new site has been selected and acquired: this is being laid out and will soon be available. The abattoirs are nearly completed, and will be utilised within a very short period. At the back of the beautiful bay there is some land of a sandy nature and of poor quality. This should have been retained as a reserve for the recreation of children and a lounge for invalids. Unfortunately it has been cut up into building-lots and sold, and the land is being rapidly covered with cottages. To have parted with the birthright of the town does not reflect credit on those responsible.

Of the townships north of Gisborne, *Tologa* and *Tokomaru*, there is nothing fresh to report. At *Waipiro* the slump-hole alluded to in my last report has been attended to, but it would have reflected more credit on the local authority—the Waiapu County Council—if the nuisance had been abated on the receipt of my report instead of waiting till a case of typhoid occurred in the vicinity. The old ramshackle building that served for a hotel has been pulled down and been replaced by a creditable and up-to-date structure. At *Tuparoa* there is nothing to report. At *Awanui* the schoolhouse was unsuitable and insanitary. On my recommendation it has been closed, and a suitable schoolhouse has been erected.

Clyde, Wairoa (population, 623).—The large hospital is completed, and occupies a very pretty site. The building is imposing and the arrangements convenient, reflecting credit on those responsible and the architect, Mr. Finch. The drainage will be passed through a septic tank, and the effluent will flow over a steep bank and fertilise the shrubs that have been planted there. In other respects the sanitation of Wairoa remains much as it was, some improvements have been made to some of the houses, but the town generally has not moved. A public water-supply and drainage for the congested area of the town is a great desideratum, but the desire to keep down rates is for the present an effectual bar to the initiation of any scheme involving the expenditure of money. There have been nine cases of typhoid notified in Wairoa during the year, 50 per cent. more than Napier, with sixteen times the population. The water-supply is partly from shallow wells and chiefly from rain-water tanks; these latter are seldom cleaned, and no attempt is made to prevent the inrush of dirty water from the roofs

after a drought. I have pointed this out to the local authority, the Wairoa Town Board, and recommended that they make the use of some of the various appliances to prevent the influx of dirty water into the tanks—such as Roberts's rain-water separator, or, better still, Oxenham's patent, which provides for the separation of the dirty water and the automatic cleansing of the tanks by an underflow instead of an overflow—compulsory, but my recommendation has not yet found favour. The number of deaths in Wairoa during the year amounted to ten, a rate of 16·05 per 1,000. This is much higher than it should be in such a favourably situated township. I have no hesitation in expressing the opinion that much of the sickness and some of the deaths are attributable to the want of pure water. Dr. Thresh states in his excellent work on water supplies, "The filthiest waters used for domestic purposes which I have examined have come from rain-water tanks." I shall again move in the matter with the Town Board, and I hope with better success.

Mohaka.—The new hotel is rapidly approaching completion, and the architect informs me that it will be ready for occupation in the course of two or three weeks. The commencement of the building was delayed from various causes: first, the local authority, the Wairoa County Council, took up a defiant attitude and refused to serve the notices on the owner, who was a member of their body. I brought the matter before the Hawke's Bay Licensing Committee, who gave effect to my recommendations, but were more lenient to the owner in the time-limit than, in my judgment, was advisable; then there was some culpable delay on the part of the owner in calling for tenders, some unavoidable delay in getting timber on the ground owing to the difficulty in negotiating the bar of the Mohaka River, and notwithstanding my protests the Licensing Committee extended the time-limit for the completion of the hotel. However, when the work was commenced it was pushed on expeditiously, and the time is near at hand when the travelling public between Napier and Wairoa will be provided with decency and comfort during their enforced night's sojourn at Mohaka. The schoolhouse at Mohaka is out of repair, badly lighted, and requires to be rebuilt. I have reported adversly upon it, but owing to the action of the Natives there are difficulties in the way. I trust that they may be overcome, and the work put in hand shortly.

Buildings condemned.

The building provided for the manager for the Assets Company's estate beyond Muriwai, about twenty miles from Gisborne, was visited by me. I found that the building occupied an unwholesome site, and the building itself was quite unfit for occupation. After notices were served the building was vacated for some months. The estate has now changed hands, and I am informed by Mr. Currie, the Inspector appointed by the Cook County Council, that the manager for the present owners is occupying the house. I have written to the local authority, the Cook County Council, to take proceedings under the Act. I have not yet received their reply. An insanitary house at the Tiratu sawmills, near Dannevirke, was pulled down.

The residence provided for the school-teacher at Puketapu, a village about nine miles from Napier, is very old, the floors nearly resting on the ground and below the level of the adjacent road; the timber is in a state of advanced decay, and the house quite unfit for habitation. I wrote to the Education Board condemning the building under section 11 of "The Public Health Amendment Act, 1903," but the Board contented itself in spending a little money on paint and paper and declined to go further. It is disgraceful that a public body should provide such a building as a residence for one of its employees.

Two dilapidated and insanitary cottages situated at Mohaka were condemned by me and ordered to be pulled down. Later on the architect employed by the owner, Mr. Finch, of Napier, called on me and assured me that the condition of the cottages warranted the expenditure necessary for reconstruction. I therefore consented to this being done, the work to be completed to the satisfaction of the Department.

Prosecutions.

A prosecution resulting in a conviction was undertaken by the Department, the local authority—the Hastings Borough Council—having refused to act against a resident for defiling an open drain in the borough. A prosecution resulting in a conviction was instituted by the Napier Borough Council, at the instigation of the Department, against the occupier of a house who had permitted his yard to remain in a dirty condition. These are the only prosecutions that have proved necessary; many others have been threatened, but when the delinquents were assured that the bite would follow the bark they considered discretion was the better part of valour, and carried out the requirements of the Department.

I have been able to obtain improved sanitation in several of the hotels situated in country places. At Morere there was a badly constructed and foul drain, which was a nuisance and menace to the health of the boarders whose rooms abutted on the vicinity of the drain. I am informed that my requirements have been carried out, and shall satisfy myself on the point by personal observation as soon as my engagements permit me to visit the district. At the Havelock Hotel sanitary improvements have been and are still being carried out. At the Puketapu Hotel sanitary arrangements that I have recommended are being initiated.

Recommendations.

In many of the older towns there are slums and overcrowding of houses on insufficient areas; this should not be in a young country. I have recommended the Borough Councils in this district to pass a by-law insisting that the curtilage should be at least equal to the land covered by the buildings. I have always received courteous replies informing me that the matter will merit their consideration; but I have little hope that the matter will be taken seriously by the members of the municipal bodies. It would tend to the health of the inhabitants of the towns that are growing if some such law could be enforced.

I have, &c.,

Fred. de Lisle, L.R.C.P., D.P.H.,
District Health Officer, Hawke's Bay.

J. Malcolm Mason, M.D., D.P.H.,
Chief Health Officer.

WELLINGTON DISTRICT.

The Chief Health Officer.

I HAVE the honour to present the following report for the year 1904–5:—

The year's work has not been characterized as in the past by its varied nature. For the first time in the history of the Department a year has gone without the ordinary routine being temporarily dislocated by an alarm of some oversea epidemic. It has been possible, therefore, to devote an almost uninterrupted attention to certain matters which have for some time past been recognised as requiring particular consideration. Chief of these has been the question as to the accommodation of consumptives. Time has also been devoted to the sanitation of schools and the milk-supply of some of the larger towns.

On the whole the year's work has been satisfactory. Three consumptive annexes are in course of erection. An improvement is manifest in the sanitation of our larger towns. In some of the smaller townships, however, little improvement can be reported. Unfortunately, the joint system of sanitary inspection shows a tendency to break down: this is a decided retrogression. There has been a decided diminution in the notifications of scarlet and enteric fevers, and an increase in those of tuberculosis and diphtheria. Further details as to the above and other matters are given in another portion of this report.

TUBERCULAR DISEASES.

Following on the work of last year a good deal of time has been devoted to furthering the "annexe system" for the treatment of consumptives. There is every reason to believe that the splendid example set by the people of Taranaki, Nelson, and Wellington will be followed in other parts of the colony, and that the first expense of these annexes will be largely borne by public subscription.

That the people of the colony recognise something must be done to help the poor consumptive is shown by the way the public has subscribed when the dire need of the matter has been represented. In Taranaki £750 was collected, in Nelson some £700, and in the recent campaign in Wellington no less than £2,500 was raised within one month, and subscriptions are still coming in. With the Government subsidy these sums are sufficient for the purpose for which they were collected. The Taranaki annexe has already been opened, a similar institution is in course of erection at Nelson, and plans have been drawn for buildings at Wellington and Otaki.

To persons wont to deal with large communities the above-mentioned sums may seem small; but when it is taken into consideration that on an average each person in the districts approached subscribed rather more than 1s. per head, the whole-heartedness with which the public recognised the urgency of the appeal is represented in its true significance. As a rule the burden of public subscription—in this colony at any rate—has been in the past almost entirely borne by certain generously disposed persons; but such was not the case in this instance. Subscriptions have poured in from all classes, and it is particularly pleasing to record the generosity displayed by the poor. It would seem that in a community like this, where there is not so vast a difference between the wealth of the well-to-do and the poor as in old settled countries, it would be better to provide for hospitals and similar institutions out of the public fund rather than to rely on public subscription. There are not a few people who say that the tendency of such legislation is to dry up the fountains of charity. Be this as it may such has not been our experience. For a special object, such as the treatment of the poor consumptive or the incurable indigent, it may be as well to depart from the usual course and give the public an opportunity of doing good to their more unfortunate fellow-creatures, especially by means of a judicious and deserving philanthrophy such as the above, in that in doing good to our neighbours we are doing good to ourselves.

The Department must not claim any *kudos* for the early successes in the campaign against tuberculosis, except possibly in the light of an Intelligence Department in furnishing the strength, position, and vulnerable points of the enemy. The bulk of the actual fighting has been done by the medical profession. The success of the campaign was due to the absolute unanimity with which members of the profession have represented to the local bodies concerned the need of providing proper accommodation for consumptives in their respective districts. To Dr. Leatham and his colleagues in Taranaki, to Dr. Barr and his colleagues in Nelson, and to the President of the British Medical Association in Wellington (Dr. Martin), Dr. Collins, the late President, and the members, I am sincerely indebted for very cordial assistance. Nor must the kindly assistance of Dr. Newman be forgotten, who, with characteristic energy, threw himself into the breach, and took on the joint duties of lecturer, secretary, treasurer, and canvassser.

At the present time Dr. Jennings, President-elect of the New Zealand Branch of the British Medical Association, is organizing an attack on the enemy in Christchurch. He will be ably backed up by the members of the association, and there is little doubt that their efforts will result in the erection of a consumptive hospital worthy of that city.

So much then for the campaign, the work done, and the friends of the movement. What about its foes—the misguided allies of the common enemy? In all communities there are always weaklings who blench from the forefront of the battle, and who nevertheless do not hesitate—from the security of some post of vantage—to criticize the actions of their more valiant brethren who press forward to the fighting-line. Actuated by various motives—some in genuine fear, but the majority from selfish interests—there are some who view with disfavour the erection of annexes in their districts. They talk of the danger to the district; they work up indignation meetings and deputations to the Minister. It has been said that some are actuated by real fear of infection—if not for themselves, for their wives

and children. Such objection is in some measure entitled to respect and every consideration, for their fears are due to the fact that we have failed in our duty, in that we have not represented the disease in its true colours and shown that with proper precautions a consumptive hospital need be no danger to any one. They know nothing of Brompton and Ventnor and other hospitals in the United Kingdom where consumption has been treated for the last fifty years without danger to people in the neighbourhood; they lose sight of the fact that consumptive patients are more dangerous in hotels or common lodginghouses, in public vehicles, or places of entertainment than in properly managed sanatoria. For such persons information is only required to dispel their fears. This information can be given by lectures, and departmental officers should lose no opportunity of giving them. At the same time, although in face of danger—apparent or real, a man is quite right to consider first his wife and children—such fear does not absolve him from his duty to the State. Nobody can overcome a foe by running away from him. This applies to individuals as it does to nations. If we want to fight consumption with any degree of success we must stand fast—not give an inch, lose no opportunity of giving the enemy a set-back, whether by the erection of a sanatorium or the disinfection of a room. Rather than try to avoid the disease by dodging its microbe we should rely on healthy living to render ourselves immune to its invasion.

There is another class of the community that objects to the annexe. For this class we have no sympathy, but unmitigated contempt. They profess fear of the disease and talk loudly of its dangers to woman and children, not forgetting the Native population or anything that may appeal to sentiment; they say the patients should be isolated in mountain fastnesses. A short talk to these individuals will generally get to the bed-rock of their objections. They are land speculators and fear that the consumptive hospital may bring down the price of their land. These persons can always be appeased by a good round sum for their sections. Hence the agitations, the indignation meetings, and the deputations to the Minister. There are rather too many of these people in the colony. They would turn the consumptive into a pariah, and make his hard lot even harder than it is at present.

There is yet another objector—the parochial objector—who is quite willing to see provision made for consumptives in another hospital district, but fails to see that such accommodation is required in his own; he is quite willing for his Hospital Board to combine with another specified Hospital Board, but will not agree to his Board combining with a Hospital Board that is much better situated geographically, on the ground of some petty grievance between the Boards, or on account of some little parochial jealousy.

Another objection that is often furnished to the annexe system is that of site. Apart from the danger of infection to the surrounding community there is a popular impression to the effect that a consumptive sanatorium should of necessity be erected a good distance above the sea-level. Altitude has very little to do with the success of the treatment—in fact, Dr. Knopf, of New York, who may fairly be considered one of the best known authorities on the sanatorium treatment, expressly lays down that as good results are obtained in flat country as at high elevations. The same authority lays stress on the fact that where possible it is better for patients to be cured in the climate in which they have subsequently to live.

This is another argument in favour of the annexe system.

Appended are four charts relative to the distribution of the disease in the colony. They require no special comment. The high death-rate of Otago may be due to the fact that certain parts of that province have for some time enjoyed a reputation for the successful treatment of consumption. The same may also be said of the Hawke's Bay and Auckland Provinces. The high death-rate of Westland may be due to the fact that a large proportion of the population are engaged in mining pursuits.

The same chart also shows the death-rate in our chief centres. Here Dunedin heads the list. The influence of density of population is shown as compared to the mortality of the country districts. It is curious that the death-rate in Dunedin and Christchurch exceeds that of Wellington, which is by far the most densely populated city in New Zealand—forty-eight persons to the acre.

Chart 2 shows that there is no relation between the death-rates from respiratory disease and that from consumption.

Chart 3 speaks for itself, and shows how far the mortality from tuberculosis exceeds those which may be termed the five next most dreaded diseases.

Chart 4 is interesting. Of 3,500 known cases of deaths among members of friendly societies during the ten years 1894–1903, no less than 549, or one death in every 6·4, is due to tuberculosis. This is particularly interesting when it is considered that members of friendly societies are generally understood to be specially selected lives, in that they are expected to undergo a medical examination before being admitted as members.

In connection with this chart it is to be regretted that the death returns are so loosely compiled. This is clearly shown in column 4. Terms such as "obesity," "inflammation," "confinement," "fever," "natural causes," "abscess," "inward trouble," "complications," "baby blight," should not be given by the secretary of the lodge nor received at the office of the Registrar of Friendly Societies. It is also a pity that some advantage is not taken of the only form of registration of sickness in the colony. The sickness returns among some forty thousand members of the societies would be both instructive and interesting.

Chart 5 is compiled from a chart issued by Sir Henry Littlejohn with his report on consumption in Edinburgh. Although the comparison is very favourable as regards New Zealand it must be remembered that the population of our larger cities is not one-tenth that of Buenos Ayres, which, of foreign towns, comes lowest on the list. It is therefore not too much to reiterate what has been expressed in previous reports that, considering the natural advantages of the colony as regards climate, soil, and social conditions, the death-rate is far in excess of what it should be.

Chart 1.—Death-rate per 10,000 of Population from Tubercular Diseases and Phthisis in Provincial Districts and Four Chief Towns for Ten Years, 1894–1903.

Provincial District.	Death-rate per 10,000 from Tubercular Diseases.	Death-rate per 10,000 from Phthisis.	Chief Towns.	Death-rate per 10,000 from Tubercular Diseases.	Death-rate per 10,000 from Phthisis.
Otago	12·03	8·85			
Westland	10·32	8·08	Dunedin	15·13	11·34
Hawke's Bay	10·20	7·76			
Auckland	10·23	8·12	Wellington	13·39	9·85
Canterbury	9·95	7·65			
Wellington	9·63	6.98	Christchurch	12·89	10·00
Nelson	8·98	7·30			
Taranaki	8·07	6·12	Auckland	12·85	9·59
Marlborough	5·56	3·82			

Chart 2.—Death-rate from Tubercular Diseases, Phthisis, and Respiratory Diseases in Urban and Rural Parts of the Four Chief Provincial Districts for Ten Years, 1894–1903:—

Provincial Districts.	Urban Population.	Rural Population.	Tubercular Diseases.				Phthisis.				Respiratory Diseases.			
			Urban Deaths	Rural Deaths	Urban Death-rate per 10,000.	Rural Death-rate per 10,000.	Urban Deaths	Rural Deaths	Urban Death-rate per 10,000.	Rural Death-rate per 10,000.	Urban Deaths	Rural Deaths	Urban Death-rate per 10,000.	Rural Death-rate per 10,000.
Auckland ..	504,192	1,143,596	648	1,022	12·85	8·93	483	856	9·57	7·48	699	1,411	13·86	12.33
Wellington	471,765	838,057	632	621	13·39	7·40	465	450	9·85	5·36	559	847	11·84	10·10
Canterbury	447,575	977,337	577	840	11·89	8·59	448	643	10·00	6·57	563	1,124	12·57	11·50
Otago ..	508,805	1,208,498	770	1,288	15·13	10·65	577	944	11·34	7·81	649	1,466	12·75	12·13

Sanitary Inspection.

It is to be regretted that there are indications that the system of sanitary inspection—inspectors paid by the local bodies, but under the control of the Department—is likely to break down. This is largely due to the fact that the Department has no power to levy the local bodies for their respective contributions towards the inspector's salary, and also owing to the size of the districts. This was recognised from the first as the weak point in the system, but it was hoped that in course of time members of local authorities would see the advantages of the system from views of efficiency and economy. It is gratifying, however, to report that the two boroughs which have broken away from the system —viz., New Plymouth and Palmerston—were so far satisfied with the Inspectors appointed by the Department that the positions of Inspectors for those boroughs were immediately offered and accepted by Inspectors Kendall and Perry at better salaries than those officers were receiving from the Department.

In each case the reason of secession was the size of the district, the Councillors of each borough considering that there was quite enough work in the town to take up the entire time of the Inspector. In this I could not but agree.

By these alterations the Department loses the services of Inspectors Kendall and Perry. The former has ever proved a capable and reliable officer. Inspector Perry has also done good work in Palmerston.

I am still hopeful that something may be done whereby the Department can exercise some control over the sanitary inspection of the colony. Where it has been tried it has admittedly worked well. If the Government were to give a small subsidy to the salary of the Inspectors of larger towns it might be an inducement to the borough authorities to leave the appointment of the Inspectors and the direction of their movements in the hands of the Department. This would be an efficient and economical arrangement for the local bodies and the Department.

Milk-inspection.

The need of systematic inspection of dairies and all that pertains to the distribution of milk has been referred to in previous reports. No progress in this direction can be reported. When the extreme importance of such inspection is taken into consideration it is not too much to say that the Department will be failing in its duty if it does not by some means or another bring about a speedy reform in this direction. The need for such inspection is imperative.

During the past summer I instructed Inspector Schauer to look into the sanitation of the dairies supplying milk to Wellington; at the same time, the Chief Veterinarian instructed Mr. Quinnell, M.R.C.V.S., of his Department, to accompany Inspector Schauer. The report of our officer shows the unsatisfactory condition under which the cows are milked, the general insanitation of the dairies and byres, and the filthy condition of many of the cans in which the milk is conveyed to the city. Unfortunately, the report is not completed. I may say that Mr. Quinnell has had considerable experience in dairy-inspection in the Australian Colonies, and his report is awaited with interest.

A good many people, particularly the trade, are under the impression that many of the dangers of impure milk may be obviated by sterilisation. This is true to a certain extent, but it cannot be too strongly insisted upon that sterilisation cannot *purify* a dirty milk. What is required rather than

CHART 3.—Showing Proportions of Deaths in ten years, 1894-1903, from Most-Dreaded Diseases in New Zealand.

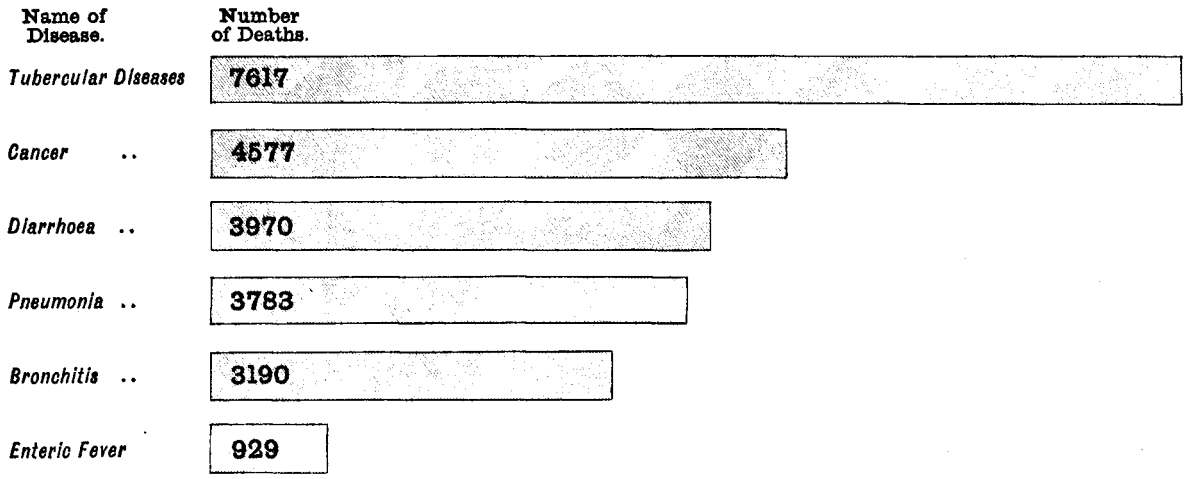


CHART 4.—Showing Proportions of Deaths in ten years, 1894-1903, in Friendly Societies in New Zealand.

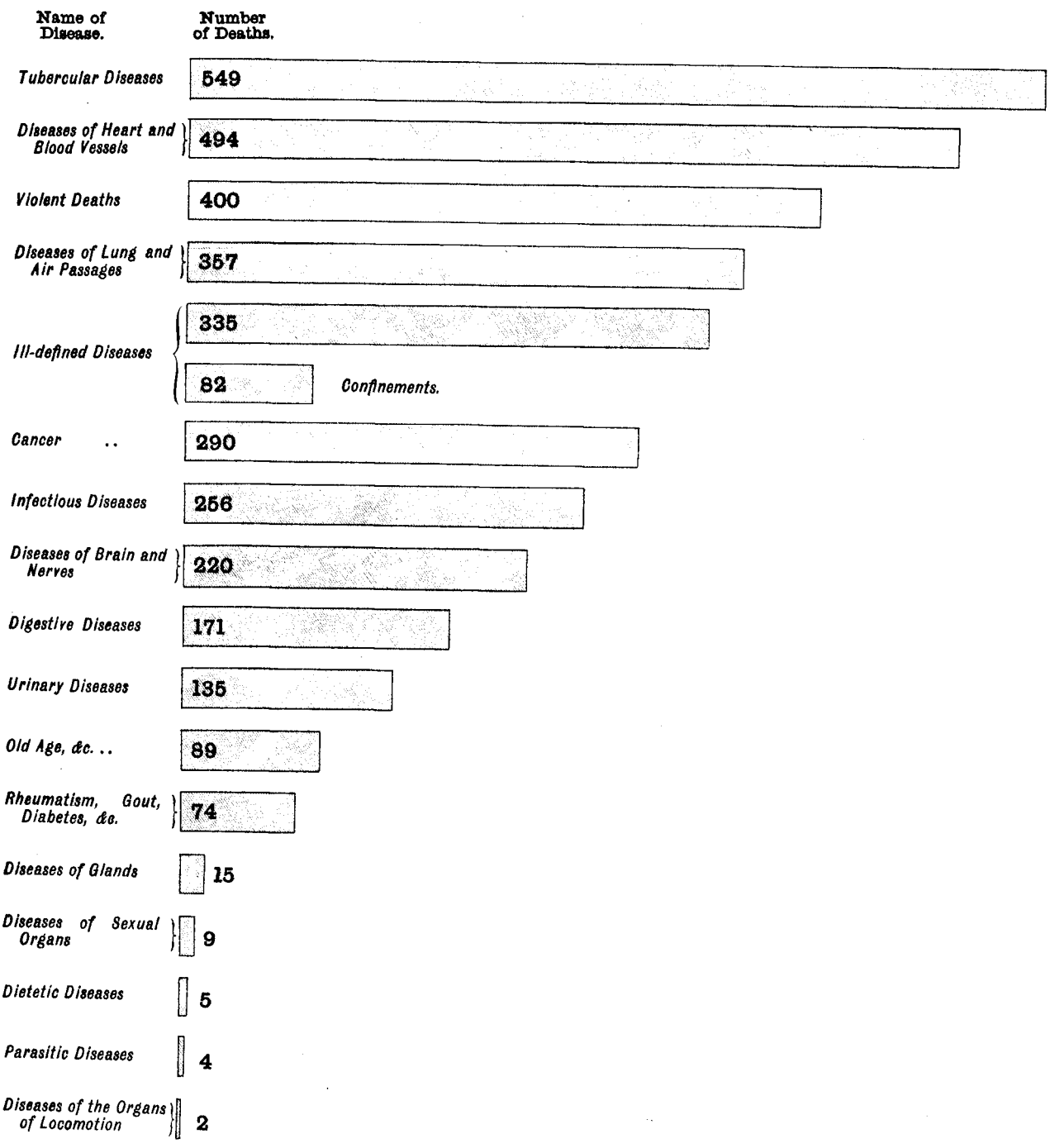
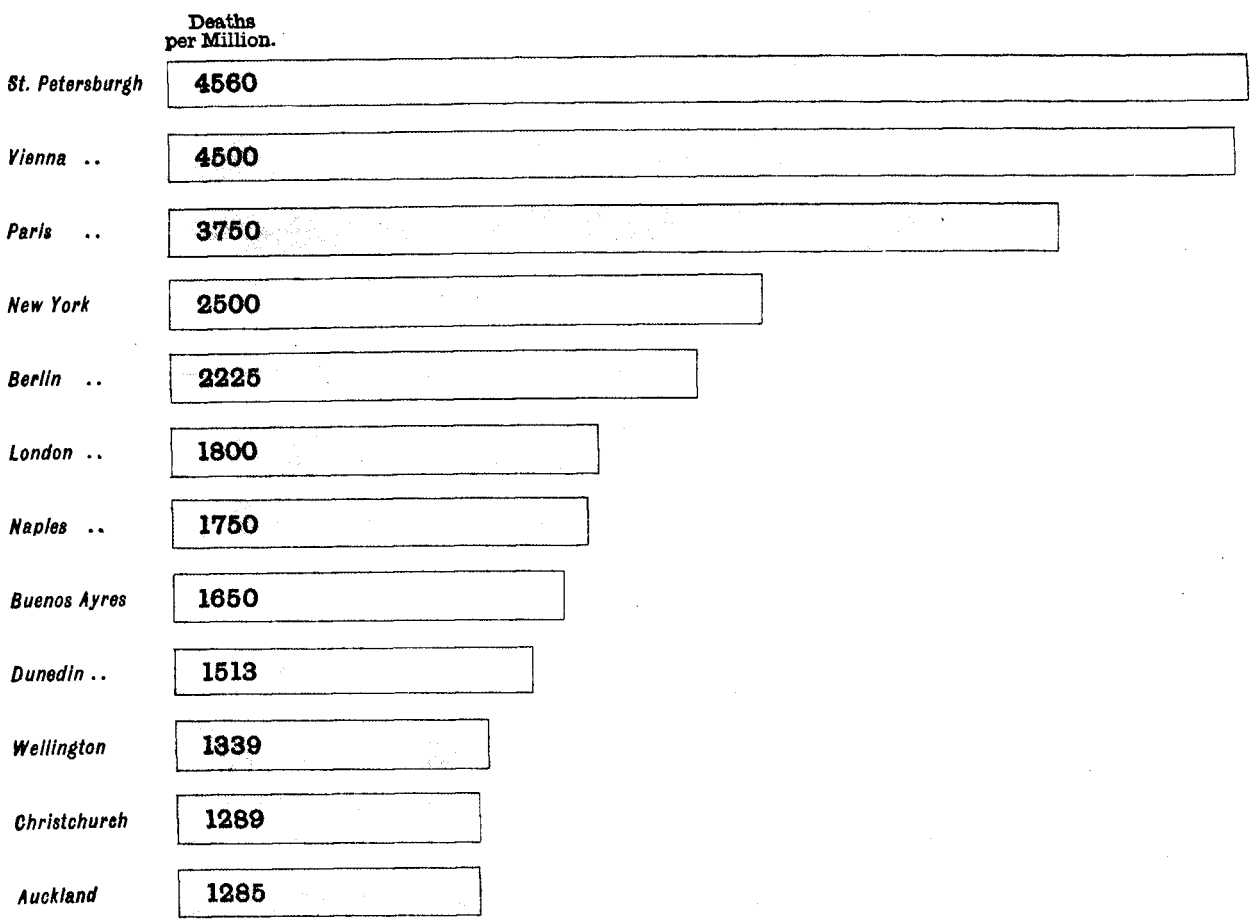


CHART 5.—Showing Number of Deaths from Tubercular Diseases to the 1,000,000 of Population of Chief Towns in the World and New Zealand, for ten Years, 1894-1903.



sterilisation is the observance of cleanliness in the surroundings of the dairy, cleanliness in the actual operation of milking, in straining, storing, and conveyance, and again in the subsequent stages of retail. Milk requires very careful, in fact, separate, storage. It is quite usual to find milk stored in the larder with meat and other foods. Little wonder then that in summer the milk is often found to contain putrefactive organisms. As a medium for assimilating an emanation and for propagating infection there is no food-stuff to compare with milk. Ample evidence of the latter exists on the departmental files showing how diphtheria, enteric and scarlet fever have been spread by these means; nor must we forget that without doubt the still more dreaded disease of tuberculosis can be spread by milk from tubercular cows. Again, there is little doubt that many of the cases of diphtheria reported in different parts of the colony during the year were not due to the germ of that disease, but rather to a streptococci infection from the milk of cows with infective mammitis, details of which disease have from time to time been supplied by the Chief Veterinarian. That gentleman has by his reports shown the dangers of milk infected by this germ, and it is only fair to assume that, as in the United Kingdom, many cases of "sore throat" may be traced to this disease of cows; indeed, an epidemic of this nature has come under my own observation.

Careful inspection of milk is required not only at its source of collection on the farm, but also in its transit to the retailer, and again into the condition under which it is kept and distributed by the latter. Part of this work, such as the inspection of the cows, the byres and their surroundings, should of necessity come under skilled veterinary inspectors or men specially trained by the Veterinary Department. The milk in its course of transit to the retailer should also be watched by the same officers; in fact, until the time of reaching the shop, the milk might well be left to the inspection of veterinarians. When once in the shop, the conditions under which it is kept and distributed should be under the supervision of the officers of this Department. By these means the dangers of dual control would to a large extent be obviated. The officers of each Department would be fully aware where their responsibilities in the matter began and where they ended. Under the present system the overlapping of inspection is not only annoying and bewildering to those engaged in the milk traffic, but as a safeguard to the public health it is comparatively useless on account of its inefficiency. In a conversation with the Chief Veterinarian, I was led to understand that such a system of inspection could be undertaken by the veterinary surgeons without in any way disorganizing the ordinary routine of his special branch of the Agricultural Department, and what is more, at no greater cost than the present system of inefficient inspection.

In conclusion, I again reiterate that inspection of the milk traffic may be efficiently conducted under the dual control of this and the Veterinary Division of the Agricultural Department, provided it is clearly defined that until the milk actually reaches the retailers' premises supervision is in the hands of the Veterinary Department, and when it reaches the shop its means of storage and subsequent distribution are under the supervision and control of officers of this Department.

I would suggest that owing to the importance of the subject, the Ministers of the respective Departments be advised to make some arrangements whereby the inspection and control of the milk-supply may be put on an efficient and comprehensive basis in the manner I have recommended.

Infectious-diseases Hospital.

At the request of the Palmerston Hospital Board, on the 23rd February, 1905, I attended a meeting of the local bodies concerned. After a somewhat protracted discussion the representatives of the local bodies agreed to contribute to the following allocations: Palmerston North Borough Council, 41 per cent; Kiwitea County Council, $2\frac{11}{70}$ per cent.; Pohangina County Council, $2\frac{11}{70}$ per cent.; Kairanga County Council, $17\frac{60}{70}$ per cent.; Oroua County Council, $11\frac{60}{70}$ per cent.; Manawatu County Council, $13\frac{11}{70}$ per cent.; Feilding Borough Council, $7\frac{46}{70}$ per cent.; Halcombe Town Board, 1 per cent.; Foxton Borough Council, $3\frac{11}{70}$ per cent.

Wellington City.

Population, 46,633. Death-rate, per 1,000—Wellington and suburbs 9·53, Wellington City alone 9·85, average of four centres 9·99; death-rate, excluding children under 1 year—Wellington and suburbs 7·49, average of four centres 7·99; infantile mortality—deaths under 1 year to every 100 births—Wellington and suburbs 7·54, Wellington City alone 7·68, mean in other three centres 7·43; percentage of deaths under 5 years to total deaths—Wellington and suburbs 27·63, mean in other three centres 23·12; zymotic death-rate—Deaths in Wellington and suburbs 46, total of four centres 143, proportion of deaths in Wellington 32 per cent. Infectious diseases notified during year—Scarlet fever, 164; enteric fever, 39; diphtheria, 60; tuberculosis, 67. Inspections made, 920; houses disinfected, 223; houses condemned, 36.

The infectious-disease returns show that there has been this year a satisfactory drop in the number of cases of *scarlet fever*, being little more than one third of those reported in 1904. The epidemic, however, is by no means at an end, and we have had from time to time small localised outbreaks in connection chiefly with school-children, although none have been sufficiently serious to warrant closing a school.

Of *enteric fever*, curiously enough, exactly the same number of cases (thirty-nine) occurred as last year. Some of the cases arose in the outlying suburbs, where drainage and water-supplies have not yet been provided, and were doubtless the result of local insanitary conditions. Others were certainly imported from outside districts. One or two apparently arose in the city, but although the source could not be traced, they probably owed their origin to conveyance of infection by milk or other food-stuffs.

Diphtheria shows a most disappointing increase, being more than double the number reported last year. Contrary to the usual experience, the majority of cases (thirty-four) occurred in the summer months—November, December, and January. It is possible that a number of the cases reported as diphtheria were really not due to the diphtheria bacillus, but were of a septic origin, such as may result from the use of milk from cows suffering from mammitis. The lack of regular inspection of the dairies makes this latter a probable source of disease. However, the examination of the specimens sent in by medical men showed that there were a large number of cases of true diphtheria in the city. A large proportion arose in the Mount Cook area, but all efforts to trace the source of the disease failed. As many were among adults, we were able to a certain extent to eliminate the question of spread through contact at the schools, though an inspection of the State schools at Mount Cook revealed a very unsatisfactory sanitary condition. This it may be said has in a great measure been removed by the action of the Education Board, which has effected improvements to the full extent of its financial resources, though far more sweeping changes would be desirable.

As in several cases diseased cats had been found at the infected houses, it was suggested that possibly these might be the means by which the diphtheria was being spread, in the manner reported by Klein some years ago. However, although a number of such cats were obtained and examined in the bacteriological laboratory, no trace of diphtheria could be detected in any of them.

The general sanitary condition of the city is satisfactory. Increased facilities for the disposal of house-refuse are required, and, doubtless, this will be rectified when the refuse-destructor is reorganized, as it must be shortly now that the necessary expenditure has been authorised. The service should then be extended to the suburbs, where—notably in the Kelburne and Roseneath districts—the householders are in sore straits for the lack of facilities for the disposal of refuse.

At Kelburne and Kilbirnie the lack of drainage has been responsible for much trouble. It is satisfactory to learn that in the former district the Council propose now to lay a sewerage system, while Kilbirnie will shortly be connected with the water-service, and the sewerage system must then follow. The rapid growth of these places makes such improvements absolutely imperative.

Smoke Nuisance.—During the year the Council made an effort to deal with this question, and laid informations against several of the principal offenders. Owing, however, to legal technicalities which do not appeal to the lay mind the cases broke down in Court. It is evident that the law should be amended in this direction, for there can be no question that unless checked the health of the community will suffer as the number of smokestacks increase, and already many individuals are sufferers—if not the public in general. If the municipalities were given the power to regulate by by-law the number of minutes per hour that a chimney could be permitted to emit black smoke, the danger could be averted. The English law as it applies in Birmingham and other great manufacturing centres might well be copied.

The housing question and other matters have been dealt with elsewhere.

It is satisfactory to be able to add that in all matters affecting the sanitation of the city the officers of the Council have afforded us the most cordial assistance and support, with the result that there has been a happy absence of friction, which the efforts of this Department occasionally meet with elsewhere.

Lower Hutt.

Population, 1,823. Infectious diseases reported—Scarlet fever, 4; enteric fever, 1; diphtheria, 1; tuberculosis, 1.

During the past year the Council has initiated a system for the removal of nightsoil. A suitable site has been obtained and the necessary plant erected thereon. Mr. Laing-Meason's scheme for the drainage of the borough is shortly to be put before the ratepayers.

Petone.

Population, 3,780. Infectious diseases reported—Scarlet fever, 7; diphtheria, 2.

Despite this borough being thickly populated in some parts, its sanitary condition is good. The nightsoil-removal system is working well, and the majority of houses are connected with drainage for slop-waters.

Onslow.

Population, 1,499.

Very little has been done by this borough as regards sanitation. The existence of a number of offensive trades at Kaiwarra has been the cause of a great deal of complaint, though some improvement may be claimed to have taken place during the past two years.

The Council is still considering the advisability of establishing a system for the removal of nightsoil, and the Department has approved of a suitable site for the depot.

Karori.

Population, 1,212.

The chief difficulty in this borough is the disposal of slop-wastes. In dry weather these occasionally give rise to considerable nuisance, but in wet weather the configuration of the ground tends to remove any possible source of objection.

New Plymouth.

Population, 4,405. Infectious diseases reported—Scarlet fever, 4; enteric fever, 5; diphtheria, 1.

The drainage-works are being pushed on. The sewers and drains are being laid under the supervision of Inspector Kendall. The septic tank has not yet been erected.

I regret that Inspector Kendall, who has done exceedingly good work in the district, has severed his connection with the Department. As evidence of the good work he has done his services have been retained by the New Plymouth Borough Council.

Hawera.

Population, 2,131. Infectious diseases reported—Scarlet fever, 3; enteric fever, 1; diphtheria, 1; tuberculosis, 2.

Hawera has a splendid water and drainage system, and I hope soon to see all premises in the borough connected therewith.

Stratford.

Population, 2,027. Infectious diseases reported—Scarlet fever, 8; enteric fever, 1; diphtheria, 1.

Connections with the drainage system are being pushed on, and are very nearly completed. The railway-station has been connected with the water system. The septic tank and filter-beds appear to be working particularly well, the analysis of the effluent from the latter being very satisfactory

It is interesting to note that the Borough Council has paid £900 as compensation to the owner of the land on which the septic tanks have been erected; the original claim was £3,000.

The sanitary condition of the town has greatly improved.

Manaia and Opunake.

Manaia.—Population, 447. Infectious diseases reported—Enteric fever, 1.

Opunake.—Population, 466. Infectious diseases reported—Enteric fever, 1.

Inspectors Kendall, Wilson, and Brownlie have in turn visited these townships, which have adopted the by-laws recommended by the Department. Considerable trouble has been occasioned by a septic tank at the Manaia Hotel. The trouble was due in the first place to the large amount of storm-water which was gaining access to the soak-pit into which the effluent is allowed to run, and also to the carelessness of the occupier of the hotel in not giving ordinary attention to the drains connected with the tank.

Eltham.

Population, 1,400. Infectious diseases reported—Enteric fever, 5; tuberculosis, 2.

The drainage and water system is now practically in working-order, and connections therewith are being pushed on.

I drew the attention of the Council to the large prices demanded by some plumbers for connecting the houses. Consequently the engineer was instructed to have some connections made by day-labour; a considerable reduction in the plumbers' charges was the consequence.

Very sweeping improvements have been made at the Eltham Hotel, which for some time past has been regarded as a possible focus of typhoid infection. Since the improvements have been made no suspicion has been attached to the hotel. The sanitary condition of the town has greatly improved during the past year. All the excreta-pits have been filled in under the supervision of Inspectors Kendall and Brownlie.

Inglewood.

Population, 719.

The ratepayers have agreed to a loan of £15,000 for water and drainage.

Waitara.

Population, 765. Infectious diseases reported—Scarlet fever, 2; tuberculosis, 1.

The sanitary condition of this town has been much improved. It is to be hoped that the improvements made in the newly erected freezing-works will considerably mitigate the nuisance therefrom.

Wanganui.

Population, 7,335. Infectious diseases reported—Scarlet fever, 23; enteric fever, 8; diphtheria, 12; tuberculosis, 14.

The sanitation of this town has improved considerably during the past few years. Though the system of drainage is old-fashioned, the sanitary condition of the town as a whole is good. A great improvement has been made this year in the installation of the Okehu water-supply. It is very pleasing to notice the considerable diminution of notifications of typhoid fever—only nine cases have been reported this year.

The decision of the Council to allow the employment in the borough of none but duly qualified plumbers is a very wise one.

The sanitation of the suburbs of Aramoho and Durietown is far from satisfactory, though some improvement has been made in the former. The sanitation of Wanganui will never be perfect until these two suburbs are included in a "Greater Wanganui."

The system for removal of refuse in the borough is most unsatisfactory. It would be very much better for the Borough Council to undertake the work and not leave it in the hands of a contractor. The latter only cleanses those places where he receives a fee from the householder for so doing. The result of such a system is obvious.

So far many of the old buildings condemned by the Department have not been removed, but the Borough Council has requested the Department to take action.

The carrying of the sewer outfalls to low-water mark is a great improvement, and since that date very little nuisance has been complained about.

Inspector Hurley has done very good work in this borough and neighbourhood.

Marton

Population, 1,101. Infectious diseases reported—Scarlet fever, 2; enteric fever, 1; tuberculosis, 3.

Sanitation fair. There has been some talk of a drainage scheme being installed—in fact an engineer's estimate has been obtained. Six thousand pounds would be very well spent in this direction

Rangitikei County.

Population, 7,570. Infectious diseases reported—Scarlet fever, 24; enteric fever, 1; diphtheria, 3; tuberculosis, 2; blood-poisoning, 2.

In this is included the townships of Hunterville, Mangaweka, and Taihape. The former has severed its connection with the county and is now a Town Board. Mangaweka and Taihape are considering the advisability of following the example of Hunterville. At Hunterville and Taihape considerable sanitary improvements have been made during the past year, but at Mangaweka little or nothing has been done.

Inspector Wilson has done good work in this district.

Masterton.

Population, 3,949. Infectious diseases reported—Scarlet fever, 12; enteric fever, 3; diphtheria, 2; tuberculosis, 1.

Sanitation good. Considerable extension has been made in the drainage system during the year. I have again drawn the attention of the Council to the advisability of providing a better system for the removal of rubbish. Great improvement is noticeable in the plumbing. An improvement has also been made in the distribution of the effluent from the septic tank. In place of the old filter-beds, which were practically useless, the effluent is now distributed over some 5 acres of specially prepared land in the immediate vicinity of the tank. This system is working well. It is to be hoped that the Council will acquire another 5 acres at least for the purpose of irrigation.

The drainage of the Kuripuni portion of the borough requires serious consideration.

Carterton.

Population, 1,205. Infectious diseases reported—scarlet fever, 2.

A good water-supply has been obtained, and a water and drainage scheme is in course of construction.

Greytown.

Population, 1,122.

There seems little prospect of a water or drainage scheme being adopted by the ratepayers. The sanitation of the district is fair.

Inspector Dolby has done good work in the Wairarapa.

Featherston.

Population, 629. Infectious diseases reported—Scarlet fever, 2; diphtheria, 5.

This is quite a model little town: it is well situated and kept clean—the only blot on it being a septic tank at the hotel recommended by the Department which cannot be said to be working well. Featherston is likely to be provided with a water-supply at an early date.

Pahiatua.

Population, 1,209. Infectious diseases reported—Scarlet fever, 3; diphtheria, 7.

A drainage and water scheme is now installed. It would have been better I think to have located the septic tank a little further from the township, but with due care there is not likely to be much danger to persons living in the vicinity.

The number of cases of diphtheria notified occasions comment. The accommodation of these cases assisted me in drawing the attention of the Hospital Board to the advisability of having some accommodation at the hospital for infectious cases. Plans of a small isolation hospital have been forwarded to the Board.

Palmerston North.

Population, 6,534. Infectious diseases reported—Scarlet fever, 19; enteric fever, 1; diphtheria, 6; tuberculosis, 6; blood-poisoning, 1.

A new drainage system has been installed, and should now be in working-order. It remains for the Council to take a firm stand in insisting that houses within the drainage area should be connected with a sewer. The borough by-laws badly require revision and bringing up to date, particularly with regard to plumbing. The removal of rubbish is being better attended to, but Palmerston is badly in need of a rubbish-destructor. The Hospital Board has now in course of erection an infectious-diseases hospital for the accommodation of eight patients.

Inspector Perry has done good work in the district. He has been retained by the Borough Council as its Inspector.

Feilding.

Population, 2,298. Infectious diseases reported—Scarlet fever, 14; diphtheria, 6; tuberculosis, 2.

Drainage and water works are now being installed. New by-laws are badly required. The sanitary condition of the borough is fair.

Horowhenua County.

Population, 4,654. Infectious diseases reported—Scarlet fever, 5; enteric fever, 4; diphtheria, 10; tuberculosis, 2; blood-poisoning, 1.

Sanitation in this county is of a retrograde character. For some time the exertions of Inspector Brownlie bore good results, but with his removal from the district sanitary affairs have lapsed into their ordinary condition.

T. H. A. Valintine, D.P.H., M.R.C.S., L.R.C.P., &c., Eng.

Infectious Diseases reported.

	Scarlet Fever.	Enteric Fever.	Diphtheria.	Tuberculosis.	Blood-poisoning.	Totals.
Boroughs.						
Wellington	164	39	60	67	7	337
Palmerston North	19	1	6	6	1	33
Wanganui	23	8	12	14	..	57
New Plymouth	4	5	1	..	..	10
Pahiatua	3	..	7	..	..	10
Petone	7	..	2	..	..	9
Masterton	12	3	2	1	..	18
Marton	2	1	..	3	..	6
Carterton	2	..	..	..	..	2
Feilding	14	..	6	2	..	22
Lower Hutt	4	1	1	1	..	7
Hawera	3	1	1	2	..	7
Patea	2	..	..	1	..	4
Foxton	..	1	1	1	1	3
Eltham	..	5	..	2	..	7
Waitara	2	..	..	1	..	3
Stratford	8	1	1	..	..	10
Total	269	66	100	101	9	545
Town Districts.						
Waverley	10	1	1	..	..	12
Opunaki	..	1	..	..	..	1
Featherston	2	..	5	..	..	7
Bull's	2	..	..	1	..	3
Halcombe	2	..	..	1	..	3
Manaia	..	1	..	..	..	1
Total	16	3	6	2	..	27
Counties.						
Kiwitea	7	1	..	1	..	9
Rangitikei	24	1	3	2	2	32
Taranaki	..	2	1	..	..	3
Oroua	3	1	7	3	..	14
South Wairarapa	2	1	..	1	..	4
Pahiatua	1	..	..	..	..	1
Horowhenua	5	4	10	2	1	22
Hutt	13	15	..	3	..	31
Manawatu	2	..	4	1	..	7
Wanganui	4	..	..	..	..	4
Eketahuna	11	..	..	..	..	11
Masterton	1	..	..	..	..	1
Waitotara	2	..	7	..	..	9
Stratford	4	1	..	..	..	5
Wairarapa	..	..	..	1	..	1
Akitio	1	..	..	..	..	1
Clifton	2	..	..	..	..	2
Hawera	3	4	..	..	..	7
Castlepoint	..	1	..	2	..	3
Patea	..	..	2	..	..	2
Total	85	31	34	16	3	169
Summary.						
Boroughs	296	66	100	101	9	545
Town Districts	16	3	6	2	..	27
Counties	85	31	34	16	3	169
Total	370	100	140	119	12	741

There were no prosecutions under the Public Health Act in the Wellington District during the year ending the 31st March, 1905.

PROSECUTIONS under the ADULTERATION PREVENTION ACT.—Wellington District, during the year ending 31st March, 1905.

No.	Date.	Offence.	Result.
1	7th November, 1904	Adulteration of milk ...	Fined 40s., and costs 38s. 6d.
2	"	" ...	Fined 40s., and costs 70s.
3	"	" ...	Fined 10s., and costs 70s.
4	"	" ...	Convicted; costs 70s.

NELSON DISTRICT.

After the transfer of Dr. Frengley to Auckland, this district was attached to the Wellington Health District, and has been visited by Dr. Makgill or myself as occasion might require, while the routine duties have been ably attended to by Inspector Middleton, a summary of whose work is appended. It has been impossible to devote as much attention to the minutiæ of sanitary matters as the district requires, but the recent appointment of Dr. Hudson as local Health Officer will rectify this difficulty. The district has been fortunately free from any widespread epidemic, and on the whole there has been an advance in sanitation in the larger centres.

The following table indicates the incidence of infectious disease :—

	Scarlet Fever.	Enteric Fever.	Diphtheria.	Tuberculosis.
Nelson City	19	8	..	7
Motueka Borough	20	..	..	2
Richmond	..	1	..	..
Stoke	2	..	..	2
Hope	..	2	..	1
All other districts	6	2	2	8
Totals	47	13	2	20

In Nelson the majority of the disinfections have been done by the officers of the City Council, and at Motueka also the Borough Council has undertaken this work. In the rest of the district this work has been done by Inspectors Middleton and Munro. The totals are as follows: By Nelson City Council, 26; by Motueka Borough Council, 10; by Department of Public Health, 19.

NELSON CITY.

Population, 7,167.

It is satisfactory to record the great fall in the notification returns of infectious diseases during the past year.

Scarlet fever has dropped from seventy-two in the previous year to nineteen for the year just ended. A few cases prevailed during the winter months, and in one instance there was a slight outbreak in connection with a school, but on the whole the cases have been isolated ones, and during the months of January, February, and March no cases occurred.

Enteric fever.—Here we have a most gratifying decrease, the number of cases notified during 1904–5 being but eight, as against twenty-nine the previous year, and twenty-seven the year before that. It is perhaps unwise to be too precipitate in drawing conclusions, yet one may be permitted to remark that this decrease follows on the final exclusion of the oyster-beds from the sewage-polluted zones in the harbour, which was effected by Dr. Frengley last year. There is no question as to the frequency with which disease is conveyed by oysters exposed to sewage contamination, and the condition of the shallow foreshores certainly rendered it quite unsuited for storing oysters. In this connection, notice was served during the year prohibiting the removal of gravel from the polluted areas, as it was evident that this material when used for paving yards, &c., might easily be productive of disease.

Diphtheria.—No cases occurred, as against three the previous year; doubtless a hopeful sign.

Tuberculosis remains much the same as last year, seven cases having been notified.

INFECTIOUS-DISEASES HOSPITAL.

The drop in the number of infectious cases has no doubt tended to lull the authorities into a sense of false security, for this much-needed building has not yet been provided; however, a further advance has been made, inasmuch as the necessary legal steps were taken to fix the basis of allocation for the cost among the various local bodies concerned. The representatives of the Hospital Board and the contributing bodies appeared before the Stipendiary Magistrate, Mr. Eyre Kenny, while the Department was represented by Dr. Makgill. Mr. Eyre Kenny's decision was as follows: City of Nelson, £352; Borough of Richmond, £38; Waimea County Council, £268 10s.; Borough of Motueka, £22 10s.; Collingwood County Council, £28 10s.; Takaka County Council, £40 10s.: total, £750.

How greatly this hospital is required is emphasized by a recent case, where a pedlar without any fixed abode was found to be suffering from scarlet fever. The hospital authorities having no special accommodation demurred to receiving him there, and naturally no private boardinghouse would accept him, and there was a prospect of the unfortunate man being compelled to camp in the open air. In-

spector Middleton rose to the occasion, however, and turned the Health Office into a temporary ward, and made the patient comfortable there until the hospital authorities were able to arrange for his reception.

Consumptive Annexe.

The public of Nelson are to be congratulated on having tackled this important question in a generous spirit, and the building will in a few months be an accomplished fact. This subject is more fully dealt with in another part of my report.

Sewerage.

It is to be regretted that I cannot report any advance in the direction of obtaining the much-needed modern sewerage system. The matter remains in the same unsatisfactory condition as reported by Dr. Frengley last year. Although the scheme has been sanctioned by the ratepayers, the necessary financial arrangements have not been made by the Council, whose sanitary zeal is tempered by questions of economy to an extent somewhat exasperating to the earnest reformer in public-health matters.

As regards house drainage and plumbing, a distinct improvement may be noted in the more recent work, thanks to the supervision of Inspector Middleton, whose co-operation in this direction has latterly been readily accepted by the Council. The lack of modern sanitary by-laws hampers this work of reform, but acting on a few general recommendations drafted by the Wellington office, the Council has been able to give effect to the Inspector's suggestions. In this way some very defective plumbing which had been put in at a new hotel has been improved to the extent of removing some of the more serious defects, while at a biscuit-factory and many private dwellings up-to-date house connections have been installed.

Ruinous buildings are somewhat plentiful for so small a town. During the year four of these have been condemned, and extensive repairs have been ordered in four others.

In the country districts but little requires to be reported. A fairly severe outbreak of scarlet fever occurred at *Motueka* during the earlier part of the year, twenty cases being reported. As a result, the Borough Council undertook the disinfection of premises within their district, and their officer received the necessary instructions in the methods.

At *Richmond* considerable improvements have been effected in the method of drainage and nightsoil-disposal. This place is too small to go in for any scheme, but on the representations of the Department many cesspit privies have been removed, and pan privies substituted. For slop-waters soak-pits have been provided in certain houses which formerly polluted a stream, while at one large establishment a complete septic tank with filter-trenches has been provided with the same object.

At *Stoke* certain alterations were suggested in the sewerage scheme for the new orphanage, and have been adopted by the architect. A complete septic tank and filter-beds have been installed here.

At *Wakefield* improvements have been effected in the method of disposal of the effluent from the creamery, which had in former years created a considerable nuisance.

Appended is a table showing the work done by Inspector Middleton during the year. He has shown himself to be a zealous and capable representative of the Department.

T. H. A. Valintine.

Department of Public Health, Nelson, 17th June, 1905.

Memorandum for Assistant Chief Health Officer, Wellington.

Re Annual Report: A tabulated report was forwarded on the 1st April, 1905, but I herewith give the matter asked for in yours of the 16th instant:—

Infectious Diseases.	1904.									1905.			Total.
	April.	May.	June.	July.	Aug.	Sept	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	
Scarlet fever	1	7	3	4	6	4	5	2	1	...	...	...	33
Enteric fever	2	...	1	1	...	...	2	...	...	...	...	...	6
Diphtheria	...	...	...	...	...	1	...	...	...	...	...	...	1
Tuberculosis	...	1	...	2	2	2	3	2	3	1	1	...	17

Disinfections.—By Department of Public Health, 19; by Nelson City Council, 26; by Motueka Borough Council, 10.

Inspections.—By Department of Public Health: Westport, 45; Denniston, &c., 30; Greymouth, 100; Brunnerton, 20; Reefton, 25; Hokitika, 30; Kumara, 25; Nelson, 630; Richmond, 30; Motueka, 20; Wakefield, 10; Outlying places, 60: total, 935.

The above include all public places, as hotels, boardinghouses, &c.

The plumbing and drainage of Nelson buildings are being inspected as the buildings are erected.

Summary of Inspectors, &c., from 1st April, 1904, to 31st March, 1905.—Infectious diseases reported, 50; infectious diseases investigated, 49; school-teachers notified, 43; house premises inspected, 261; house premises reinspected, 229; hotels inspected, 86; hotels visited, 5; schools inspected, 9; work-

shops inspected, 9; fruit-shops inspected, 42; meat-shops inspected, 29; fish-shops inspected, 6; oyster-shops inspected, 6; oyster-beds inspected, 1; bakehouses inspected, 40; butter-factories and creameries, 3; townships, general inspection; nuisances found, 8; complaints, 16; complaints investigated, 16; complaints abated by Department, 17; complaints referred to local authority, 7; complaints abated by local authority, 7; sanitary defects found, 31; sanitary defects referred to local authority, 7; sanitary defects remedied by local authority, 6; sanitary defects remedied by Department, 9; requisitions by Department to local authority, 11; requisitions complied with by local authority, 5; dilapidated buildings inspected, 67; buildings condemned by Department, 4; buildings ordered to be repaired, 4; dairies inspected, 35; cowsheds inspected, 43; milk-shops inspected, 2; private hospitals inspected, 2; drainage-plans approved of, 30: total number of inspections and visits, 940

E. Middleton, A.R.S.L., Inspector.

Sir,— Department of Public Health, Wellington, 28th June, 1905.

I have the honour to present to you a report on the work done during the year, 1904–5.

Owing to the delay in the completion of the Stock Department laboratory at Wallaceville, the two laboratories during the year have remained combined as heretofore, and the bulk of the pathological work has been done by Mr. Gilruth and his staff; and as the vaccine laboratory was not completed till towards the end of the year, my time has been chiefly occupied in the general administrative work of the Wellington and Nelson Districts, of which I had sole charge in the early part of the year. Dr. Valintine's report will deal with the general district work; therefore I propose to confine myself to such subjects as have come more directly under my control.

Housing.

A considerable amount of work has been done in the matter of the improvement of the condition of the dwellings in the district, and the number of ruinous insanitary houses which each year require demolition or extensive repair is evidence that the jerry-builder flourishes here as in older countries. This is more especially the case in Wellington, due, doubtless, partly to the difficulty of getting good building-material, and partly to the high price of land, which exhausts the funds of the would-be builder and makes him seek cheap methods in the construction of his house. Certainly many of the dwellings which have come to our notice do not owe their decrepitude to antiquity.

Except in one area there has been no attempt at a systematic house-to-house inspection, the different cases being dealt with as they chanced to come under the notice of the Inspectors in the course of their ordinary duties. This is, perhaps, the better method, for any attempt to deal comprehensively with the undesirable dwellings in the larger centres would result in a large number of families being turned adrift, and already there is a great difficulty in finding sufficient house accommodation, even among those who can afford to pay moderately high rents. As it is, the fact that, on account of their highly insanitary condition, we have been obliged to order the demolition or extensive repair of seventy-three house in Wellington City alone during the past year, has doubtless contributed to the difficulties in the way of those in search of dwellings at low rentals.

The better housing of the poorer classes is a problem requiring the attention of the authorities perhaps more urgently in Wellington than in other centres. That here there is overcrowding of houses is apparent to all; but it is perhaps not so well known how much overcrowding there is inside the houses. It is not unusual to find a six- or eight-roomed house occupied by three or four families—a whole family being huddled into one or two rooms—and were it not that Wellington possesses an excellent sewerage system, the zymotic death-rate would be extremely high. Mention was made in last year's report of an area in which there were seventy-two persons per acre. Of course, this is small compared to the population of the slum districts in some English towns, but it is surely undesirably large in so young a community and in a country with many thousands of acres of land practically uninhabited within two or three miles of the centre of the city.

With the causes contributing to this state of affairs we are only concerned in so far as they may serve to indicate to younger centres with rapidly growing populations how to avoid the difficulty, or may indicate the direction in which to seek the remedy for the evil once it is established. The physical conformation of the ground, the former absence of rapid means of transit to the suburbs, and later the price of land and the system of rating, have, no doubt, all had their influence. But if in the earlier days of a growing community by-laws were enforced defining the area of land on which a dwelling might lawfully be established, it would compel the inhabitants to find means for overcoming the natural difficulties in the way of suburban extension. It would be well to draw the attention of these communities to the powers now possessed by all local bodies to frame by-laws limiting the overcrowding of houses on sections, compelling each to have a frontage to a street, and so forth. It is certain, however, that these powers of local authorities still require widening and defining, for it somewhat detracts from their value when we find (as in section 27 of "The Municipal Corporations Amendment Act, 1903") that the limit for back-yard space has been fixed by statute so low as 300 square feet. It would surely be wiser to have the adoption of this extremely low limit permissive on the part of a Borough Council. The natural desire of owners of suburban land to make the most of their property, and the apparently inherent tendency for certain classes to aggregate together as closely as possible must lead to the fullest advantage being taken of so meagre a limitation; and the suburban borough with roseate visions of rows of neat detached villas in well-kept gardens will wake to find itself a reproduction of the overcrowded parts of the city with only a few minutes' rail or tram journey to remind its inhabitants that they are presumably enjoying the benefits of rural life. It is of little use spending money in schemes for the better housing of the working-classes if it is only to result in taking them from a well-sewered slum within ten minutes of their work to place them in an ill-drained slum a few miles away, necessitating his getting up half an hour earlier and perhaps spending the difference in his rent on train fare.

The following is a summary of the work done in this direction during the year: Houses condemned —Wellington, 37; Hutt Borough, 7; Hutt County, 1; Feilding, 1; Carterton, 1; Palmerston North, 3; Nelson, 3; New Plymouth, 6; Hokitika, 13: total, 72. Houses in which extensive repairs were effected—Wellington, 36; Nelson, 5; Richmond, 3; Paparangi, 1; Lower Hutt, 2; Reefton, 3; Marton, 1; Feilding, 3; Levin, 4; New Plymouth, 1; Palmerston North, 1; Waeraroa, 2: total, 62. This does not include minor repairs and improvements in drainage, &c.

A house-to-house inspection was made of the area bounded by Cuba, Dixon, Abel Smith, and Ghuznee Streets, and a large number of requisitions for repairs, &c., to premises in this district were forwarded to the City Council, which have all through had the improvements carried out without friction.

Drainage and Disposal of Refuse.

Sewerage systems are in progress in several of the larger towns, and inspections of these have been made by officers of the Department at Palmerston North, Stratford, Hawera, Masterton, and Feilding. In some instances minor alterations have been recommended. Plans for drainage have been submitted and approved for Feilding, Marton, Taihape, Carterton, and Eketahuna, and the work is either in progress or should shortly be undertaken. Inspections have been made, and temporary arrangements recommended for the better disposal of sewage at Upper Hutt, Richmond, Kaponga, and Johnsonville—these places being too small to be able to afford anything in the shape of extensive drainage-works.

Nightsoil or Rubbish Depots have been inspected and approved for Karori, Lower Hutt, Petone, Upper Hutt, and Taihape. In many instances difficulty is experienced with the present legal powers as regards rating for sanitary services. The present limit of 6d. does not yield sufficient income to meet the expenditure where, owing to the physical conformation of the ground or the scattered character of the town, the cost of administration is high. As it is most desirable that such services should be carried out by the local authority rather than by a contractor who collects the fees direct from the householder, it would be well if the law were amended in this respect, either by increasing the rating-power or by enabling an authority to make up deficiencies from the general rates. The closed-pan service is the only satisfactory method of nightsoil-removal, but unless it is thoroughly well carried out it is no better than the older cruder systems. Thus a specially strong pan and lid are essential, and these must be carefully cleansed and disinfected by steaming, and the wagons also must be kept scrupulously clean. These very necessary precautions increase the cost of the service, which is thus often beyond the reach of a local body under the present system of rating.

Septic Tanks.—Private systems for drainage-disposal on a small scale for schools, factories, private houses, &c., generally resolve themselves into adaptations and modifications of the septic tank, and, given proper conditions, there is no doubt this is the most satisfactory method to adopt. Strict supervision of the work by those who have studied the subject is, however, necessary, as cases are not infrequent where, owing to want of knowledge of the limitations of the system, tanks have been installed which have created a serious nuisance. The chief difficulty lies in arranging the filter-bed, for the effluent as it comes from the tank is charged with offensive gases, which are given off as the fluid spreads over the surface of the filtering-material. Where the ground is sufficiently porous and free from subsoil-water, perhaps the simplest plan is to carry the tank-effluent direct into covered subsoil trenches, and thus allow the natural soil to act as the nitrifying agent. But each case demands special consideration, and no hard-and-fast rule can be laid down. The disposal of the final effluent is another matter requiring special consideration, for, as I pointed out in my report last year, it is doubtful whether, in these small installations, the same degree of purity of effluent can be obtained as that which has rendered this system so satisfactory where the sewage of large towns is dealt with.

The disposal of the washings from butter-factories, creameries, and so forth, has proved a somewhat difficult problem, and one to which I have devoted some little attention this year. This kind of drainage if allowed to stagnate becomes very offensive, and the septic-tank system apparently is not quite applicable, as, possibly owing to the production of lactic acid retarding the growth of liquefactive organisms, the tanks are liable to choke up with scum and silt. This difficulty may be got over by emptying the tank perhaps twice a year and burying the solid contents, but this can scarcely be regarded as satisfactory. The manager of one large factory near Feilding has devised a method which, though it involves a considerable amount of labour, appears to offer good prospect of success. It is simply the mechanical filtration through coke breeze of the milky drainage from the factory. Once a week, as the coke begins to get sour and choked with solid particles, it is taken out of the filter-bed and burned in the boiler-furnace. The sample of the resulting effluent submitted was quite satisfactory.

Plans for drainage systems have been dealt with by the Department at the following places: Hotels and boardinghouses at Otaki, Levin, Shannon, Manaia, Patea, Manakau, Opunake, Taihape, Richmond, and Nelson—totalling fifteen in all. Schools at Johnsonville, Spring Grove, Mataroa, and Okaiawa. Dairy factories at Bunnythorpe, Halcombe, Makino, Feilding, and Wakefield.

Plans and advice have been furnished to private individuals at Miramar, Petone, Lower Hutt, Northland, Karori, Taihape, Feilding, and many other places. Extensive drainage alterations in private premises have been carried out at the instance of the Department in nine houses, and minor alterations in some hundreds of cases.

Inspection of Foods, Etc.

This branch of public-health work will remain in the present unsatisfactory state until special inspectors are appointed who shall specialise in this work. At present it is done in a very fragmentary fashion.

A certain amount of work, chiefly as regards sanitation of bakehouses, retail butcheries, and so forth, falls on the Inspector of Factories, and so comes into the scope of the Labour Department, while the Stock Department deals in part with the sanitation of dairies. This divided control results, as might be expected, in an unnecessary expenditure of work with little to show for it.

An attempt was made at co-operation between the Stock and Health Departments in an inspection of the dairies supplying Wellington. The work is not complete yet, but it has served to show how very unsatisfactory is the sanitary condition of the majority of these places, and how great the need for organized inspection. As it is at present, any honest effort on the part of the supplier to obtain and distribute wholesome milk is discouraged, for the public have not yet learned to value the sound article, and are just as ready, prices being equal, to buy the bacteria-laden product of the cow fed on the refuse-tip and milked in the muck-heap, as the chilled and pasteurised milk from a model dairy. The latter gets no return for the trouble and money so spent, and as a dairy is worked for profit and not from philanthropic motives, the dairyman cannot be blamed if, his sanitary zeal being damped, he slips back into the habits of his less scrupulous rival. We appoint meat-inspectors at abattoirs whose whole duty it is to see that the meat supplied to the public is wholesome. Why should not so much more sensitive an article of food as milk receive similar attention, especially when we remember the important part it plays in the diet of children and invalids ?

The idea of a municipal milk-depot in each of the larger towns is well worthy of consideration. At such a place all the milk coming into the town would be received and inspected, the condition of the tins, &c., noted, and samples of milk taken for analysis where deemed advisable. The milk could then be passed on to the retailer, whose premises should of course be under strict supervision. It is not necessary to adopt the system in vogue in some Continental towns, where the local authority itself takes on the functions of the retailer. Depots of this type combined with systematic inspection of the farms would go far to insure the uniform purity of the milk-supply, and would not unduly interfere with private enterprise.

The following work had been done during the year : Sanitary improvements effected in bakehouses, &c.—In Wellington, 2 ; Otaki, Taihape, 2 ; Mataroa, Shannon, Nelson, 1.

Vegetable-shops.—All the Chinese fruiterers' shops in the district have been inspected during the year, and many improvements effected. In one instance, a Chinese fruiterer found to be suffering from a contagious disease was removed from the shop.

In several instances improvements required in butchers' shops and dairies have been referred to other Departments more directly controlling them.

Food-stuffs condemned include a number of turkeys and ducks at an auction mart, five cases of eggs, a truck-load of patatoes, part of a shipment of flour, vegetables in a Chinese shop, &c.

Examination of doubtful food-stuffs in the laboratory was carried out in eleven instances, details of which appear in the laboratory report.

Prosecutions.—For adulteration of milk, 4 ; for selling unwholesome vegetables, 1 ; for insanitary conditions at a dairy, 1. In all cases convictions were obtained.

By-laws.

The frequent applications from growing boroughs and Town Boards for sanitary by-laws shows that there is urgent need for the framing of a set of models after the manner of the English Local Governing Board. Three sets are required, one for cities and large boroughs with drainage facilities, another for smaller communities with more primitive sanitary arrangements, and a third for rural districts. A certain amount of progress has been made in this direction, but it is work which above all others requires uninterrupted attention and deliberation, and these requisites unfortunately are difficult to obtain with the unceasing calls on one's time made by the routine work of office and laboratory.

By-laws submitted by the following bodies have been examined and approved : Eltham Borough Council (drainage), Hutt County Council (general), Hutt Borough Council (nightsoil), Otaki Road Board (general). General sanitary and drainage by-laws for Nelson City Council are in course of preparation.

Quarantine, and Dangerous Infectious Disease.

We have been fortunate this year in avoiding the necessity for any stringent precautions as regards oversea shipping.

Against *plague* the usual routine regulations against the landing of rats were in force in the earlier part of the year. An outbreak of mortality among rats at Wanganui was investigated, and found to yield no cause for alarm.

A case of supposed plague arrived by an oversea steamer, and was taken to the Wellington Hospital, where the patient died. Subsequent *post-mortem* and microscopical examination proved that it was not a case of plague, but one of blood-poisoning.

For *leprosy* three Chinese were examined, one from a Sydney boat, another resident in Wellington, and a third at Palmerston North. None were found to be affected by this disease.

For suspected *small-pox* one case in Wellington was isolated for a few days until the nature of the disease—aggravated chicken-pox—became apparent.

An outbreak of *diphtheria* on board a direct liner was dealt with by isolating some of the milder cases at Somes Island, while the severer cases were sent to the Hospital.

A shipment of flock of a dubious character was inspected and condemned.

A report on the needs at Somes Island has already been furnished. No improvement, however, has been begun, either as regards wharfage accommodation or in the buildings. These are matters urgently requiring attention.

ADMISSION OF PATIENTS TO CAMBRIDGE SANATORIUM.

A glance at the attached table shows that applications from 163 persons were dealt with during the past year, and as every such application meant three or four letters and telegrams, it will be seen that this was by no means the lightest of my duties.

Total applications dealt with during year 1904–5:
163
(M. 91+F. 72.)

Applicants on list, 1st April, 1904:	New Applications received during year 1904–5:
70	93
(M. 63+F. 7.)	(M. 54+F. 39.)
Applicants placed on register during year 1904–5:	**Applications deferred, withdrawn, &c.:**
118	45
(M. 69+F. 49.)	(M. 27+F. 18.)

Admitted to sanatorium during year:	Awaiting admission, March 31, 1905:
93	25
(M. 54+F. 39.)	(M. 15+F. 10.)

During the previous year, when the accommodation at the Sanatorium was very limited, and we were unable to cope with the rush of applicants eager to avail themselves of this new chance of recovery, a large number of names had accumulated on our lists, with the result that many had to wait nearly a year before their turn came; thus the institution received many cases who were by then too advanced to benefit by the treatment. On taking up this work, I found seventy names still remaining on the list of those awaiting admission, and it was decided to accept only a limited number of applications in future, and as few as possible till these seventy were disposed of. It is after all more humane to tell a patient as soon as he applies that he cannot hope for admission, than to let him suffer the disappointment of hope deferred for perhaps a year. The object of the Sanatorium is, moreover, destroyed if only these overdue cases can be dealt with. The applicants are now classified according to the amount they are able to pay, and a certain number of beds are set apart for each class, the majority perforce being for non-payers, or those who can only contribute a very moderate sum. A preponderance of beds has also to be set apart for male patients, who exceed the female for some reason by about 20 per cent. When the maximum number of names appear on the register of those waiting in any class we refuse to accept any more applications, advising the patient to make another attempt in a month or two. If by then there is a vacancy, and he is still in a fit condition, his name is added to the register. The opening of the new wing about the middle of the year greatly relieved the congestion, and we are now able to keep the period of waiting within fairly reasonable limits, although in the non-paying male class our list is generally nearly full. A fair number refuse to avail themselves of the opportunity when thier turn comes, feeling perhaps better or having made satisfactory private arrangements for treatment. Others less fortunate have become too ill to undertake the journey to Cambridge; but perhaps the majority of the forty-five who failed to gain admission did so by neglecting to reply to our notices that a vacancy awaited them. Sometimes they had changed their addresses and neglected to apprise us of the fact, as one or two wrote later from other places making inquiries as to when their turn was coming. It is a matter for surprise that they should be so careless when so vital a matter is at stake. A certain number of applications were rejected on the ground that they were already too bad to hope for benefit. For these unfortunates there is at present no provision, and it is to be hoped that in the local schemes which have been so enthusiastically taken up by the public in several districts, a place will be found for the incurable. While on this subject, mention should be made of the charitable work done by Nurse Holgate in Wellington, who has undertaken the care of several cases for whom nothing could be done at Cambridge or Otaki. To her and the generous ladies who placed ground-space suitable for tents at her disposal, and otherwise assisted, the best thanks of the public are due.

It is evidently not yet widely enough known how important it is to begin the treatment at the very earliest stage. The majority of the cases with which we have to deal are far beyond the conditions in which complete recovery can be prognosed with some degree of certainty. This is a detail in the anti-tubercle crusade the medical profession in the colony might well emphasize.

A different problem arises as regards applications for free treatment from new arrivals in the colony. To refuse an invalid the only hope of recovery because he is without money or friends seems the height of inhumanity, and yet it is scarcely fair to the colony to saddle it with immigrant pauper invalids. It is useless to expect our present quarantine restrictions to keep such cases out of the colony, as any medical man knows how impossible it is without minute examination to detect the presence of the disease, even in a case which soon after develops unmistakable symptoms. The system adopted in America, where the passengers on all ships of the usual cheap immigrant type are quarantined for a period during which they are closely examined, medically and otherwise, would doubtless act as an efficient filter, but it would cost the colony far more than the upkeep in the Sanatorium of the few pauper consumptives who at present manage to slip in. Two applicants of this type are at present on the "deferred" list awaiting a chance of communicating with their friends at home.

PLANS AND ESTIMATES FOR SANATORIA.

Plans for sanatoria at Otaki, New Plymouth, and Nelson have been submitted to me during the year, and estimates of cost of such places have been prepared for the Wellington Hospital Board and

South Canterbury. An attempt has been made in these designs to gain the maximum amount of open wall in the shelters and dining-rooms. It is desirable that a wall be obtained which shall be weather-tight in bad weather and be completely removable at other times. To this end a working-model was obtained of a rolling shutter, something after the style of the shop-window shutters familiar enough in the Old Country; probably something in this line, if it can be prepared sufficiently cheaply, will prove most suitable. I have to acknowledge much valuable advice on this subject from Mr. Campbell, Government Architect.

Private Hospitals.

The duty of inspecting and licensing premises intended for use as private hospitals devolved on this Department during the year as the result of the passing of "The Public Health Act Amendment Act, 1903."

The following is a return of the work done in this direction in the Wellington and Nelson Districts: Licenses applied for, 43; applications withdrawn, 3; licenses issued, 34; licenses refused, 3; applications held over for improvements, 3. In most cases where sanitary defects were pointed out, the necessary work was effected by the owner without demur.

The definition of a private hospital is a far-reaching one, and our list includes many dwellings where only an occasional lying-in patient is taken. The supervision of the work of these establishments will prove very onerous, and if effectually carried out will necessitate the appointment of some one who can devote his time chiefly to this work.

Sanitation of Mines.

This subject received some attention during the year. I visited the Reefton district, inspected six quartz-mines there, and interviewed the Inspector of Mines, Mr. Tennant, and his assistant, Captain Richards. I also took evidence offered by the representative of the miners' union, several mine-managers, and some miners, and examined the Registrar-General's returns for the district. A report has already been furnished embodying my conclusions. Briefly, I found that, except in the matter of dust from rock-drills in dry country, there was nothing calling for urgent reform. There is no reason to think that ankylostomiasis has so far made its appearance; but there is abundant evidence here, as in other countries, of the evil effects produced by the inhalation of the fine dust produced in hard-rock drilling and later when the ore is being shovelled after blasting.

In my report I mentioned that the Home Office were dealing with this question, and, as their report was not available, recommended waiting before taking any steps in the matter. Since then the blue-book on the subject has been received. Briefly, the Commissioners found that nearly the whole of the deaths of rock-drill men in Cornish metalliferous mines were due to miners' phthisis, and 74 per cent. at least (and probably all) of these were tubercular. They proved by experiment that the dust from the drilling could be prevented by a very small jet of water being driven into the bore, and where it resulted from blasting in "close ends," by using a powerful jet of water and air produced by the compressed air used in drilling acting on a few gallons of water contained in a strong metal cylinder. They recommend that the workings in general should be kept damp. They sum up by recommending as follows:—

"1. That the use of percussion rock-drills in hard stone without satisfactory precautions for preventing the dust being inhaled by the men, be prohibited in all mines.

"2. That special rules be established . . . . for the carrying-on of the work in such a manner as to reduce to a minimum the inhalation of dust by the various classes of men employed in the mines."

These recommendations have been adopted by the Home Office, and there is no reason why the Government here should not follow suit. The cost to the management of the mines would be small, for the report shows that it is not necessary to have an elaborate system of pipes for bearing water to the faces. By using the compressed air which supplies the power to the drill small reservoirs of water—12 gallons or less—are sufficient, and this serious danger to miners can be reduced to a minimum at the cost of a few pounds.

Examination of Sanitary Inspectors.

In two of the larger towns the borough authorities have appointed Sanitary Inspectors who shall in future deal exclusively with the borough work. It has been necessary therefore to obtain other Inspectors to attend to the work of the remaining portions of the combined districts. Another vacancy was caused by Inspector Hurley being transferred to the Pathological Department. Four Inspectors during the year have been taken on probation, and after some months of training at Head Office have been examined theoretically and practically as to their capabilities. Two have passed satisfactory examinations, and have been drafted to fill country vacancies, and one has not yet come up for examination.

Pathological Laboratory.

Owing to the delay in the completion of the Veterinary Department laboratory at Wallaceville the work of that Department has been carried on as heretofore in the Health Department laboratory, and the major part of the examinations in human pathology have been done by Mr. Gilruth and his assistants. A list of the specimens examined appears elsewhere.

As, owing to the distance from town of the laboratory, the services of Mr. Barker will be less available than formerly, Mr. Hurley, my assistant in the Vaccine Laboratory, who has already had experience in this direction, will take on similar duties in the Pathological Laboratory, and is now acquiring the necessary special technical knowledge under Mr. Barker's able guidance. The practical work of the two Departments has grown greatly, and has become almost beyond the possibilities of the very limited

accommodation of the Health Office. It may be hoped, therefore, that the separation of the two laboratories will result in increased efficiency, more especially as we shall still be able to avail ourselves of the valuable services of Mr. Gilruth and his staff.

Vaccine Laboratory.

This building was not completed till the end of February; therefore the preparation of vaccine was not at the close of the year satisfactorily established. Experiments are being made in the direction of obtaining a reliable strain of lymph, and until this is accomplished I do not propose to issue any for use by the Public Vaccinators. A supply has been obtained from the Local Government Board Laboratories, England, and this is at present undergoing the necessary tests of efficiency. So far three calves have been operated on, and in the course of a month or two I hope to have a stock of pure vaccine lymph which will pass satisfactorily all the safeguards laid down by the English and Continental authorities.

In the meantime I have made during the year a series of bacteriological examinations of the lymph obtained from the Hastings laboratory and from the English and American suppliers. Ten samples have been so examined, and a special report on the results obtained has already been submitted.

Presumably owing to the limited area of ground available the design of the laboratory building is somewhat after the style of that at Cologne, the preparation and storing-rooms being placed in an upper story over the stable and operating-rooms, the arrangement being such that the lymph, after removal from the calf, is prepared, tested, stored, and distributed without coming again in the neighbourhood of the stable or washing-room. The walls throughout are of smooth impervious cement, designed to offer little opportunity for the harbouring of impurities. The floors of the lower story are also faced with cement and drained to facilitate thorough cleansing. The general appearance of the building is pleasing—even picturesque; but it has been found necessary to modify some of the details in the original design to improve the lighting of the workrooms. The apparatus and internal fittings are similar to those in use at the English Local Government Board Laboratory. Behind the stable is a room where the preliminary washing of the calf can be carried out. The operating-room is fitted with a tilting table on which the calf is placed during the process of vaccination and later when the lymph is being collected. Here also are appliances for sterilising towels, aprons, instruments, &c., and for providing a sufficient supply of sterile water. During the processes of vaccination and the subsequent collection of the lymph the same precautions as regards both calf and operator are observed as in the operating-theatre of a hospital. After the lymph is collected the calf is submitted to examination by the Veterinary Department officers to insure that it was free from disease. Immediately above the operating-room and connected thereto by a staircase is a room fitted with appliances for the bacteriological testing of the lymph before issue. Next to this is the preparation-room, where the lymph is weighed, ground, and mixed with the glycerine. Special apparatus has been imported for this process, the machines being worked by electric motors. Finally, we come to tube room where the lymph is stored in a cool-chamber, kept at a constant temperature. When the bacteriological tests show that the proper degree of purity has been attained the lymph is taken again to the preparation-room, where it is drawn by a specially designed air-pump into the capillary tubes familiar to the medical profession, and it is then returned to the cool-chamber where it is stored till required for issue. Public Vaccinators will be asked to furnish reports on the success or otherwise of every tube sent out. Throughout the whole process from first to last we are following the methods adopted at the Local Government Board Vaccine Station, and I trust that subsequent reports will show the same satisfactory results as have been obtained by that institution.

I have, &c.,
R. H. Makgill, M.D., D.P.H.,
District Health Officer.

Dr. Mason, Chief Health Officer.

CANTERBURY DISTRICT.

Dr. Mason, Chief Health Officer, Wellington.

The Canterbury Health District comprises the Provincial District of Canterbury, the County of Waitaki in Otago, and the County of Kaikoura in Marlborough.

Vital Statistics.

Birth-rate.

The birth-rate per 1,000 population for the colony in 1904 was 26·94; for Christchurch City, 27·53; for Christchurch and Woolston, 27·41; The birth-rate for Christchurch is therefore above the average for the colony, and is the second highest in the four chief cities, Auckland and suburbs being highest, with a birth-rate of 29·80.

Death-rate.

The death-rate per 1,000 population for the colony in 1903 was 10·40, Christchurch City 11·39, and Woolston 11·29.

The following table taken from the Registrar-General's report in the *New Zealand Gazette* of the 16th March, 1905, gives the returns for Christchurch and Woolston for 1904.

—	Population—Census, March, 1901.	Estimated Mean Population, 1904.	Births registered in 1904.	Proportion of Births to the 1,000 of Population.	Deaths registered in 1904.							Proportion of Deaths to the 1,000 of Mean Population.
					Males.			Females.			Total Deaths.	
					Under 1 Year.	1 and under 5 Years.	5 Years and over.	Under 1 Year.	1 and under 5 Years.	5 Years and over.		
Christchurch...	57,041	48,752	1,342	27·53	69	13	194	70	10	156	512	10·50
Woolston ...		2,981	76	25·49	4	...	8	3	...	13	28	9·39
Totals ...	...	51,733	1,418	27·41	73	13	202	73	10	169	540	10·44

The death-rate for Christchurch and Woolston (10·44) is lower than the average death-rate for the four chief cities (10·73). It is higher than Auckland (10·20); a shade higher than Wellington (10·43); but lower than Dunedin (11·82).

Zymotic Disease.

Owing to the absence of any epidemic of zymotic disease during the year the deaths under this heading are few in number. Of the 67 deaths in the four chief cities from zymotic disease only 8 occurred in Christchurch. Of the 8 deaths, 3 were due to influenza, 1 to whooping-cough, 2 to diphtheria, and 2 to typhoid fever.

Diarrhœal Disease.

Of the 92 deaths from these diseases in the four chief cities, 21 occurred in Christchurch. Seventeen of these deaths occurred in the period from the 1st January to 31st March, 1904, and were referred to in my last report. During the period from the 31st March, 1904, to the 1st January, 1905, there were four deaths from these causes in Christchurch; from the 1st January to the 31st March, 1905, there were 8 deaths. The dry summer and hot weather were given as the principal causes of the large number of deaths in the previous year, and the absence of these conditions in the last summer accounts for the small number of deaths during the current year.

Infantile Mortality.

This was 10·36 in Christchurch City, as compared with 6·93 in Auckland, 9·55 in Wellington, and 8·74 in Dunedin. If the mean of the last five years is taken, Christchurch has an infantile mortality of 11·50, which is the second highest of the four cities, the infantile mortality in Auckland being 12·10.

Phthisis.

Of the 188 deaths from phthisis in the four chief cities in 1904, 42 occurred in Christchurch, the number being slightly lower than that of the other cities.

INFECTIOUS DISEASE.

Table No. 1.

—	Population.	Enteric Fever.	Scarlet Fever.	Diphtheria.	Tuberculosis.	Erysipelas.	Septicæmia.
Amuri County	1,142	...	...	...	...	...	...
Hawarden	...	...	...	...	1	...	...
Akaroa County	4,265	1	...	...	...	...	1
Ashburton County	15,552	...	..	...	5	...	...
Ashburton and suburbs	...	1	23	2	9	...	1
Rakaia	...	1	2	...	1	1	1
Ashley County	15,564	...	4	4	8	...	...
Amberley	...	...	1	...	2	...	...
Waikari	...	...	1	1	1	1	...
Rangiora	...	...	1	3	...	1	...
Kaiapoi	...	...	10	2	2	...	...
Springston	...	...	7	...	1	...	...
Cheviot County	1,120	...	...	...	...	...	...
Cheviot	...	...	1	...	...	1	...
Geraldine County	8,441	...	...	...	...	...	...
Geraldine	...	...	2	...	...	...	...
Temuka	...	1	...	3	...	1	...
Kaikoura County	1,765	...	...	...	...	...	...
Levels County	12,496	...	1	...	...	...	...
Timaru	...	1	18	3	3	2	...
St. Andrew's..	...	...	4	...	...	...	...
McKenzie County	1,642	...	..	...	...	...	...
Fairlie	...	...	...	...	2	2	...
Selwyn County	85,568	...	2	...	5	...	...
Christchurch	...	6	50	20	47	4	...
Woolston	...	1	7	4	2	...	...
Avon	...	...	4	...	1	...	...
Carried forward	...						

INFECTIOUS DISEASE—*continued.*

Table No. 1—continued.

—	Population.	Enteric Fever.	Scarlet Fever.	Diphtheria.	Tuberculosis.	Erysipelas.	Septicæmia.
Brought forward	...						
Selwyn County—*continued*—							
Riccarton	...	...	8	4	1	...	...
Heathcote	...	...	1	...	2	...	...
Papanui	...	...	...	2	2	...	...
Addington	...	...	7	...	2	...	...
Spreydon	...	...	1	...	2	1	...
Halswell	...	...	...	...	1	...	...
Lincoln	...	...	1	...	...	...	...
Sumner	...	...	...	...	4	1	...
New Brighton	...	...	...	...	1	...	...
Lyttelton	...	3	30	23	9	1	1
Belfast	...	...	1	1	1	...	...
Southbridge	...	...	1	...	1	...	...
Leeston	...	12	...	...	...	...	...
Sockburn	...	...	1	...	...	...	...
Islington	...	...	...	2	...	...	...
Darfield	...	...	...	...	2	...	...
Waimate County	7,053	...	...	...	3	...	...
Waimate and district	...	4	4	...	7	...	1
Waitaki County	14,396	...	...	...	3	...	...
Oamaru	...	2	...	5	...	...	...
Kurow	...	...	...	4	...	...	...
Herbert	...	1	...	...	...	...	...
Totals	...	34	193	83	131	16	5
Totals for Christchurch and district...	...	7	78	30	60	5	0

In this table every case in every house is recorded.

SCARLET FEVER.

Table No. 2.

—	Apl.	May.	June.	July.	Aug.	Sept	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Totals.
Christchurch	4	9	4	7	6	2	1	2	...	3	2	1	41
Woolston	1	2	...	2	...	...	...	1	...	1	...	...	7
Avon	2	2	...	...	...	...	...	...	...	...	...	...	4
Addington	...	...	1	...	...	1	1	2	1	...	.	...	6
Heathcote	...	1	...	...	...	...	...	...	...	...	...	...	1
Spreydon	...	...	...	...	...	...	...	1	...	...	...	...	1
Riccarton	...	...	1	...	2	...	...	1	...	...	...	...	4
Lyttelton	2	1	...	7	2	3	1	...	2	2	1	...	21
Sockburn	...	1	...	...	...	...	...	...	...	...	...	...	1
Lincoln	...	...	...	...	...	...	1	...	...	...	...	...	1
Southbridge	...	...	...	...	...	...	...	...	...	1	...	...	1
Kowai Bush	...	...	1	...	...	...	...	...	...	...	...	...	1
Russell's Flat	...	1	...	...	...	...	...	...	...	...	...	...	1
Belfast	...	...	1	...	...	...	...	...	...	...	...	...	1
Kaiapoi	1	1	...	...	...	...	1	...	...	...	...	4	7
Rangiora	...	...	...	...	..	1	...	...	...	...	...	...	1
Springston	...	2	3	...	...	...	...	...	...	...	...	...	5
Sefton	...	...	...	...	...	...	...	...	...	...	...	1	1
Fernside	...	...	...	...	...	...	1	...	...	...	...	...	1
Woodend	...	...	...	...	...	...	1	...	...	...	...	...	1
Southbrook	...	...	...	...	...	...	1	...	...	...	...	...	1
Waikari	...	...	...	1	...	...	...	...	...	...	...	...	1
Amberley	...	...	...	1	...	...	...	...	...	...	...	...	1
Cheviot	...	1	...	...	...	...	...	...	...	...	...	...	1
Ashburton and suburbs ...	...	...	2	...	3	1	3	8	3	...	...	1	21
Rakaia	...	2	...	...	...	...	...	...	...	...	...	...	2
Geraldine	...	1	...	1	...	...	...	...	...	...	...	...	2
Timaru	...	2	4	1	4	1	1	...	1	...	...	1	15
St. Andrew's	...	...	2	...	...	...	...	...	...	...	...	...	2
Pareora	...	...	...	...	...	...	...	...	...	...	...	1	1
Waimate and suburbs ..	...	...	2	1	1	...	...	...	...	...	...	...	4
Totals	10	26	21	21	18	9	12	15	7	7	3	9	158
Totals for Christchurch and district	7	14	6	9	8	3	2	7	1	4	2	1	64

In this table only one case has been counted to each house.

The number of notifications (158) received during the past year shows a considerable decrease in the number of those received during the previous year (664). In Christchurch and district there were 64 cases notified, and of these 47 were removed to Bottle Lake. The advantages of having an infectious-diseases hospital to which such cases can be removed are becoming much more widely appreciated, and there is seldom now any objection on the part of the patient or the patient's friends, except in the case of young children who have never been away from home and whose mothers are loth to part with them. There is no doubt that many of the patients who are treated in the Bottle Lake return to their homes in a very much better state of health than they would be in if they had been properly isolated at home. The Bottle Lake site, although, owing to its distance from Christchurch (over five miles) it appears to be somewhat cut off from civilisation, has proved, owing to its sheltered position and dry soil, to be a very healthy one.

It is often stated by members of local bodies that they do not fear the first cost of erection of an infectious-diseases hospital so much as the cost of maintenance and administration afterwards. The following information with regard to the expense of treating cases at Bottle Lake will show that cases of scarlet fever can be treated at comparatively small cost, both in epidemic times and non-epidemic times. During the period 1st July to the 30th November, 1903, in the first few months of which period there was an epidemic in Christchurch and district, and the staff at Bottle Lake included a resident doctor and matron and a sufficient number of nurses, there were 111 patients treated. The average length of stay of each patient was thirty-one days, and the average number of patients in the hospital each day during that period was 22; the cost per patient per day was 3s. 6d. During the period 15th March, 1904, to 31st March, 1905, in which there was no epidemic but only isolated cases occurring from time to time, there were 49 patients treated; the average length of stay was thirty-one days; the average number of patients in each day was 4; and the cost per patient per day was 5s. 4d. The staff consisted during most of this time of a caretaker, his wife (who had had some experience in nursing), and a cook; a special nurse was sent down from the Hospital as occasion required, and the assistant house surgeon at the Hospital visited Bottle Lake when necessary.

The cost per patient per day in the Christchurch Hospital during the period 1st April, 1903, to 31st March, 1904, was 5s. 3d.

There was a small epidemic at Ashburton in November, but as most of the cases were isolated in the infectious ward of the hospital, and the local authorities were vigilant in taking action to prevent the spread of the disease, the epidemic was soon stopped.

In Timaru there were very few cases, and this was fortunate, inasmuch as there was no accommodation available for isolating any cases which might occur.

Age and Sex Distribution.

0–5 Years		5–10 Years.		10–15 Years.		15–20 Years.		20–30 Years.		30–40 Years.		Over 40 Years.		Total.
M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
2	2	8	10	6	11	1	4	2	3	3	3	0	0	55

The number of cases recorded is too small to either prove or disprove my suggestion in my last report that the age distribution in New Zealand differed from that in other countries. This table is compiled from the 78 cases which occurred in Christchurch and district, in 57 of which the age was known and in 21 the age was unknown. Of 169 cases out of 193 of the notifications received throughout the district 76 were male and 93 female.

Mortality.

There were two deaths recorded in Christchurch, but both of these were due to complications independent of scarlet fever.

ENTERIC FEVER.

Table No. 3.

—	Apl.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Totals.
Christchurch	1	1	...	...	...	...	...	...	...	1	3	...	6
Woolston	...	...	...	...	...	...	1	...	...	...	...	...	1
Lyttelton	...	...	...	...	...	...	...	...	...	1	..	...	1
Akaroa County	...	...	...	...	...	...	1	...	...	...	...	..	1
Leeston	2	3	1	1	...	...	...	...	...	...	...	...	7
Rakaia	1	...	...	...	...	...	...	...	...	...	...	...	1
Ashburton and suburbs ...	1	...	...	...	...	...	...	...	...	...	...	...	1
Temuka	...	...	...	...	1	...	...	...	...	...	...	...	1
Timaru	...	...	...	...	1	...	...	...	...	...	...	...	1
Oamaru	...	...	...	...	...	1	...	...	1	...	..	...	2
Waimate and suburbs ...	..	1	...	...	...	2	...	...	...	...	...	1	4
Herbert	...	...	...	...	1	...	...	...	...	...	...	...	1
Totals	5	5	1	1	3	3	2	...	1	2	3	1	27
Totals for Christchurch and district	1	1	...	...	...	...	1	...	...	1	3	...	7

In this table only one case has been counted to each house.

The above table shows a total of 27 cases recorded in the district, being a little less than half those recorded last year. There is also a considerable decrease in the number of cases in Christchurch and district, there being only 7 recorded this year against 23 last year. Of the 7 cases 2 were fatal.

DIPHTHERIA.

Table No. 4.

—	Apl.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Totals.
Christchurch	1	2	2	1	3	1	1	3	1	1	2	1	19
Woolston	3	...	...	...	...	1	...	...	...	...	...	...	4
Papanui	...	...	1	...	...	...	...	...	...	...	...	1	2
Riccarton	...	...	...	...	...	...	...	1	1	1	...	...	3
Lyttelton	2	...	7	8	1	...	2	...	2	1	...	...	23
Islington	...	...	...	2	...	...	...	...	...	...	...	...	2
Belfast	...	...	...	...	...	...	...	...	...	...	...	1	1
Kaiapoi	...	2	...	...	...	...	...	...	...	...	...	...	2
Waikuku	1	...	1	...	...	...	...	...	...	...	...	...	2
Rangiora	...	...	...	...	...	...	...	...	1	...	1	1	3
Cust	...	...	...	...	...	...	...	1	...	...	...	...	1
Woodend	...	...	1	...	...	...	...	...	...	...	...	...	1
Waikari	...	...	...	...	...	...	...	...	1	...	...	...	1
Ashburton and suburbs ...	...	...	1	...	...	...	...	...	1	...	...	...	2
Temuka	1	...	...	...	...	...	...	...	...	1	...	1	3
Timaru	...	...	1	1	...	...	...	...	...	...	...	...	2
Oamaru	...	...	...	...	...	...	...	...	2	2	...	...	4
Kurow	...	...	...	...	...	...	...	...	...	1	...	...	1
Totals	8	4	14	12	4	2	3	5	9	7	3	5	76
Totals for Christchurch and district	4	2	3	1	3	2	1	4	2	2	2	2	28

In this table only one case has been counted to each house.

The above table shows that there were 76 cases of diphtheria in the district, being an increase of 4 over those recorded last year.

There were 3 fatal cases in Christchurch, but none in Lyttleton, though there were 23 cases notified. As a rule the disease has been present in a mild form.

MEASLES.

There were 3 cases of measles notified—1 in Christchurch, 1 in Oamaru, and 1 in Lyttleton; otherwise, to the best of my knowledge, the district was entirely free from any cases of true measles.

SMALL-POX.

On the 6th October I was requested by a medical practitioner in Christchurch to see a child who was suffering from a rash which he regarded as suspicious of small-pox. I found that the child and his mother had arrived in Wellington by the "Tongariro" on the 27th September; the father had already been in the colony about seven months. The symptoms of the patient, a boy of four years, and the condition of the rash were suspicious though not typical of small-pox. The ship's doctor on the "Tongariro," on inquiries being made, stated that there had been no illness on board the least suspicious of small-pox. The parents and the child, who comprise the household, were strictly isolated in their home. The following day I saw the case with Dr. Jennings, Health Officer for the City of Christchurch; the boy seemed a little better in himself but the rash was not clearing up, and we decided to remove him to Bottle Lake with his mother; the father was also removed for a time to Bottle Lake. The boy got quite well and was kept at Bottle Lake until the skin was quite clear. The symptoms and rash were decidedly suspicious of small-pox, though the absence of any known source of infection and the fact that no other cases occurred on the ship are difficult to explain.

TUBERCULOSIS.

Notification and Statistics.

The freedom of the district from epidemics of the minor infectious diseases and, with the exception of the one suspicious case of small-pox, the non-occurrence of dangerous infectious diseases in this district and elsewhere has enabled me to give more attention to the best means of coping with this the most prevalent and fatal of all the infectious diseases.

It was found that the information received by the Department of the occurrence of this disease was very defective. The number of notifications received during the year was 131. The average death-rate per 10,000 population for ten years, from 1894 to 1903, of all tubercular diseases in the Canterbury Provincial District was 9·95, and of phthisis alone 7·65. In Christchurch the average death-rate for the same period was 12·89 for tubercular diseases, and for phthisis 10. As the population of the Provincial District of Canterbury was at the last census 143,041 there must be approximately 100 deaths from phthisis each year. If the average duration of illness was more precisely known it would be easy to calculate the exact number of cases. If two years is taken as the average duration of illness there must be about two hundred cases of phthisis at the present time in the Canterbury Provincial District. It is practically certain that the average duration of illness is more than two years and that three years would be a more correct estimate, and this would give about three hundred cases. In order to get some

idea of the actual number of cases which were being attended by medical practitioners, circulars were sent to all the medical practitioners in the district in February, asking for information as to the total number of cases known to them. The following table gives the results obtained :—

—	Christchurch Hospital Board.				Total North Canterbury.	Ashburton.	Timaru.	Oamaru.	Total.
	Christchurch and District.	Country Districts.	Nurse Maude's Camps.	Avon Pine Sanatorium.					
Lungs.									
Curable—									
Suitable for sanatorium treatment	4	4	23	...	31	8	7	1	47
Treated privately ...	10	4	...	15	29	3	6	5	43
Curable total ...	14	8	23	15	60	11	13	6	90
Incurable—									
Sufficiently isolated ...	6	2	...	...	8	1	4	2	15
Not sufficiently isolated	2	1	3	...	6	4	3	...	13
Incurable total ...	8	3	3	...	14	5	7	2	28
Total lungs ...	22	11	26	15	74	16	20	8	118
Total other parts of body	3	1	...	...	4	3	10	3	20

Of the 83 medical practitioners written to 53 replied. The returns from all districts outside Christchurch may be taken as a fairly true report of the number of cases known to medical men, as most of the medical practitioners outside Christchurch replied. From the notifications received during the year it is known that there are 60 cases of tuberculosis in Christchurch and district, and probably 50 of these are tuberculosis of the lungs. During the last three years 303 notifications of tuberculosis have been received, 78 being received in the first year, 94 in the second, and 131 in the third. This indicates that little difficulty need be expected in obtaining notifications from medical practitioners in the future as soon as the machinery for dealing with tubercular cases becomes more perfect.

The information obtained from medical practitioners, both by notifications received and replies to the circular, goes to show that we shall never obtain complete returns of all cases of tuberculosis from medical practitioners, for the simple reason that a large number of those suffering from the disease either are not aware of the fact or are not being medically attended.

Another explanation might be that the average duration of the disease is much less than above stated (viz., three years), and that the number of cases of tuberculosis in the district is much less than the number given above. There is immense scope for educating the public in the early symptoms of phthisis in the methods that should be adopted for successfully curing and successfully preventing the spread of the disease. It is also easy to see that any persecution of the consumptive individual will defeat the object in view by causing the sufferer to conceal the disease.

In order to overcome some of the objections of medical practitioners to notifying cases of consumption, and in order to get fuller information on other points in connection with the occurrence of the disease, the following notification form was drawn up and sent to you for approval. The filling-up of the details required in this notification form must, under the existing law, be left entirely to the good will of the medical practitioner, and it is to be hoped that when accommodation is available in the district for the reception of such cases, that this notification form will come into general use by medical men.

Department of Public Health. [File No. 177.

NOTIFICATION OF TUBERCULOSIS.

Name of householder: Address:
Name of patient: Age: Sex:
Occupation (*a*):
Is there any history of previous tubercular disease in the family ?
Is there any history of previous tubercular cases in present house ?
Would an Inspector's visit be advisable—
1. To examine the house from a sanitary point of view ?
2. To disinfect any room or rooms ?
Does patient know he (or she) has tuberculosis ?
Does any member of family know patient has tuberculosis ?
What is your opinion as to—
1. Predisposing cause of illness ?
2. Source of infection ?
Where did patient contract disease (*b*) ?
Locality of disease (*c*):
Is removal desired to—
Bottle Lake Hospital, Christchurch ?
Cambridge Sanatorium ?
Nurse Maude's Camp, Christchurch ?
Remarks:
Dated at , this day of , 190 .

, Medical Attendant.

(*a*.) If patient has no occupation, please give occupation of householder.
(*b*.) If contracted in New Zealand, please state town or district; if abroad, state country.
(*c*.) Lungs, glands, joint, &c.

Special Accommodation for Consumptives.

In November a meeting of medical men in Timaru and district was held in Timaru, at which I was present. The meeting was called at the suggestion of the South Canterbury Hospital and Charitable Aid Board, as they wished to obtain the views of the medical men in South Canterbury with regard to the necessity or otherwise of something being done towards the erection of a sanatorium for the treatment of consumption. The following resolutions were carried: "That it is desirable that a sanatorium be erected for the treatment of pulmonary tuberculosis in South Canterbury." "That the situation be a sheltered one within a few miles of Fairlie Township." "That the sanatorium be built on the most suitable and economical lines, with accommodation for twenty-four patients." The opinion was expressed at this meeting that it was the duty of those present to recommend to the Board what they considered to be the best way to deal with the question of the erection of a sanatorium, and that it was the business of the Board to consider whether the recommendation was practicable from the financial point of view.

At a meeting of the South Canterbury Hospital Board on the 8th December, at which Dr. Mason and myself were present, and the resolutions of the medical men were considered, it had to be pointed out by us that the estimated cost of the building, site, &c., would be about £2,000, and maintenance about £2,400 per annum, and that so great an expense was not warranted. It was then decided that Dr. Unwin, the Resident Surgeon, and myself should report on the practicability of erecting accommodation in or near the Hospital grounds. After an inspection of the Hospital grounds and an adjacent site, we reported that we could not see our way to recommend an annexe in connection with the Timaru Hospital as a permanent and satisfactory way of dealing with consumption in the district. It was then proposed that as there was ample room in the grounds of the Waimate Hospital for the erection of an annexe that would be sufficient for the reception of cases of consumption in the district of the Hospital Board, and as Waimate Hospital was a separate institution within the district of the Board, that it would be an economical and satisfactory solution of the problem that an annexe should be erected in the grounds of the Waimate Hospital. Strenuous objections were raised by the residents of Waimate to this proposal. The objections were of two kinds: one was that the institution would endanger the health and prosperity of the town, and the other objection was to doing anything that would in any assist the South Canterbury Hospital Board, as in the past there appear to have been many points of disagreement between the local authorities in Waimate and the local authorities in Timaru, not only on Hospital Board matters, but in other matters affecting the interests of both districts. I am inclined to think that the latter objection had more weight with the residents in Waimate than the former. From a medical and scientific point of view, the presence of an annexe in the Waimate Hospital grounds, if it was properly conducted, could certainly have no harmful effect on the health of the residents of Waimate; especially as the Hospital grounds are well away from the main part of the town.

On the 2nd March I attended a meeting of the North Canterbury Hospital Board and proposed to them that, as the grounds at the Christchurch Hospital were too small for the erection of an annexe, and the erection of accommodation at Bottle Lake would mean practically an entirely separate administration, it would be advantageous and in the interests of the North Canterbury Hospital Board and of the other Hospital Boards in the district to combine for the purpose of the erection and maintenance of a sanatorium. Subsequently I attended meetings of the South Canterbury Hospital Board who approved of the proposal, and of the Waitaki Hospital Board who approved of the proposal subject to the site decided on being sufficiently accessible to them. The Ashburton Hospital Board have not yet had a meeting to consider the proposal. A committee has been appointed by the North Canterbury Hospital Board, and a conference will be called of the representatives of the other Boards.

I think there are good grounds for stating that during the current year continuous, though possibly slow progress, will be made in providing accommodation for consumptives, either by the adoption of this proposal, or by some of the Hospital Boards combining to provide accommodation and the others putting up annexes in their own hospital grounds where it is possible.

Nurse Maude's Camps.

A separate camp has been provided and equipped for women, and there is room for twelve patients. The men's camp can now accommodate about twenty patients. The continued existence, and especially the increase in accommodation in these camps are great sources of credit to those concerned in the management, and especially to Nurse Maude. As soon as adequate accommodation is provided by the Hospital Boards, the necessity for these camps will cease to exist, and their useful purpose—viz., the provision of temporary accommodation until something better is provided, will have been fulfilled.

INFECTIOUS-DISEASES HOSPITALS.

Christchurch.

On the 22nd January, 1904, the Chief Health Officer certified that a hospital for the reception of persons suffering from infectious diseases was necessary for the City of Christchurch and surrounding districts, and directed that the cost of providing and maintaining the hospital should be apportioned amongst the following local bodies: Christchurch City Council, Borough Councils of Lyttelton, Sumner, New Brighton, and Woolston, Road Boards of Riccarton, Avon, Heathcote, Spreydon, Halswell, Taitapu, Lincoln, and Templeton.

Up till this time the whole district of the North Canterbury Hospital Board had been responsible for the cost of provision and maintenance of Bottle Lake Hospital. Under this certificate only those local bodies who used the hospital would have to pay for the maintenance. Acting on this certificate the Hospital Board levied on these local authorities for such amount as they considered necessary for the provision and maintenance of Bottle Lake Hospital on the basis of capital value. Some of the

Road Boards furthest from Christchurch objected to the levy as they thought it ought to be on a population basis, and applied to the Magistrate under section 60 of "The Public Health Act, 1900," in order to get the allocation of the cost made on this basis. The Magistrate held that opportunity had not been given to the local authorities for coming to an agreement in the matter. A meeting of local bodies was then called on the 9th September by the Hospital Board in order that they might have an opportunity to come to some agreement. No agreement was come to at this meeting; I therefore applied under section 60 to the Magistrate for an order apportioning the cost of providing and maintaining the infectious-diseases hospital among the local bodies. The hearing took place on the 19th October. After argument had been heard on whether the contributions should be on the basis of population or on the rateable value, the Magistrate decided that all the local authorities mentioned should be rated on the rateable value.

Timaru.

On 6th April I wrote to the South Canterbury Hospital and Charitable Aid Board pointing out that the duty of providing and maintaining hospitals for the reception and treatment of infectious cases which by "The Public Health Act, 1900," devolved on the local authorities, had now, by section 4 of "The Public Health Amendment Act, 1903," devolved on the Hospital Boards, and I also pointed out that Timaru was the only town in the Canterbury Health District in which there was no provision for the isolation of infectious cases. I attended a meeting of the Board on 20th April, when the matter of provision for infectious cases was considered, and the following resolution was passed: "That in the opinion of this Board the time has now arrived when an infectious-diseases hospital should be erected in South Canterbury, and that the local bodies be requested to send delegates to a meeting to be convened by the Chairman in Timaru for the purpose of discussing the details of establishing such an institution."

It is greatly to the credit of the members of the Board in general and of the Chairman in particular, that throughout the year, during which there was much discussion and conflicting opinions as to site, plans, and the local authorities who should contribute towards the erection and maintenance of the Hospital, the main principle of the resolution carried—namely, "The necessity for the erection of an infectious-diseases hospital in South Canterbury" was never departed from. Finally, on 18th April, almost exactly a year from the time when the proposal was first considered, the tender of Mr. E. Hall of £2,179 15s. for a building in brick was accepted.

During the year I attended several meetings of the Hospital Board and of the contributing local authorities. Part of the delay was caused by the passing of "The Public Health Amendment Act, 1904," which made it necessary to call a meeting of the contributing local authorities before the Magistrate could be applied to for an order apportioning the shares in which the local authorities were to contribute. The local authorities having been unable to agree on the shares which they should contribute, summonses had been issued under section 60 of "The Public Health Act, 1900," so as to obtain an order from the Magistrate apportioning the contributions. The passing of the 1904 Act made it necessary to call another meeting of the local authorities, at which again no agreement was arrived at, so consequently fresh summonses had to be issued to the contributing local authorities in order to get the proportions fixed by the Magistrate.

On the 13th February, 1905, the Magisterial inquiry took place, and on the 7th March the Stipendiary Magistrate delivered his judgment in the matter of proportion of the costs, and the erection and maintenance of the infectious-diseases hospital. The following is a brief summary of the judgment: "Regard being had to the distance of each of the local authorities from the hospital, means of access thereto, and the population of the district of each local authority as a basis of contribution, the population of each local district as published from year to year in the Government statistical tables is taken. From this is deducted one-tenth from the population of the Borough Council of Waimate, Borough Council of Geraldine, County Council of Mackenzie, and the Road Board of Mount Peel; five-sixths of the sum of the above deductions is added to the Borough Council of Timaru, and one-sixth of the said deductions is added to the County Council of Levels. The Borough Council of Temuka and the Road Board of Temuka are assessed in proportion to the population." This allocation of contributions appeared to be favourably received by the contributing local bodies.

The building is to be immediately proceeded with, and the hospital will doubtless be in full working-order during the current year. The plans provide accommodation for sixteen patients, and the cost of the building complete will be probably about £2,500. This will doubtless appear to many a large sum for the first cost of a building for the treatment of infectious disease for a population of 28,000; but when it is granted that a new building is necessary, and that the population of the district is likely to increase, it is difficult to see how a building could be erected at a less cost and still be sufficient for the purpose for which it is erected. Some representatives of the local bodies have stated that it is not so much the first cost that they regard as so unduly expensive as the cost of maintenance; but I think that the figures quoted above in regard to the expenditure at Bottle Lake show that the cost of maintenance is not a formidable item either during an epidemic or in non-epidemic times when only a casual case is treated in the Hospital.

Oamaru.

In Oamaru the Waitaki Hospital Board has decided to make some additions to the present building at a cost of £700, which will greatly improve the existing accommodation and provide sufficient for the present needs of the district, and the future needs for some time to come.

General Sanitation of the District.

Christchurch.

Water-supply.—The water-supply scheme for the Sydenham Ward has been proceeded with and will be completed within a few months. The estimated cost was £20,000.

Drainage.—In the Central Ward there were at the last census 3,441 houses; at the end of 1904 there were 3,822 houses. In the Wards of Sydenham, St. Albans, and Linwood, the number of houses is estimated at about six thousand. At the end of 1894 there were 1,323 houses connected with the sewer; in 376 of these houses there were 967 water-closets. At the end of 1901 there were 2,186 houses connected, in 933 of which there were 1,915 water-closets, which shows that only 763 houses were connected during these seven years. Of these 763 houses 557 contained 948 water-closets. The City Council then took action to enforce the connection of houses with the sewer, with the result that at the end of 1904 there were 4,291 houses connected with the sewer, and of these 1,792 contained 3,190 water-closets. These figures show that during the last three years 2,105 houses have been connected with the sewer, in 859 of which 1,275 water-closets have been constructed. The large majority of these connections have been in the Central Ward. During the last year 669 houses have been connected, in 408 of which 578 water-closets have been constructed. There are still about three thousand nightsoil-pans in the Central Ward, so that at the present rate of progress the substitution of the water-closet system for the pan system will not be completed for some years. In the Central Ward, with the exception of the Richmond district, the sewers have been completed; but in the other three wards considerable extensions are necessary before all the houses can be connected, and in certain portions of the town sewers cannot be laid to connect with the present system by gravitation, and a separate system of septic tanks, the raising of sewage by pumps, or some other means will have to be adopted. The estimated cost of completing the sewers in the whole of Christchurch with the necessary additions to the existing means of disposal of the sewage, is £100,000. In the portions of Christchurch where there are no sewers, and where the householders dispose of foul water by discharging it into the side channels, the discharging of the side channels into the nearest drain, creek, or natural watercourse often gives rise to a nuisance. As the buildings increase in number in these districts the position will become worse and the question of providing better facilities for drainage will have to be faced. Certain portions of these ditches and drains have already become a nuisance, and some have been improved by constructing concrete inverts, or by being covered in. An aggravated form of this nuisance existed in an old watercourse known as Jackson's Creek, which takes the drainage from a great portion of the side-channelling in Sydenham. This creek has for a long time been a source of grievance to the residents in the neighbourhood, but, owing to the representations of the Department to the City Council and Drainage Board, action has at last been taken to remedy this nuisance by putting in a concrete invert for 155½ chains where the condition of the creek was worst, at a cost of £2,402.

At the Drainage Farm eight new paddocks have been completed, of about 2 acres each, at a cost of £2,274 10s. There are also two new paddocks in the course of formation of 2 acres each, at a cost of about £300. The sewage farm has been the cause of great complaint from certain houses in the neighbourhood, and there is no doubt that under certain conditions of wind these houses have good cause for grievance. It is probable that the nuisance arises almost entirely from the large pond into which the sewage first flows. A sedimentation-tank is now in process of construction, at the cost of about £7,000. If this tank can be induced to behave like an ordinary septic tank and become coated with a scum, the cause of complaint as far as the settling-pond was concerned will be done away with. Unfortunately the Christchurch sewage is a somewhat dilute one, which will militate against the ordinary septic-tank action being established.

At the invitation of the Sanitary Committee of the City Council, I have attended several of their meetings, though, unfortunately, through my absence from Christchurch at the time of the meetings, I have frequently missed them. At these meetings, besides the ordinary routine business of sanitary administration of the town, various important matters have been discussed, and when approved of referred to the City Council for approval. In this way Dr. Jennings was appointed City Health Officer to act in my absence as Health Officer, especially in connection with the outbreak of infectious disease or any other urgent matter. The improvements to Jackson's Creek and the estimates obtained for the completion of the sewerage system were also dealt with. The question of a municipal fish-market has been from time to time brought before the Council; but on being referred to the Sanitary Committee it was found that the City Council had not sufficient powers to warrant the expenditure of a large sum of money to establish the market, as they could not compel dealers in fish to sell there or prevent them selling in other places. The careful inspection of fish in the fish-shops is made daily in the summer months by the City Inspectors, and on several occasions fish has been condemned as unfit for human consumption.

The by-laws of the old City of Christchurch and the Boroughs of Sydenham, St. Albans, and Linwood have been repealed, and new by-laws drawn up, which came into force on the 1st January, 1905, for the whole of the Greater Christchurch. The by-laws relating to the public health were submitted to me for approval, and, with some additions and alterations, were approved of by me.

Suburbs of Christchurch (the Borough of Woolston and the Road Boards of Heathcote, Avon, Spreydon, and Riccarton).

As I pointed out in my last report, the proposal that the local bodies should combine for the purpose of establishing a joint system for the collection of nightsoil was dropped last year owing to the Road Boards having no power to levy a uniform annual fee in lieu of a separate rate. It was considered that the former method was a much fairer way of collecting money for the removal of nightsoil than the latter. On the passing of "The Public Health Amendment Act, 1904," containing section 3, which gave the Boards power to levy a uniform annual fee, delegates from these local bodies again met, and, though no joint system was arranged, each local body has now passed by-laws enforcing the removal of nightsoil and has made arrangements for this removal. The by-laws also contained provisions relating to the prevention of nuisances, and for general sanitary improvements in the districts.

Ashburton.

The Borough of Ashburton, with a population of 2,400, has three local bodies immediately beyond its boundaries in which a good number of the people with business interests in Ashburton live. These are the Town Districts of Hampstead, population 1,250; Tinwald, population 560; and the Upper Ashburton Road Board, population 2,002. It would be advantageous from a sanitary point of view if these local bodies would combine for sanitary purposes, and for this purpose a meeting of delegates from the local authorities met on the 13th January. As a result of this meeting for the prevention of the spread of infectious disease, a joint inspector was appointed to visit infectious cases and undertake disinfection. A local medical officer of health was also appointed to advise the authorities on questions involving the prevention of the spread of infectious disease. The Hospital Board was recommended to procure a conveyance for the bringing of infectious cases into the Hospital.

Timaru.

The question of a deep-drainage scheme in Timaru has been under consideration during the last year. Messrs. Meason and Marchant were instructed to report on a scheme suitable for the whole borough. Their scheme, which provides for the whole of the sewage to be dealt with in septic tanks before it is discharged into the sea, is estimated to cost about £45,000 when completed. The sewerage of the closely built portion of the town which would alone be needed to be done in the immediate future, is estimated to cost £20,000. Such a scheme is urgently necessary, as the present sewers, which were constructed in the first instance for storm-water, are totally unsuitable for the reception of the drainage which at present flows into them. The Bill was introduced into the House last session, but owing to supposed conflicting interests in Timaru, it was opposed in the House, and this made the time too short for it to be passed. Another year will now have passed, and, as presumably the supposed conflicting interests will have been discussed and a basis of agreement arrived at, it is to be hoped that the Bill will be passed next session. As soon as the Bill is passed, the ratepayers will be asked to authorise a loan for carrying out the first portion of the scheme. In some portions of the town small portions of the scheme have already been put in by private individuals, on the understanding that when the drains are finally laid the Council will recompense the private individuals who put in such portions of the drainage system as is provided for in the scheme. By-laws regulating plumbing and drainage work and other improvements in sanitary matters are under consideration.

Waimate.

In my previous annual report I mentioned that while two polls had been carried in favour of the water-supply, there had been a difficulty in raising money at the rate of interest authorised at the poll. The matter would probably have been allowed to rest until money became cheaper, but, in response to a petition sent to you by certain ratepayers, a number of samples of water were taken and a further report was made by me, which, being forwarded to the Borough Council, again brought the question of provision of a public water-supply into prominent notice. The analysis and the report show that the well-water is polluted with sewage-matter, and that this pollution especially occurs when the wells are in the neighbourhood of cesspits. The final result is that the Council have decided to adopt the scheme of Mr. Crawford (estimated cost, £8,858 16s.), and negotiations are now in progress for the purpose of obtaining the money. The question of enforcing the by-law with regard to the proper construction of cesspits is discussed by the Council from time to time, but no definite action has yet been taken.

Oamaru.

New and more satisfactory by-laws are now in force in this borough. Improvements in the collection and removal of nightsoil and household refuse are necessary.

Akaroa.

The drainage scheme is in process of construction, and will be completed and in full working-order during the current year.

OFFENSIVE TRADES.

Six permissions have been given under section 82 of "The Public Health Act, 1900," for the establishment of offensive trades in various parts of the district.

BUILDINGS UNFIT FOR OCCUPATION.

Thirty-six certificates have been issued that buildings were unfit for occupation. In the majority of cases the buildings have been pulled down; in other cases improvements and alterations have been effected.

PROSECUTIONS.

The following is the result of prosecutions taken by the Department during the year.

June 16.—For permitting accumulation of offensive matter while carrying on an offensive trade. The person carrying on the offensive trade was fined £6 and £2 2s. costs.

July 12.—For having food unfit for human consumption offered for sale. The food had been destroyed in error by the City Inspector before the case came on, and the prosecution failed for technical reasons.

PRIVATE HOSPITALS.

The enforcement of the new regulations providing for the licensing of private hospitals has entailed a fair amount of correspondence and time spent in their inspection. Notices were sent to sixty-eight

persons, who, from various sources of information were expected to be carrying on private hospitals, drawing their attention to the regulations and the necessity of compliance therewith. Forty-five applications were received, and thirty-two have been recommended for licenses up to the present time. The recommendation of some of the applications has been deferred pending improvements to the drainage system, ventilation, and other matters. Some of the persons who were previously carrying on private hospitals in a small way, such as taking in midwifery cases occasionally, have not applied for a license. Generally speaking, the private hospitals, especially the larger ones in the larger towns, are carried on very satisfactorily. The smaller homes fulfil a useful purpose, though in some of them there is a tendency to overcrowd the usual occupants of the house to provide accommodation for a patient. In the smaller towns it would certainly be more satisfactory to have one good home than a number of small indifferent ones. The supply of cases is, however, so irregular that there is more financial difficulty in the provision and maintenance of one larger hospital than in the existence of several smaller homes.

Adulteration of Food.

Samples have been taken from time to time of various foods, such as cocoa, tea, vinegar, limejuice, &c.; no adulteration sufficient to warrant a prosecution was found in any of the samples.

Inspectors' Work.

In January, Inspector Kershaw, before stationed at Napier, was transferred to Christchurch. The presence of two Inspectors in the district has enabled much more systematic work to be done. Previously an inspection would be made of a town or district and recommendations and requisitions issued, but owing to the pressure of work in other districts it was often impossible for the Inspector to visit the town when the notices had expired and see that the requisitions had been given due effect to. Inspector Kershaw's special knowledge in technical instruction in plumbing is also being made use of in this district, as at the instigation of this Department plumbing classes have now for the first time been started in Timaru and Oamaru, and he has been appointed instructor. The sanitary-plumbing work will be greatly improved in these towns by these means, and this is of special importance in Timaru in connection with the proposed drainage scheme. The following is a summary of Inspector McKenzie's work during the year: General inspections of houses, shops, &c., 600; investigations into infectious diseases, 22 districts; infected houses inspected, 190; disinfections performed, 106; schools inspected, 37; offensive trades, 17; hotels inspected, 51; fish-shops inspected, 30; bakehouses inspected, 40; meat-shops inspected, 31; breweries, jam-factories, aerated-water factories, 13; creameries inspected, 10. Sixty-four notices have been served to abate nuisances of drainage, manure-heaps, &c., and all have been complied with. Several cases of overcrowding have been discovered and remedied. In eighteen cases of insanitary buildings, structural alterations and improvements have been insisted on instead of condemning. In eleven hotels improvements in sanitary fittings have been obtained.

Medical Examination.

Seven examinations have been made for the Postal Department, and one person has been examined for admission to Cambridge Sanatorium.

Offices.

At the beginning of the year the office of the Department was in the old Colonial Bank in Hereford Street, which had been taken at the time of the small-pox outbreak in January, 1904. The building was an improvement on the last office in Worcester Street, but as it was not altogether suitable and was also required by the Government for other purposes, other offices were obtained in a house previously used as a private dwelling at 110, Hereford Street, and have proved much more convenient.

Bacteriology.

In the new offices there is sufficient accommodation to carry out ordinary bacteriological diagnosis, and I hope during the current year to get this branch of public health properly established. A few specimens have been examined. Frequent absence from Christchurch, and the lack of some assistance in the laboratory make it difficult to carry out regular and systematic work.

Hugh E. Finch, M.A., M.B., B.Ch., Oxon., D.P.H., London,
District Health Officer.

OTAGO AND SOUTHLAND DISTRICT.

Department of Public Health, Dunedin, 23rd June, 1905.

The Chief Health Officer, Wellington.

I HAVE the honour to send you my report on the work done in the Otago-Southland District during the year ended the 31st March, 1905.

PRIVATE HOSPITALS AND NURSING HOMES.

The Act passed last session, and which came into operation on the 1st January of this year, under which all private hospitals and nursing homes had to be seen and approved of by the District Health Officers before receiving a license from the Minister of Public Health, involved a great amount of work, requiring me to visit some seventy or eighty houses throughout my district which I had been informed were being kept for the reception of invalids for remuneration. Out of these, so far, fifty have been licensed, and about twelve more have been examined and approved by me, though, for various reasons, the process has not been quite completed, and applications for a few more have come in since the end of the year. Some dozen or so have not made application for the license, and have given up receiving patients.

The following is the list of private hospitals in the district :—

Dunedin and Suburbs.—Mrs. Thomson, 344, Great King Street; Misses Church and Sutherland, 84, High Street; Miss Tombe, 8, St. David Street; Miss Thomson, 106, Maitland Street; Mesdames Mayhew and Sherburd, 307, Castle Street; Mrs. Peterson, 28, Stuart Street; Mrs. Coates, 61, Cargill Street; Mrs. Philp, Cutten Street, South Dunedin; Mrs. Bayley, Parkside, Caversham; Mrs. Thomson, Farley Street, Roslyn; Dr. Stephenson, Whare Flat; Mrs. Burrows, Larkworthy Street, St. Kilda. Inspected but not completed: Mrs. Forrest, 95, Hanover Street.

Invercargill and Suburbs.—Miss Thomson, Spey Street; Miss Kelso, Spey Street; Mrs. Peters, Clyde Street; Mrs. Rogers, Nith Street; Mrs. Morrison, Nith Street; Mrs. Mathison, Liddell Street; Mrs. Harrop, Liddell Street; Mrs. Wilson, Liddell Street; Mrs. Walker, Deveron Street; Mrs. Dickenson, Tyne Street; Mrs. Kelly, Enwood; Mrs. Anderson, Low Street, Avenal; Mrs. Tait, Fox Street, Avenal; Mrs. Dawson, Crinan Street, South Invercargill; Mrs. Aitkin, Ellis Road, South Invercargill; Mrs. de Joux, Ellis Road, North Invercargill; Mrs. Bowers, Bluff. Inspected but not completed: Mrs. Marks, Leet Street, Invercargill; Mrs. Bonthron, Tweed Street, Invercargill; Mrs. Wilson, North Road, Avenal.

Gore.—Mrs. Kelly, Wigan Street; Mrs. Pollock, Fairfield Street; Mrs. Scott, Broughton Street; Mrs. Thomas, Thistle Street; Mrs. Dey, Nelson Street; Mrs. Henderson, Dundas Street. Inspected but not completed: Mrs. Fiskin, Dundas Street.

Wyndham.—Mrs. Todd, Mrs. Morrison, Mrs. Leitch, Mrs. Kirkland, Mrs. McNichol.

Riverton.—Mrs. White, Mrs. Frew, Mrs. Miller, Mrs. Bayley. Inspected but not completed: Mrs. Powell, South Riverton.

Otautau.—Mrs. Lee, Mrs. Mathison.

Winton.—Mrs. Watson, Mrs. Nicholson. Inspected but not completed: Dr. Green..

Naseby.—Mrs. Smith. Inspected but not completed: Mrs. Jacobs.

Arrowtown.—Mrs. Horne.

Balclutha.—Mrs. Barrett.

PLACES VISITED AND INSPECTED.

In the course of the year the following places were visited, partly by myself, partly by my Inspectors; and, as it may be interesting to record the work thus done by each respectively it may be mentioned that I visited some 42 places; Inspector Cameron some 24; and Inspector Gladstone some 51: or 117 in all, the number of visits paid being 211, The places were: Queenstown, Arrowtown, Pembroke, Winton, Lumsden, Palmerston South, Clyde, Rough Ridge, Cromwell, Invercargill, Bluff, Port Chalmers, Mosgiel, Outram, Henley, Allantown, Balclutha, Middlemarch, Milton, Hawksbury, Ophir, Omakau, Chatto Creek, Naseby, Tapanui, Macetown, Mataura, Wyndham, Gore, Pukerau, Lawrence, Rocky Point, Owaka, Catlin's, Ratanui, Houipapa, Riverton, Otautau, Dipton, Waitati, Portobello, Seacliff, Clinton, Manseford Town, Waiwera, Kaitangata, Berwick, Saddle Hill, Purakanui, Abbotsford, Otakou, Otago Heads, Ranfurly, Franktown, Puketeraki, Dunback, Fairfax, Hawea Flat, Kingston, Kelso, Waikoikoi, Evansdale, Kilmog, Queensberry, Shag Valley, Orepuki, Clifton, Wallacetown, Balfour, West Plains, Edendale, Waikiwi, Drummond, Nightcaps, Colac, Waipahi, Woodlands, Riversdale, Makarewa, Spar Bush, Waianiwa, Thornbury, and Seaward Bush.

DISPOSAL OF SEWAGE AND NIGHTSOIL.

In the towns throughout my district improvements in the disposal of nightsoil and sewage generally are taking place. In Dunedin the new system of sewerage is being satisfactorily and gradually gone about, and the union of the suburban boroughs, Caversham and South Dunedin, with the city will

facilitate this. Concurrently with the sewering of districts of the town, the connection of the houses with the street sewers is being gradually enforced; and these house connections are all now properly made and trapped according to the by-laws of the Drainage Board under the superintendence of their employees. This must in time effect a great improvement in the healthiness of the town, as in many cases the drainage and trapping of houses was in a very unsatisfactory state, on an amendment of which it was impossible to insist, as there existed perhaps no street sewer with which to make connection.

In Invercargill, at last, the question of diverting the drainage of part of the town from the Puni Creek has been commenced, and before next summer it is hoped this creek will no longer be a common sewer and a public nuisance, while the boroughs of South and East Invercargill will be able to dispose of their drainage to a great extent by the sewer being now formed along the line of the creek.

North Invercargill has now a pretty complete system of sewers, but for slops only, and the houses in that borough are now having their drains connected with the sewers under the supervision of Inspector Cameron and the local Inspector.

In Gore, too, the drainage system has been completed during the year, and houses are being connected by up-to-date connections with the sewers.

Main sewers now run through the principal streets of the towns of Riverton, Winton, Otautau, and Wyndham, though closets are not connected with them owing to the want of a water-supply which the revenue of these towns will not allow to be undertaken meantime. But this is a great improvement, since the house-slops may now be diverted from the street-gutters along which they had to run for want of better provision.

The two septic tank installations in my district are now working satisfactorily. That at the Benevolent Institution, Caversham, which at first was faulty, has, since the coke has been replaced by a harder grade, done its work well; and that serving the Riverton Hospital is doing nicely, except that a grating was introduced between the grit-chamber and the septic tank, which intercepted the solids that should have gone into the septic tank, thus converting the grit-tank into a septic tank far too small for the work, and causing a smell. This grating is now removed. From the septic tank no smell arose when I saw it in March, and it was doing its work thoroughly well, as were the bacterial filters connected with it.

In several of the towns the local authorities have adopted at my recommendation or at their own instance a municipal system for the removal and disposal of nightsoil and rubbish, and have had places approved by me and authorised by the Governor as nightsoil-depots; or they are in a process of doing so. Among these are Port Chalmers, Palmerston South, Mataura, Wyndham, Winton, Queenstown, Arrowtown, and the suburbs of Invercargill South, North, East, and Avenal and Gladstone, as well as the Town of Invercargill itself; and except for a little friction, inevitable at first, these promise to work well.

In Riverton, where I had to recommend the municipal collection of nightsoil, as I was credibly informed that many of the householders buried the contents of the privies in their gardens throughout the town, some of the people and of the Town Council too are inclined to resist my recommendation, and I shall have to take an early opportunity to have a conference with the Town Council about the matter. I am not inclined to recall my recommendation for two reasons, the first being that some parties derive their water-supply from shallow wells in the town, and the second, that the town in summer is a favourite health resort for people from the interior seeking the sea-breezes, and for others from many parts of Otago, who have to be protected.

Tips for House-refuse and Road-scrapings, etc.

In many of the towns these are found to be any place not already built on, and I have been endeavouring to have them located in such situations that they will not be nuisances.

In Dunedin, for instance, towards the north and south ends of the city proper, the house, &c., refuse is being tipped into otherwise objectionable hollows, with a view to have them converted into useful recreation-grounds. These have been closely and frequently supervised by us, to see that the refuse was covered with a layer of clean and good soil, which would prevent the underlying stuff from causing a nuisance, and convert it into soil fit to nourish a carpet of herbage. Though occasional complaints have been made regarding these, I am satisfied that they were practically groundless, and that the grumble was more at the temporary unsightliness than from any nuisance these operations were causing.

Attention has also been paid to similar places at various localities throughout my district; but a notice to the local authorities has been efficacious in removing the annoyance.

In this connection it may be remarked that the reclamation by the Harbour Board of Dunedin has converted a wide stretch of foul-smelling mud-flats, uncovered at low tide, and pervading the town in certain winds with a surfeit of fearful smells, into a valuable and healthy area to be utilised by the railway. This has been one of the best, as well as the most profitable, public improvements recently given to the city, and one which will tell favourably on the public health.

Infectious Diseases.

The annexed table shows at a glance the incidence of infectious diseases throughout my district from month to month.

Return showing Number of Notified Cases of Infectious Diseases from 1st April, 1904, to 31st March, 1905.

Disease.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Total.
DUNEDIN.													
Scarlet fever	1	2	..	..	1	2	..	..	..	..	1	1	8
Tuberculosis	1	..	1	1	..	4	4	1	..	1	..	..	13
Enteric fever	..	..	..	..	2	..	1	..	1	1	1	2	8
Diphtheria	..	..	..	..	..	..	..	..	..	1	..	..	1
Blood-poisoning	..	..	..	..	1	1	1	..	..	..	..	..	3
SOUTH DUNEDIN.													
Scarlet fever	1	..	..	2	2	1	1	2	..	..	1	..	10
Tuberculosis	2	..	1	3	2	..	1	1	..	..	1	..	11
Enteric fever	..	..	1	2	..	..	..	..	..	..	..	1	4
Diphtheria	..	..	..	..	1	..	..	..	..	..	..	..	1
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
CAVERSHAM.													
Scarlet fever	..	..	..	..	1	..	..	..	..	..	1	..	2
Tuberculosis	2	..	1	2	..	..	..	..	..	..	..	..	5
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	1	1
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
MORNINGTON.													
Scarlet fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Tuberculosis	..	..	..	..	..	..	..	..	..	..	1	1	2
Enteric fever	..	..	..	..	..	..	..	..	..	..	1	..	1
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
ROSLYN.													
Scarlet fever	..	..	..	..	1	..	..	..	..	..	..	..	1
Tuberculosis	1	..	..	2	..	..	..	..	..	1	..	..	4
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
ST. KILDA.													
Scarlet fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Tuberculosis	..	..	..	..	..	..	..	..	..	..	..	..	..
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	1	1
Blood-poisoning	..	..	..	..	..	1	..	..	..	..	..	..	1
NORTH-EAST VALLEY.													
Scarlet fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Tuberculosis	..	..	..	..	..	..	..	..	..	..	..	..	..
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
MAORI HILL.													
Scarlet fever	..	..	..	..	..	1	..	..	..	..	..	..	1
Tuberculosis	..	..	..	..	..	1	..	..	..	..	..	..	1
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
WEST HARBOUR.													
Scarlet fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Tuberculosis	..	..	..	..	..	..	..	..	..	..	..	..	..
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
PORT CHALMERS.													
Scarlet fever	1	..	..	1	..	..	..	..	..	..	..	..	2
Tuberculosis	..	..	..	..	..	..	..	..	..	..	..	..	..
Enteric fever	..	1	..	..	..	..	..	..	..	..	..	..	1
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
INVERCARGILL.													
Scarlet fever	15	15	8	7	2	10	2	..	..	..	..	..	59
Tuberculosis	..	..	3	2	1	3	1	2	1	1	..	..	14
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	1	..	..	1	4	8	1	..	..	15
Blood-poisoning	..	1	..	..	..	..	..	..	..	..	..	..	1
TAIERI COUNTY.													
Scarlet fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Tuberculosis	..	..	..	..	..	1	1	..	1	..	..	..	3
Enteric fever	1	..	1	..	..	..	..	..	..	1	..	..	3
Diphtheria	..	..	..	1	..	..	..	..	1	1	..	..	3
Blood-poisoning	..	..	..	1	..	..	..	..	..	..	1	..	2
TUAPEKA COUNTY.													
Scarlet fever	..	1	1	1	1	..	..	..	..	..	..	..	4
Tuberculosis	..	1	1	2	..	..	1	..	2	..	..	..	7
Enteric fever	..	..	1	..	..	1	..	..	..	..	..	2	4
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
BRUCE COUNTY.													
Scarlet fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Tuberculosis	..	..	..	..	..	..	..	..	..	..	..	..	..
Enteric fever	..	..	..	..	..	..	..	..	..	1	..	..	1
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	1	..	..	..	..	..	..	1
LAKE COUNTY.													
Scarlet fever	..	..	..	..	..	..	..	..	..	1	..	..	1
Tuberculosis	..	..	..	..	..	..	1	..	..	..	..	..	1
Enteric fever	..	..	..	..	..	..	..	..	1	..	..	..	1
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
PENINSULA COUNTY.													
Scarlet fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Tuberculosis	..	..	2	..	..	1	..	..	..	..	..	..	3
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
MANIOTOTO COUNTY.													
Scarlet fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Tuberculosis	..	..	..	..	..	..	..	..	..	..	..	..	..
Enteric fever	..	1	..	..	..	..	..	..	..	..	..	..	1
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
WALLACE COUNTY.													
Scarlet fever	2	..	..	..	..	..	..	..	..	..	..	..	2
Tuberculosis	..	..	..	..	..	..	2	..	..	..	..	..	2
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
WAIKOUAITI COUNTY.													
Scarlet fever	..	1	..	1	..	1	1	..	..	..	..	..	4
Tuberculosis	..	..	1	..	..	..	2	..	2	..	..	..	5
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	1	..	..	..	1	..	..	..	..	..	2
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
SOUTHLAND COUNTY.													
Scarlet fever	4	..	7	3	3	5	..	2	2	1	2	1	30
Tuberculosis	..	..	..	2	2	1	1	..	1	1	2	..	10
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	1	1
Diphtheria	1	..	..	..	..	..	..	..	..	4	1	..	6
Blood-poisoning	..	..	..	..	..	1	..	..	..	..	..	..	1
VINCENT COUNTY.													
Scarlet fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Tuberculosis	..	..	..	..	..	..	..	..	..	..	..	..	..
Enteric fever	..	3	1	1	..	..	..	..	..	..	7	4	16
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
WAIHEMO COUNTY.													
Scarlet fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Tuberculosis	..	..	..	..	..	..	..	..	..	..	1	..	1
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
CLUTHA COUNTY.													
Scarlet fever	..	..	..	..	1	..	1	..	..	..	..	..	2
Tuberculosis	..	..	..	..	..	..	2	..	..	2	..	..	4
Enteric fever	..	..	..	..	..	..	..	..	..	..	1	..	1
Diphtheria	..	..	..	..	..	1	..	..	..	..	..	..	1
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	1	2

Scarlet Fever.

This disease has almost exhausted itself in the northern half of the district; but it appears to be slower in dying away in the southern half. Thus, while we had notification of only 22 cases in Dunedin and its suburbs, and 2 in Port Chalmers, we had only 2 in Clutha County, and none in the Peninsula, Taieri, and Bruce Counties; but we had 59 cases in Invercargill and its suburbs, 30 in Southland, 2 in Wallace, 1 in Lake, and 4 in Tuapeka Counties, all of which are in connection with Invercargill. It would thus appear that the disease was being spread from that as a centre. Even here, however, the incidence of the disease is less in the later than in the earlier months of the year. A few cases occurred in one of the most northerly of the counties of my district—namely, Waikouaiti, but none in the other three—Waihemo, Maniototo, and Vincent Counties.

Enteric Fever.

This disease has not bulked very largely in my district, although we have had cases cropping up occasionally, in widely scattered localities, without any link to connect them, and, so far as could be ascertained, dirty surroundings as the only discoverable cause.

We had 15 cases in and about Dunedin, some of them imported into the Hospital from various localities, while there was only 1 in and about Invercargill, and 4 in Tuapeka County. But, unfortunately, we had a renewed outbreak at Mount Pisa Station, where it raged last year, during the early months. Two of the station hands were attacked about the middle of May, both recovering, but a week later a wool-classer who had gone meantime to a neighbouring station was taken ill, and died. I had information, too, that his friend who had also been wool-classing at Mount Pisa Station had been treated for enteric fever in Wellington. Some three weeks later a man who had been for a time at Mount Pisa Station with a threshing-mill was taken ill with the disease at a place in the Cromwell Gorge where he was encamped, but recovered. This seemed to end the trouble, but we looked forward with some anxiety to the next shearing season; and, unfortunately, our fears were realised, for early in February a case occurred, a week later 4 more, of whom 1 died; and a few days later still there were 2 more. In March again, on the 9th, two men became ill at the same place, and a servant (not a nurse) who had needlessly exposed herself to infection took ill, and died in the Cromwell Hospital. Most of these cases came from the men's quarters, but the station-manager and a household servant were also attacked. We had then 15 cases connected with the station this year, of whom 3 patients died, the others recovering.

About the time these cases were occurring at Mount Pisa I received notice that a man was ill with the disease at Rocky Point, near Bendigo, and as this appeared to be a new centre, I made a special visit to the place to investigate. I found that the farm at which the sick man was, distant from Cromwell about eight miles, lay at a point nearly opposite Mount Pisa Station, but with a rapid unfordable river separating the two places, and therefore no connection between them. There was, however, a remote possibility of infection from that source, as a man who had been ill with the fever the preceding year was then living at Bendigo, a mile or so distant from the farm, and the farmer's children were in the way of going to the post-office at Bendigo for their letters. Two of these children had been suffering from diarrhœa (not improbably a mild attack of enteric fever), and they may possibly have received infection during a visit to Bendigo. It is not likely, however. The farm surroundings were very dirty, with a shallow well liable to pollution from a swamp into which refuse of all kinds was being thrown.

Immediately I received information of the outbreak of the disease at Mount Pisa I went out to make a renewed examination of the whole place, looking carefully not only at the buildings, several of which had been burnt down and rebuilt, as I had required last year, but at the whole surroundings, including the complete course of the water-race. In this I had the advantage of the assistance of Dr. Coughtrey, who had been sent out for the purpose by the agents for the estate. There was some evidence of pollution of the top of the water-race from a very dirtily kept rabbiter's house and the foul pig-sty which was close to it; but the liquids, &c., from these percolated over and through loose gravel in a valley in which ran the creek from which the water was taken, and the race from the point of intake was about a mile long, running in a clean, open, gravel-bottomed bed, so that this pollution would have been abated most probably thoroughly before the water reached the homestead. Besides, the fact was undoubtedly brought out, by the statements of three of the sick men, and by those of the station-manager and others conversant with the habits of shearers and station hands, that they never drank, by any chance, water in its natural state, but always tea made with well-boiled water. It is thus evident that the water-pollution had nothing to do with the occurrence of the fever, but that it had still been hanging about the station, in spite of what had been done, and that the flies had carried it to the food in some way, as I indicated in my last year's report on the epidemic at the same place. I shall have a look at the station early next season, before the shearing begins, to make sure that it is well cleaned up. If the fever breaks out again, I am inclined to think that the whole of the station buildings should be shifted to another location, and the present place dismantled and not used at all. Meantime the rabbiter's place has had a thorough cleaning-up, and the water-race has been taken into the station by a different line, from a point some distance above the present intake.

In this connection it may be mentioned that not only in the district contiguous to Mount Pisa, but also in other parts of my district, there was a rather unusual amount of diarrhœa, due probably to the fact that after a wetter than ordinary spring and early summer, we had a sharp change into hot weather. Thus a well-recognised factor in the production of diarrhœa and suchlike diseases was in operation.

Diphtheria.

Only three cases of this disease were notified in Dunedin and its suburbs, with one death. These, it is worthy of note, perhaps, all occurred in the low-lying portions of the town; the more highly situated parts being exempt from the disease.

In the counties neighbouring Dunedin, a few scattered cases happened, nearly always in damp localities.

The cases in Invercargill, of which there were fifteen, are divisible into two groups. One such group occurred in October and November, and the later cases were found to have been in communication with the first-recorded. From this one household apparently spread three cases, and perhaps a fourth. A second group was notified between the 2nd and 19th December, occurring in contiguous streets, and perhaps attending the same school. This group consisted of seven, and, unfortunately, two of the cases died. The cases were all attended to by Inspector Cameron, but I have reason to think these localities generally are unhealthy, and I have them noted for investigation when I am next down in Invercargill, which will be soon.

I consider, however, that these outbreaks of diphtheria indicate the necessity, at no distant date, of a scheme for drainage of the town, a thing which will have to be undertaken sooner or later, combined with one for the service of the town with a more efficient water-supply than it has at present. For want of efficient water-service and drainage dry closets are the rule, even in the chief hotels and public buildings, and these are far from sanitary or safe from the public-health point of view. But, before this is undertaken, probably the town and its suburbs will have to be amalgamated, and the sooner the better, the total population of the whole combined boroughs amounting to about twelve to fourteen thousand, allowing for a considerable increase since the census of 1901, when it was reckoned at 10,637 persons.

A small outbreak of diphtheria took place at Drummond, a country township near Winton, in the Wallace County. This was clearly traced to a family which arrived in the colony by the ocean-steamer "Corinthic," which came into the Port of Wellington with that disease on board.

The history of this outbreak is rather interesting, as showing that, in spite of all possible precautions which were taken on the arrival of the steamer, including the detention under the quarantine regulations of several persons showing somewhat suspicious throats, diseases of infectious nature will at one time or another come into an isolated colony like ours, and spread to points widely separated from the original focus. For I have understood that Drummond in the South was not the only locality to which the disease was conveyed from this source. The first case which happened at Drummond was in a family named J——, who had arrived there about the end of December, having come from Wellington, at which port they arrived in the colony. They remained at the house of a neighbour, R——, for a week or so, continuing quite healthy, and then went into their own house, on or about the 30th December. The clothes, &c., were now unpacked which they had used on board ship. Four days afterwards several of the children took sore throats, which were diagnosed by Dr. Dalzell, of Winton, as diphtheria. Within eight days two other neighbours' families were attacked by the disease, and before it ceased fifteen children were laid up in four households. Of these children two died. As soon as he heard of the outbreak, Inspector Cameron went to the place, and, when the disease had subsided, had the houses, &c., disinfected, the trouble ending for the time. But, two months later, the father of the family of R—— was taken ill with what Dr. Green found to be diphtheria, and one of the other members of the family was also attacked. This occurrence points out how difficult it is to limit the spread of such infectious diseases, and how long the infection may linger among clothing and such articles, and also, perhaps, about the discharges of the throat and nostrils of persons who have suffered from diphtheria.

Blood-poisoning.

We have had notified nine cases of this nature, all erysipelatous in character, and all traceable to wound-infection.

One of these, which was notified as suspiciously like anthrax, but which on microscopic examination of scrapings from a wound in the face and some discharges was found to present no bacilli of that disease, died in the Dunedin Hospital.

In another instance a man who had contracted the disease from working in a very foul swamp apparently infected first one of the women who nursed him and then another, all recovering.

Tuberculosis.

The returns of this disease are necessarily very misleading from several causes, among which may be noticed that we have not anything like a complete return from medical men; and that both to Invercargill and Dunedin Hospitals, and perhaps also to Riverton Hospital, numbers of cases come from other parts of the colony, possibly from foreign countries, and the numbers are swollen unduly at these places. And one locality, at least, in my district, which has a repute as a good one for consumptives—namely, Lawrence, in Tuapeka County, receives many consumptives arriving there, pretty far gone perhaps, in hopes of cure. Besides this, the two homes into which old people are received—the Benevolent Institutions of Dunedin and Invercargill—will account for many a recorded case or death from tuberculosis. The numbers are thus swollen by the Hospitals of Dunedin, Invercargill, and Riverton, and by the Benevolent Institutions of Dunedin and Invercargill, and the deaths in the same ratio.

Without insisting too much on the point, it may be noticed that the localities furnishing the greatest number of tuberculous patients are those which are low-lying and apt to be damp. Thus, in Dunedin City, South Dunedin, and Caversham, the cases notified were 13, 11, and 5, respectively, as against 4, 2, and 1 in Roslyn, Mornington, and Maori Hill; while St. Kilda, North-east Valley, and West Harbour furnished no cases. Again, Taieri, Clutha, and Waikouaiti Counties, partly low-lying, gave us 3, 4, and 5 cases respectively; but Bruce, Vincent, Maniototo, and Lake Counties gave us only 1 case in the last, and that probably imported. These counties are mostly high-lying. And the same holds good of the southern part of my district; this may be seen at a glance from the accompanying table.

It has been stated that this district contains more cases of tuberculosis, in proportion, than any other in the colony. This may be accounted for in great measure, perhaps, from the two facts that the temperature of this part of New Zealand is on the whole lower than the other parts; and, what is probably more cogent, that most of our towns and country townships have been built on low-lying, often swampy, flats, close to rivers, the location generally having been chosen from the vicinity of a convenient river-crossing, a hotel having been first built to meet the needs of travellers, around which subsequently a township grew up, the site not having been chosen with regard to healthiness but merely from convenience. Could we shift many of these perhaps half a mile to the rising ground, away from the river-flats, we should do something to lessen the disease among our town communities. And it would be desirable that, in selecting township-sites in the localities which are now being established on estates lately opened for closer settlement, the Health Officers were consulted, and requested to appoint suitable sites for these townships.

The following list, by no means complete, will show at a glance the routine duties to which our attention was directed and in which we suggested or carried out remedies, &c.:—

Defective drains in houses	261
Defective house-closets	142
Dirty, ill-kept premises	181
Dirty stables	55
Dirty piggeries	54
Dirty dairy-farms	28
Defective factories	51
Defective shops and stores	196
Dirty fowl-runs	81
Schools examined	27
Dairy-farms, &c., examined	23
Rubbish-tips examined	27
Nightsoil-depots examined	14
Dilapidated houses examined	133
Hotels and boardinghouses examined, and restaurants	81
Seamen's quarters on ships examined and fishing-boats	11
Military camps examined	4
Premises disinfected	308
Sick people examined	5
,, (on ships)	2
Rats examined (about)	15
Boiling-down, &c., premises examined	5
Slaughterhouses examined	21
Fruit, &c., auction-marts examined (many times)	16
Meat-carts (hawkers, &c.) examined	41
Hospitals examined (by request)	8
Nursing-homes examined (of which were passed 61), over	70
Specimens (water, &c.) collected and examined by Dr. Black	101
Bacteriological examinations	22

For the northern part of district only—

Letters written to local authorities	257
,, Port Health Officers	10
,, Harbourmasters	9
,, Medical men	34
,, Consumptives	7
Letters *re* nuisances	313
Letters *re* septic-tank installations	4
Letters *re* nightsoil-depots	8
Reports, various	5
Circulars to Town Clerks	2
Conferences with local authorities	42
Conferences with butchers	2

Synopsis of Routine Work.

The above synopsis, by no means complete, taken out from our diaries, will show something of the work of my district of a routine character, and may be of sufficient interest to be put in the report, as it will demonstrate to the public the amount of, sometimes, small duties passing through our hands for attention, and as it is probably a fair sample of the work of the other districts throughout the colony.

Taking it as it stands it represents about six items seen to, or two for each member of the staff, per diem. But it does not note a large number of items, some of them of a trivial character, but each demanding a certain amount of time and care, and it does not take into account a large number of letters written to various parties relating to the above affairs. These would have numbered up some seven or eight hundred during the year, at least.

Protection against Plague, etc.

In view of the plague still lingering in Australia, the Port Health Officers at the Bluff and Port Chalmers have been making careful examination of ships arriving from that colony, and also from farther oversea countries; and in three instances I was requested to examine new arrivals.

The only one of these which I considered at all suspicious was a young man who came by a Home steamer intending to go with the Sounds excurison steamer. His case was reported as sore throat, possibly diphtheritic; but, by the time he had arrived at Dunedin, the bursting of an abscess in one tonsil clearly showed the true nature of the disease. The notice of this case, however, both from the Bluff and from Port Chalmers, showed that the Port Health Officers of these places were on the alert.

From time to time, too, I have had rats brought to me from the wharves, &c., for examination, and have found them invariably healthy.

The harbours at all my ports have been visited by myself or some of my officers occasionally to see that precautions in the way of rat-guards and suchlike were being taken, and we found that our directions were being well carried out.

Seamen's Accommodation on Vessels.

At the request of Mr. Belcher, acting for the Seamen's Union, as we understood, I sent Inspector Gladstone to examine the accommodation for the sailors. He found, in some cases, that an improvement was required, and ordered it to be carried out.

Military Training-camps.

Acting on rumours which reached us, we made an examination of the camps in which parties of Volunteers were temporarily domiciled for training. In all of them, of which three were in Dunedin, the latrines were in a condition which left much to be desired, and in the fourth, near Port Chalmers, they were positively exceedingly dangerous, papers flying about all over the camp from the open trenches forming the latrines.

I reported on the state of the camps to Colonel Robin, and also to Dr. De Lautour, who have general charge of military matters in this district.

Waterworks and Water-supplies.

In some twelve cases we have had to examine the water supplies, either of towns or of private houses, generally accompanying our local examination of the water and its surroundings with an analysis by Professor Black, Government Analyst.

In some of these, Dunedin, Port Chalmers, and Cromwell, we found pollution of the reservoirs or their feeders; and the Dunedin Town Council obtained a conviction before a Magistrate, against a dairy-farmer for permitting defilement of the chief feeder of the Northern Reservoir. In the other two cases noticed, the sources of pollution were looked into and removed. In the remaining cases the pollution was mainly or entirely topical, and cleaning-up of the spots was accomplished.

Besides these cases in which pollution was found several more examinations were made during the year. The examinations connected with these will appear in Professor Black's report, which I shall summarise and comment on later.

Food-supplies.

In connection with our examination of the food-materials coming into Dunedin we have had to condemn and order to be destroyed: 10 pigs' carcases, 46 rolls of bacon, 6 hams, 31 bags of potatoes, 28 cases of prunes, 4½ cwt. of figs, 2,003 cases of bananas, and 1,012 cases of oranges. At Invercargill, 7 sacks of green peas; and in several instances we have caused to be picked over the consignments of fruit arriving at this port in bad condition. The fruit comes mostly from Tonga and Rarotonga.

In one of the cases where I condemned nine bags of potatoes they were badly affected with the potato-blight, and in the other, where twenty-two bags were rejected, they seemed, from their appearance, to have been dug before they were fully ripe and to have gone into a state of decay in consequence.

The prunes, which I was informed were of colonial curing, were quite mouldy, and crawling with mites.

In connection with food-supplies it may be mentioned that the meat-vendors' carts were frequently examined, with a view to insure that they were properly kept clean. Somewhere about a hundred such examinations were made of these and of bakers' carts in the course of the year.

It was reported that at one place the butchers were in the way of using old newspapers, from various sources, for wrapping up meat for delivery to customers, and I had them warned to desist from such a dirty and dangerous practice.

Dairy Factories and Farms.

Some thirty of these were examined and defects in the drainage or in the buildings or their condition were ordered to be remedied; these visits being in most cases made in conjunction with the Inspectors of Dairies, with whom we have been working harmoniously.

In one case, where the dairy factory itself and its surroundings were in a very insanitary state, the factory was shut up till the repairs we considered necessary were accomplished.

In many instances the dairy farms are not in a good condition, the buildings old and makeshift, and the surroundings dirty. This is a matter of pretty general complaint by the managers of dairy factories, and it would be well that more attention were paid to these places; but while the numbe

of Dairy Inspectors is too few and their other duties too many the work cannot be satisfactorily overtaken. Besides, many of the milk-suppliers are too poor to rebuild their farm buildings, which, though perhaps at first passably fit for use, have now with time become old and dirty. It seems a pity that the "Loans to Settlers" system cannot be applied to these, and that all suppliers of dairy-produce to the public directly or indirectly through dairy factories be required to reconstruct their buildings according to a plan to be approved of by the Government Veterinarian, assisted thereto by a long loan at a moderate rate of interest from Government. This reconstruction is being carried out with regard to the slaughter-yards of the colony, and the dairy industry appears to be of fully as much importance, or more.

Perhaps, however, this matter is not strictly within the province of our Department, and it may not be proper for me to refer to it.

Shops and Stores.

Considerably over two hundred of these have been visited, and, where defects in sanitary matters, broken drains, dirty premises or yards, &c., have been found, these have been attended to.

Schools.

Both in the towns and country places many of these have come under our inspection, and their latrines, which were frequently found to be badly attended to, or, in some instances, dilapidated, have had the attention of the authorities called to them.

In cases where infectious diseases had broken out among the scholars the schools have been closed for a day or two, and a thorough disinfection seen to by my inspectors before they were again opened.

Insanitary Houses.

Of the 133 houses examined as being in bad order, twelve were so old and dilapidated that they were ordered to be pulled down; ten were required to be more or less extensively repaired; and to the rest some improvement had to be effected. Among the first two groups, were houses, &c., at Dunedin, Port Chalmers, Bluff, Hawksbury, Queensberry, and the outskirts of Mataura.

Hotels, Boardinghouses, etc.

While these have been almost invariably looked to during our visits to places in the country, and while the hotels, &c., in the chief towns, Dunedin and Invercargill, have not been neglected, in something like ninety or a hundred instances we have made more minute examinations when we noted sanitary defects of various kinds, causing them to be remedied.

One of the chief defects I have observed and at times commented on, is the want of closets specially kept for ladies in hotels. In our Public Health Act, section 47, (2), special provision has been made for separate privy accommodation for females in "factories, shops, workrooms, offices, warehouses, and other business places," but in the hotels, to which all sorts and kinds of people, dirty and clean, healthy and diseased, resort, no such provision is made, in most cases. Perhaps, with the uncertainty which the present agitation against the licensing of hotels is causing, it would not be just to the occupiers of hotels to insist on this and similar improvements; but on the score of public decency and public health it appears to me that women should not be allowed or expected to go to the same privy as men, and that sooner or later a system of separate closets will have to be instituted for them, especially in places of tourist resort.

The need, too, has been more than once urged of late here, and I some time ago called the attention of some of our local authorities to the point, of having public conveniences under the supervision of the authorities, where, by payment of a small fee, closets, carefully kept clean, may be available, and places where a casual visitor to a town may have facility for washing hands and face; where also urinals, up to date and in a first-rate sanitary condition, may be made use of. Such places are now to be found in nearly every town at Home, many of them smaller than Dunedin or Wellington, and they are well supported by the public. They are not self-supporting in most cases, the small fee charged (1d. for use of closet, and 1d. for use of a wash-basin) not quite meeting expenses of management; but they have been found to meet a public want. We ought to have them in every large town here.

And, while we need these, we also require in each of our larger towns, at least, public laundries, where the working-classes should be enabled to have their clothes and household linen washed; and, in connection with them, we should have a disinfecting-chamber, where the articles soiled by infective material could be thoroughly and cheaply disinfected at a reasonable cost to them. Private laundries as a rule leave much to be desired, especially in the matter of disinfection, where clothing of all sorts and conditions are mixed together and perhaps washed in places not too clean or sanitary in their rooms and surroundings.

Premises Disinfected.

We are, as a rule, gradually inducing the local authorities to undertake the duty of disinfecting premises after infectious diseases; but, in a certain number of cases one of my Inspectors has either personally done this work or supervised it. In these ways some three hundred places have been attended to during the year.

MORTALITY FROM INFECTIOUS DISEASES IN THE TWO TOWNS IN MY DISTRICT.

	Dunedin.	Invercargill.	Total.
Enteric fever	3	1	4
Scarlet fever	..	..	..
Diphtheria	1	1	2
Tuberculosis	76	14	90

The total deaths from all causes in the Dunedin Registration District were 626 for the twelve months ending the 31st March, while the deaths registered in the district from tuberculosis alone were 76, or about 13·5 per cent. of the total deaths.

ANALYTICAL WORK BY PROFESSOR BLACK, GOVERNMENT ANALYST.

From Professor Black's records, showing 101 analyses, I have extracted a summary.

The materials examined have comprised water, milk, lithia water, opium, and pepper.

Except in one instance the waters were used for household purposes, the remaining case being taken from an enclosed sea-water bath, used by a swimming club.

Among the domestic waters four were from surface wells in the suburb of Mornington, these being found to be much contaminated. Two were from town reservoirs—Port Chalmers and Cromwell—the former suffering from contamination from cultivated ground, the latter from want of having been regularly cleaned out.

Besides these, the water from the supply to Mount Pisa Station was again this year analysed, as enteric fever had again broken out there. It was found quite good, with the exception of a leakage from a rabbiter's camp, which occasionally found its way to the intake of the race. However, as it had to trickle over a loose shingle-bed between 100 and 200 yards before gaining access to the race, and as the water then flowed along an open race with a clean gravel bottom well exposed to sun and air, and with a pretty rapid descent before arriving at the house, I hardly imagine that it had to do with the enteric fever at the station; and the analysis of the water at the station on two different occasions showed it to be "good water." The sample of water ("10") taken at the race near the cook-house was below the point from which the domestic supply would be drawn, and merely showed that the slops thrown out from the kitchen were defiling the water, though even these are described as being "not of a dangerous character" by Professor Black.

Water from creeks at Fairfax and Owaka were also submitted to analysis on account of isolated cases of enteric fever having occurred at these localities. In both the water was found impure, and proceedings were taken to cleanse the creeks, and to stop their use for domestic purposes. In connection with the Fairfax case, two other waters were examined, but found "usable."

Three samples of so-called lithia water were analysed, and no trace of that substance was found in them. A conference with the manufacturer elicited the information that apparently the lithia put in the mixing-tank was precipitated, and was not dissolved in the water. Means are being taken to correct this.

In connection with the milk-supply of Dunedin, fifty-three samples of milk were analysed, and as the result of these, seventeen prosecutions were undertaken, but the informations were dismissed on the plea that the milk had not been taken with the statement made that it was intended to be proceeded on. The objection seems a trivial one, and not in accordance with the reading or the spirit of the Dairy Industry Act, but that Department had to bear the costs of the abortive prosecutions. In New Zealand we have two standards by which to judge of the quality of milk. By the Adulteration Prevention Act, in the Second Schedule, milk shall contain not less than 9 per cent. by weight of milk-solids—not fat—and not less than 2·5 per cent. of butter-fat. While, by the Dairy Industry Act pure milk does not include milk which contains less than 3 per cent. of butter-fat. We have thus two standards to go by, but the proceedings were taken under the latter Act. By this Act then, out of fifty samples, twenty-four were under the 3 per cent. of butter-fat, and twenty-six at or over it. But if we consider these under the Adulteration Prevention Act, only three were under the 2·5-per-cent. mark, while forty-seven reached or exceeded it. And in every one the 9 per cent. of solids not fat were exceeded, though barely in six of the samples. As a comparison, if we take Carter Bell's mean of the analysis of the milk of 181 cows milked in his presence, where he gives the amount of water in milk as 86·20 per cent. by weight, the above shows that thirty-nine of the samples had over this amount of water, and only eleven under it. It is, however, only just to state that, according to Wynter Blyth, it should be replied to a question in the Court, "that genuine milk has never been known to contain more than 88·5 per cent. of water," and that in the samples analysed only one reached that standard. It must be stated, too, that the season when the milk was taken was during our wettest months—July, August, and September—when, from the cows feeding on wet grass mainly, the milk might be expected to be thinner than usual.

Complaints regarding low and cheap grades of pepper being on the market led to the taking samples and analysing a number of these as vended in Dunedin. They were obtained by the Inspector, Mr. McIntyre, of Dunedin, under the Adulteration Act. Sixteen samples of white pepper were analysed, and three of black pepper, while two samples of the former and one of the latter, guaranteed as pure pepper, were analysed as a check. Taking the percentage of moisture at an average of 10·30 (Wynter Blyth), all examined were above the average, three being between 11 and 12, twelve being between 12 and 13, and four being over 13 per cent. Or, taking the percentage of ash as a standard at 1·12, all the samples were over it, ranging from 1·19 to 1·7 per cent., while both the check (pure) peppers exceeded it slightly (1·21 and 1·22). Taking the percentage of ash as a criterion for the black peppers, three samples, with one check sample, none of them quite reached Hassell's minimum standard of between 5 and 6 per cent.,

though they all fell just short of it, the check sample coming to 4·91 per cent. Again, calculating by the amount of piperin, of which the average should be 5·60, one was at 0·9 under, and 9 over the standard. The two worst, which only came to 4·1 and 4·2 respectively, are noted by Professor Black as containing from 12 to 15 per cent. of starchy matters. Lastly, taking the percentage of resin as the standard 2·05 per cent., only one reached the standard, and the others were under it, ranging from 1·44 and 1·51 per cent., in the two noted as containing from 12 to 15 per cent. of starchy matter to just under the mark. And the three check peppers were all slightly under par. On taking an opinion with a view to prosecution, the Crown Solicitor thought that, as the peppers were in some part of the packages marked "blended," the case would fail, so no further action was taken in the matter.

Prosecutions undertaken, and Results.

Selling bread deficient in weight: At the instance of the Inspector of Weights and Measures, seven prosecutions for selling light bread were undertaken, with the result that a conviction was obtained in every case, and a small fine was inflicted, with expenses.

By the Inspector under the Dairy Industry Act.—Two persons were prosecuted for carrying pigs' feed in carts used also for the carriage of milk: one was fined 5s., and one £1 and costs. One was prosecuted for leaving his milk-cans too long without cleaning them: this case was dismissed by the Magistrate. In the former a conviction was obtained, and a fine, with all expenses, was incurred. In the latter the case was not sustained.

By the Dunedin local authority prosecutions were undertaken.—For keeping dirty premises: fined 10s. and costs. For polluting Ross's Creek (city water-supply): fined £2 and costs.

Microscopic Examinations.

Twenty-two specimens were sent me for examination microscopically during the year. Among these, 18 were sputa from the lungs, of which 11 were found to be decidedly tuberculous, 1 doubtful, being small and dried into paper, 5 judged to be bronchitis, and 1 of pneumonia. Two swabs from the throat were examined, both containing *B. diphtheria*. Serum from a blister, when examined, contained cocci and *debris*, and was diagnosed as probably erysipelas. A chop, from a butcher, contained an enlarged gland, suppurating. This was the result of a wound from a retained thorn, and it contained no tubercle bacilli.

I had also submitted to me a sample of mixed animal and vegetable matters in a fermenting condition, which was being carried in a cart used to bring milk into town, and which had been taken by the Inspector of Dairies from the cart on its way home. This formed the basis of a prosecution in which I appeared to give evidence as to the character of the stuff.

The above report, though it contains no record of any sensational occurrence, such as a fight with plague or small-pox, shows that our public is more and more appreciating our Department and coming with greater frequency as time goes on, for our assistance, while it also demonstrates that local authorities are waking up to the duties which our public-health laws assign to them.

I must not omit to mention that my staff are working diligently and well with me, and that the the other Departments of the colony which have come in contact with us are co-operating harmoniously in the duties which we have in common.

I have, &c.,

Frank Ogston,
District Health Officer for the Otago-Southland District.

WESTLAND DISTRICT.

The Chief Health Officer, Wellington. Greymouth, 14th June, 1905.

I have the honour to submit the following report for the year ending the 31st March, 1905.

Infectious Diseases.

There has been remarkable freedom from infectious diseases during the year, especially in comparison with the number of cases reported for the preceding twelve months.

A few isolated cases of diphtheria have been reported, but the disease was generally of a mild type.

Scarlet fever was practically non-existent.

Tetanus.—A girl, thirteen years of age, was admitted to the Greymouth Hospital on the 19th January suffering from this disease. Ten days before admission she had wounded her foot while playing in the vicinity of the slaughterhouses, and she died on the 22nd.

Four ships from Clarence River, laden with timber, were boarded, and although nothing suspicious of plague could be detected, fumigation and other precautions were carried ont. I wish to express my thanks to the harbour officials for their ready assistance.

Water and Drainage.

These matters remain in much the same state as last year. Hokitika has not yet entered upon its proposed scheme, though the plans were approved some months ago. It is to be hoped that the Council will soon be in a position to make a start. The Greymouth water-supply was put to a severe test towards the end of summer when during a long period of hot weather (about ten weeks) the service met the greatly increased demand, and the water remained perfectly wholesome.

SANITARY MATTERS.

Where pan-closets are still in vogue the old unsatisfactory system still obtains, notwithstanding the strong recommendations that have been made to render the use of sealed pans compulsory. And the same remarks apply with regard to rubbish-receptacles; sanitary bins should take the places of the existing boxes and rusty tins, open to the rain, and draining upon the surface of the yards and streets. The Inspectors of Nuisances are not strict enough in insisting on improvements in these matters, and unfortunately the various local authorities did not fall in with Dr. Valintine's excellent suggestion as to subsidising a competent Sanitary Inspector for the subdistrict.

During the year Inspector Middleton, of Nelson, furnished a complete report on the hotels, bakehouses, &c., in the subdistrict, and most of his recommendations have been readily carried out.

Abattoirs are still non-existent, but the old slaughterhouses are in good condition, owing to regular inspection by special officer.

Numbers of new buildings have been erected in the different towns; but it is to be regretted that more attention is not paid to the means of ventilation, and that inspection of sanitary and plumbing work is not compulsory.

CHARLES G. MORICE, M.D.,
Acting District Health Officer.

REPORT OF DR. POMARE, HEALTH OFFICER TO THE MAORIS.

Dr. J. M. Mason, Chief Health Officer, Wellington.

Tempus fugit. We find ourselves once more retrospecting. How little one seems to have done! And yet our time has been fully taken up with the many tangled problems of the year—problems which needed solving with care—entanglements which meant delicate handling; and now when all has been done we can look back and wish and regret—wish that we had our acquired knowledge then to help us, and regret that we were not able to do more. And yet it is vain to regret, seeing that we cannot do better than our best. In trying to cope with the Native question we are but picking the leaves of the tree instead of cutting down at the root.

In my last annual report I said that in order to solve the Maori question we had first to settle the land question—that was, to individualise all titles, place each Native on his own holding, giving him enough to live on and to farm, the rest being utilised either by leasing or selling, thus breaking up communism, which is and has been productive of much evil and death, thus creating an incentive to work which is the Maori's only avenue to a physical salvation. This is the root of the tree, cut it down first and all the leaves will wither away. Settle the land question and all the reforms, sanitary and otherwise, must follow as a natural sequence. Individualisation and the settling of Native lands is the pivot upon which the salvation of the Maori race rests.

This would mean the breaking-up of communism, the creating of an absolute necessity to work, the infusion of independence into the Maori national life, the teaching and learning of the commercial ratio of work and money. It would mean that each Maori would be responsible for his own family, thus filling a much-needed attribute; in fact, it would mean the better housing, feeding, and clothing of every family, a complete change from his now derogatively baneful method of existence to a better, wholesomer, more independent, thrifty, and economical life. In fact, a gradual but sure metamorphosis into a social condition better and purer than his own.

Infusion of independence by work will mean much for the Maori. This is an attribute which he sadly needs at the present time. I would compel the Natives to work not by arbitrary laws but by the creation of an incentive to work, and, if a Maorisells all his land, better that, so that he will be compelled to work for a living, than idleness with fat rents and extinction. As I pointed out before, all this must come through the individualisation of Maori lands, and until that is done the pakeha and the Maori will walk in divergent ways, the former ever casting the Davidian eye on the one pet lamb left the Maori, and the latter ever distrustful, holding aloof from advancement, regretting the hedge of multitudinous laws which keeps him in communism and decay, compelled to spend his days in idleness, and causing his heritage to be overrun by rabbits and noxious weeds.

I am glad to report a steady progress in the sanitary conditions of the pas within the past year. The appointment of Sanitary Inspectors in the different localities has been productive of much good, and, learning from past experience, I am certain that the King-country, East Coast, and Waikato would also profit if appointments were made for those districts. I would therefore suggest that three Sanitary Inspectors be immediately appointed for these localities, as they are all great Native centres. I am attaching the reports of three or four of these Inspectors to show you what they have been doing within the last year.

The matter of building new houses has progressed steadily. Our Inspectors are ever on the watch trying to get all to fall into line. One of the greatest difficulties we have to contend with is the non-subdivision of holdings, as the Natives rightly refrain from building on sections which have not been individualised, fearing that should they build somebody else would get the house when the sections are allotted and they would thus lose their building. In many instances the Maoris have been too poor to build European houses, and I instructed our Sanitary Inspectors to see that better raupo or wiwi whares were built instead of their old ones, waiting the time when they could put up better cottages.

I would still point out that the suggestion contained in previous reports of having Maori girls trained as nurses would be most beneficial. I have never felt the need of these trained nurses so much as within the past year, as there were several outbreaks of typhoid where these girls would have proved of inestimable service, and I am positive that if their assistance were available many deaths would

have been avoided. While at the General Conference of Village Councils at Rotorua, His Excellency Lord Plunket referred to the matter of training girls as nurses and afterwards employing them in different districts, as they are doing in Ireland. The suggestion was met with general approval by the Natives and a motion was passed to ask the Government to move in the matter of getting girls trained as nurses. Probably a change in existing statutes by giving the Government more control would be the first step in this direction, the next step would be to maintain the girls while they were being trained.

Tohungaism, I am sorry to say, is still rife, and not until the compulsory registration of deaths is required by law will this multi-headed Hydra be brought to bay.

Infant mortality is still as great as ever, and will continue to be till the suggestion of having good Samaritans in the form of hygienic lady missionaries is carried out and more instruction given to mothers on infant-management.

I am sorry to say that owing to numerous duties my time has been so occupied that I have been delayed in preparing pamphlets on infant feeding and management; but I am pleased to say that I have now completed several extracts from my lectures on infant-management for publication. It is hoped they will soon be in print and widely circulated.

I regret to say that ten outbreaks of typhoid occurred during the year in different localities throughout the colony, namely, at Waikawa and Croixelles in the South Island, Meremere, Patea, Kawhia, Waikato Heads, Maungatautari, Opotiki, Omarumutu, and Te Kaha in the North. In nearly all these cases the outbreaks were due to faults in the water-supplies, the supplies being more or less polluted. In some instances it was the household filth—in one a pig-sty, while in two of the cases it was due to direct contact. The majority of the affected were children of school age, and I want, Sir, to publicly thank the school-teachers, especially Mr. Cotton of Omarumutu and Mr. Hope of Te Kaha for the prompt assistance they rendered and the kindly interest they took in the welfare of their little patients. I am convinced that the thorough disinfection of houses, the burning of excreta, the instructions given to the Natives during these outbreaks, were the means of stopping a rich harvest in deaths. I am, therefore, thoroughly convinced that if we had a staff of Native nurses to draw upon in times of need a great many lives would be annually saved, and I hope the matter of training Native girls as nurses will be seriously considered by the Government and a start made in getting them trained.

Though educational matters are outside our jurisdiction, yet, knowing that the future of the race is bound by the future of the young Maori of to-day, I cannot help resuggesting that our youths be given every opportunity of pursuing something beneficial to themselves after they are educated, and that a room be left open for them at the Agricultural College, that a better system of finding them work be inaugurated, commercial and technical training be thoroughly carried out, and all Native-school masters be put on the same basis as the public-school teachers in the colony—that is, they should be compelled to show certificates and grades and be paid accordingly.

There is one matter which I would like to draw your attention to which I think has an all important bearing on the fertility of the race, and that is Maori marriages. The matrimonial arrangements of the Maori are not only deplorable but productive of much harm. Girls entering their teens are made to wed beardless youths, with the result that the first two or three children die prematurely and those who live are helpless weaklings, prone to consumption and other weaknesses. I would ask you, Sir, to bring this matter under the notice of the Minister so that an Act can be made compelling Natives to observe an age of consent the same as the European, and I would suggest that the age of consent be eighteen years.

I am glad to state that drunkenness is on the decrease. A number of prohibition orders have been taken out against some of the chronic inebriates, and several districts have been brought under the last Act preventing Maoris from obtaining liquor in bulk. It would be well if the Waikato and Poverty Bay districts were also included.

The lepers still enjoy rides on the railroad-carriages, thanks to the objection of some Auckland agitators who did not care to have them isolated safely on an island in the Auckland harbour, twelve miles from the city. Until an island is secured for them it is impossible to isolate these cases securely.

In conclusion, I may state that the work needs more workers. Death still reaps a great harvest from the sons and daughters of Tu. Over 420 have been examined and prescribed for by us, statistics of which I hope to present in my next annual report. Still forced into Micawberism, I exclaim, "Truly the harvest is great, but the labourers are few."

MAUI POMARE,
Health Officer to the Maoris.

Dr. M. Pomare, Masterton, 7th March, 1905

FRIEND, salutations to thee in the works. I herewith send thee my report.

The number of pas I have visited is	45
The number of houses occupied is	225
The number of houses to be destroyed	9
The number of houses to be renewed	21
The number of houses to be painted	43
The number of houses lacking water-closets	75
The number of houses I have passed	77
The number of water-closets built	15

February has seen five out of the nine houses destroyed. Some of the houses are being painted, and, in my opinion, my district is commencing to work. Kohunui, Taueru, and Ohanga are in need of water-supplies.

One of the most-needed things in the Wairarapa district is a doctor to attend to the Maoris. Another thing which is desirable is to have a hospital for the Maoris, failing this they should have a separate room in the Hospital. The Maoris will be willing to subscribe for half of the cost of its erection if the Government would also subsidise a half. The Maoris will also give an acre towards that Hospital. Enough.

Kia ora tonu koe.

TAIAWHIO TE TAU,
Sanitary Inspector.

SIR,— Maketu, 2nd May, 1905.

According to your letter of the 20th February, I am sending you the general report of my district, but, owing to multitudinous duties and also to the General Council meeting, I have been delayed.

I have great honour, sir, in herewith sending you the report and tables therein contained.

I have personally observed that since 1887 up to this year which has just passed, over 630 Natives have died. The Maoris in the Arawa district are decreasing. If they are proportionately decreasing in numbers in the other districts of the colony it is hard to say how the Maori people is increasing. The best way in order to obtain correct information concerning the Maori population would be to let the Councils do the enumerating for the various districts as they are now doing the registering of births and deaths. This is an important matter for the Government to consider.

Much grief has come to me, because I have seen with my own eyes the terrible decrease in our number since 1887.

It may now be seen that all the families in the districts are minus old men. A few years ago many of our villages were filled with old men, and now the villages alone remain, the people are gone. But with it all the attached table will cheer us and give us hope, in that since 1902 to 1904 the births exceeded the deaths by 22, the deaths being 143, the births 165.

BIRTHS AND DEATHS WITHIN THE LAST THREE YEARS.

District.	Tribe.	Births.			Deaths.		
		1902.	1903.	1904.	1902.	1903.	1904.
Rotorua	Ngati Whakaue	7	17	10	2	9	6
Maketu	"	1	..	2	1	..	3
Te Ngae	Ngati Uenukukopako	1	..	..	..	2	2
Matata	Ngati Rangitihi	8	9	3	9	12	5
Matata	Te Tawera	..	..	4	..	..	2
Whakarewarewa	Tuhourangi	7	10	4	2	9	2
Te Puke	"	2	2	2	1	1	..
Rotorua	Ngati Tu	..	..	..	1	6	1
Waiotapu	Ngati Whaoa	2	3	1	..	2	2
Paeroa	Ngati Tahu	..	1	..	..	2	..
Horohoro	Ngati Tuara	1	2	..	2	1	..
Awahou	"	..	..	..	..	..	..
Te Puke	Ngati Rangiwewehi	2	6	3	..	..	8
Te Puke	Tapuika	3	4	3	..	12	2
Te Puke	Ngati Moko	4	5	3	..	1	3
Maketu	Ngati Pikiao	6	3	5	3	10	8
Rotoiti	"	4	9	3	1	..	8
Motiti	Patuwai	..	..	..	..	..	1
		48	74	43	22	67	54
Total	.. ..	165			143		

Increase, 22.

Through observation I found that the majority of those who died were children between the ages of three months and two years, and they died through three diseases—diarrhœa, influenza with colds, &c., measles. The principal reasons why they succumbed to these diseases were—(1) ignorance in nursing; (2) ignorance in the management of clothing; (3) ignorance in cooking proper food for the sick; (4) ignorance in following out the doctor's instructions; (5) because they would return to the ancient practices of *tohungas*, often leaving the patients till they were almost beyond hope before seeking a qualified man's advice. Then if the patient died the medico would get blamed for his incapacity. Even those who take their sick to the doctor at an early date, if the patient is not better within the first or second day their thoughts immediately turn backwards and the sickness is pronounced *Mate Maori* (a Maori disease which generally means a bewitchment); the medicines are then cast aside and the patient is treated by Maoris and Maori methods. If the patient recovers the *tohunga* gets the credit.

The Maori has yet but grasped the shadows of how to live. Ignorance of how to care for the sick is the chief reason why so many pass away.

Ever since 1887 to 1899 I have personally seen liquor greatly consumed at the *maraes*, at funerals, and at the various meetings held in this district. And to make matters worse, I have seen Maori women, maidens, and youths intoxicated with this vile water. I know of several instances where men and women have died through drink. Besides this many cases have reached the Magistrate's Court prior to the passing of the Council's Act. Though this district has been in the consuming flame I am very pleased to report that within the past three years drunkenness has ebbed fast. Liquor is now noticeable by its absence from the tangis and meetings, though there are a few who still drink at the hotels. When

they return to the pas, however, they are very careful not to become quarrelsome. This is entirely due to the mana of the Council, and this is the reason why disturbances do not occur at meetings as formally. There are still one or two places, like Te Puke, which are ever in trouble through the much-consuming of liquor. I have been the instrument in getting fifteen prohibition orders against some men at Te Puke and Maketu, and I and some of my friends have asked the Government to bring the Arawa Council District under section 46 of the Licensing Amendment Act of 1904.

If there is any love left for the remnant of the race, then if it is preventable let us prevent it by an Act, so that the Maori be not allowed to take liquor either inside or outside a house, though I would exempt those who had a doctor's prescription and thus would be taking it for the benefit of their health.

Pas and Whares.

Attached you will find a table which I have made which will give you a good idea of the number of places I have visited, and their various conditions. I rejoice greatly at the vast difference between the houses of the past and those which have been erected since the passing of the Maori Council's Act. The wiwi whares are standing far apart, European cottages now predominate. There are many in this district who are living like pakehas, and some are living better than some pakehas I know. The existing law is a constant reminder to the Maori that there are houses better than the wiwi ones. I have seen many encouraging things; amongst them may be mentioned that when a house has been condemned the owner has been diligent in putting it out of existence by burning with fire. Many houses have been renewed, many meeting-houses have been floored and ventilated. The new wiwi whares that have been put up were those put up by men whose finance would not allow them to erect weatherboard houses, and this was the best thing to do under the circumstances. The day is yet coming when the wiwi whares will be replaced by the weatherboard altogether.

Another pleasing thing to recount is the number of kitchens built, though some were made of wiwi, yet chimneys were added to let the smoke out. Some parts of the districts have European houses entirely, like Waitangi, Taupaki, Whakarewarewa, Ohinemutu, Haparu, and other places.

I am convinced it will not be long before Maketu, Matata, Morea, Tapiukura, and Tengae will follow the example of the aforementioned places.

There is one difficult problem which confronts us, and that is the building of closets. Upon this question I would like to state that the law should not be stringently followed out in some of the pas, though it must be enforced at Whakarewarewa and Ohinemutu, because in these two pas the houses stand close together and have also been made a site for the flood of tourists who visit our Wonderland. The inhabitants have been admonished to build these houses, and the majority have complied, though at Whakarewarewa there are not as many as there ought to be, owing to the houses being too close together, the building of closets thus causing an offence. A scheme has been proposed where two or three should combine to build a common house and a suitable site be selected.

I think it would be a good thing if the Government would spend a few hundred pounds in sewerage-pipes for these kaingas, so as to avoid infectious diseases. I think this is a matter of importance which ought to be hastened, because this is a place where many eyes come to observe, and it would not only be for the benefit of the few Maoris who reside there but for the general district and the travelling public.

The following table is the list of pas that I have visited and inspected:—

Inspection and Condition of Pas from the Year 1902 to the Year 1904.

Pa.	District.	New Houses.	Rush Whares.	Closets.	Houses renewed.	Houses destroyed.	Whares condemned.
Te Manoeka ..	Te Puke ..	..	5	..	1	1	1
Te Kahika	" ..	1	3	..	4	1	3
Waitangi	" ..	3	1	..	1	4	1
Te Matai	" ..	2	..	..	..	1	1
Otukawa	" ..	1	..	..	..	1	2
Pukaingataru ..	" ..	2	2	..	..	1	..
Maketu	Maketu ..	7	3	4	2	9	4
Matata	Matata ..	7	4	..	4	6	3
Tapuaeharuru ..	Rotoiti ..	..	..	..	..	..	2
Te Waiti	" ..	2	3	..	..	..	..
Te Ruato	" ..	1	1	..	..	..	..
Hauparu	" ..	1	..	..	..	..	..
Tapuaekura ..	" ..	1	..	..	..	..	..
Mourea	" ..	4	1	..	..	2	1
Ohau	" ..	1	..	..	..	..	..
Taheke	" ..	3	2	..	1	1	2
Tikitere	Rotorua ..	1	..	..	..	..	1
Te Ngae	" ..	4	1	..	1	1	3
Pikirangi	" ..	1	..	..	..	2	..
Mokoia	" ..	2	2	..	..	..	6
Owhata	" ..	2	2	..	1	2	2
Owhatiura ..	" ..	1	..	..	..	2	2
Whakarewarewa ..	" ..	22	..	7	1	2	2
Ohinemutu ..	" ..	25	..	19	2	3	3
Waiteti	" ..	1	..	..	..	..	3
Te Awahou ..	" ..	2	..	..	3	..	8
Te Taupaki ..	" ..	6	..	..	..	..	..
Horohoro	" ..	..	..	..	..	1	4
Totals ..	..	103	30	30	21	40	54

I am pleased to report that in the matter of foods there is a change. Bread is used much more than formerly. Rotten corn is no longer eaten. Maori *tikangas* are gradually being forgotten, and when the grandchildren will have arisen the Maori ways will be completely obliterated. Let them die now. The seed is in the soil, everything bides its time when it will grow to be seen above the soil budding and bearing fruit. RAURETI P. MOKONUIARANGI,

Sanitary Inspector.

Maui Pomare, M.D., Wellington.

Maui Pomare, M.D. Ohaeawai, 10th May, 1905.

SALUTATIONS. It is fitting that I also greet you now that you have sent a word of exhortation to finish the work. I am sending you a report on the condition of the whares I have visited during my tours of inspecting and of the number of people living in each whare. There are some districts of Pewhairangi which have not taken heed. The chief reason is that their lands are still in the hands of the Land Council. Perhaps they are right in not complying as yet.

Bay of Islands and Whangarei: Number of houses passed, 74; number of houses asked to improve, 138; number of houses in course of erection, 9; number of houses renewed, 1; number of closets built, 5; average number of people in each whare, 6. Kia ora,

RAMEKA WAIKEREPURU,

Sanitary Inspector

Maui Pomare, M.D., Health Officer to the Maoris. Kaitaia, 10th May, 1905.

GREETINGS to thee. I am now sending you a report concerning the duties I have performed in inspecting the Maori pas, number of houses inspected, number of houses condemned, &c., the thoughts of the Maoris concerning these doings, condition of the Maori health during the past two years, and my own thoughts by which a better state of affairs can be enacted in the district of Mongonui.

Number of pas visited, 23; number of houses inspected, 289; condemned 81, destroyed 75 (without a single penny being expended in compensation); number of houses erected, 69; number of closets built, 7.

The Maoris are now beginning to think about the erection of closets, though at first many did not like the idea, but now they have all agreed to build them.

In regard to the health of the Maoris during the last two years in my district I must say that it has been a great improvement on previous years. Between 1902 and 1903 there were 69 deaths and only 29 births, but from 1903 to 1904 there have been 24 deaths but 39 births. I attribute the good health of the Maori within the last year to their taking heed to the instructions given and the more cleanly condition of their houses and maraes.

I have also inspected the kauri-gum camps. These camps have improved, inasmuch as the beds are now built off the ground. It is the water-supplies to these camps which are not of the best.

The inspection of the maraes has done much towards mitigating evils in the kaingas, and those who have complied now see the benefits accruing therefrom, especially in regard to their own health. Those who have thus benefited are now persuading the others who are backwards to take heed to the words of the Inspectors. We must now turn on the full machinery of the law, and see that all things are carried out. It has been demonstrated that this law is an excellent one for the preservation of our race.

We are still hoping for the time when a hospital can be established in our midst, and if this hope cannot be consummated, then it would be well if the Government could send into our midst women of common medical knowledge to teach the parents how to look after the sick, the feeding of infants, &c.

One of the great evils in the North and cause of decay is the kauri-gum diggings. It is well-nigh forty years since the Natives commenced digging for gum, and I have not yet seen a Maori who has benefited thereby. One of the great fruits of the Maori's gum-digging are bills from the storekeepers, and afterwards summonses. Many families have moved to the gumfields, where they slave and starve and take their children of school age to the district. RIAPO T. PUHIPI,

Sanitary Inspector.

Maui Pomare, M.D. Dargaville, 13th March, 1905.

GREETINGS to thee, and may your days be long to be a father and an instructor to your Native people throughout the two Islands. You are the guardian of the health of the remnant of your people. May the Father bless thee in this year of 1905.

In regard to the sanitary condition of the Maori pas throughout the Councillor District of Wairoa my eyes have seen a great change from the years which have passed. The people have been diligent in keeping their maraes and kaingas in a good healthy condition and in building new houses. Of course the penniless ones are still thinking of the ways and means. Tangiteroria, Waihinahina, Mouhanga, Kaihu, Ahikiwi, Maropiu, Taita, Ripia, Naumai, Kapehu, Mangakahia, have all been renovated within the last two years. Enough, O friend!

The thoughts of many of these people are not stable. Some are chasing the silly words of the *tohunga* Wereta. In regard to the houses many have improved, but many have been side-tracked by the doing of Mahuta and Wereta.

O friend! to end up my few words to you I enclose a little table giving you an idea of the whares and their conditions. On the whole the people have been in excellent health, except those who were attacked at Kaihu and Taita with typhoid fever, but since last Christmas no more fever has appeared. I thoroughly disinfected all the houses occupied by those who had the fever with the instruments you

sent, and since then the fever has not returned. Unfortunately in January dysentery appeared in my pa and took away my thirteen-months-old grandchild, but on account of the good medicine of Dr. Horton no more were taken. At Houhanga scarlet fever appeared in the family of Ponaka Parore. They were attended to by Dr. Purchas, and the cases got along well. I went to see them.

Pa.	Old Houses.	New Houses.	Houses destroyed.	Closets.	Paling Houses.	Kitchens.
Tangiteroria	4	5	2	4	6	4
Waihinahina	5	3	2	..	2	3
Mangakahia	6	3	4	..	14	10
Pouto	6	2	3	2	2	4
Kaihu	15	6	4	5	3	9
Ahikiwi	10	6	3	..	5	3
Maropiu	7	4	2	2	3	4
Taita	6	1	2	1	2	4
Houhanga	7	..	3	..	..	2
Te Aratapu	10	3	3	10	..	2
Ripia	7	4	3	..	..	3
Naumai	5	3	4	2	..	2
Kapehu	5	2	2	..	7	5
Totals	93	42	37	26	44	55

Grand total, 297.

Many houses have not been destroyed which had to be condemned, though I am going to see that they are destroyed immediately. The people are willing to improve since the dawn of a new era which commenced five years ago.

Kia ora,

WAAKA TE HUIA,
Sanitary Inspector.

Dr. Pomare, M.D. Ruatoki, 7th March, 1905.

HEREWITH I forward a few notes concerning the Matatua District—*i.e.*, in regard to what has been effected by the Maori Council and various Komiti Marae of that district. The report is unfortunately not a complete one, return of improvements, &c., not being included therein. I here give such information as I have been able to gather under the headings you mentioned in yours of the 20th February: Number of kaingas visited, 29; number of houses inspected, 217; number of houses condemned, 35; number of houses destroyed, 31; number of new houses and whares, 35; number of latrines, 10.

It is much to be desired that I shall be enabled to move about the district, and so visit the other settlements it contains, during the balance of the year.

There are still to be seen undesirable kinds of dwelling-places in many kaingas, more especially in inland places, but towards the coast such are gradually giving way to small cottages constructed of sawn timber. It is often seen that those who inhabit fairly decent cottages yet condemn their womenfolk to prepare food in the most wretched hovels.

In the Ruatoki District during the past year, the most marked improvement has taken place at the Waikirikiri kainga. These are the only people who have put the village water-supply into a really satisfactory state. They have also drained the offensive lagoon or sluggish stream below the kainga. All the kaingas in this district I visit and point out what should be done, in addition to which I put the same remarks into writing, and send such to the Village Committee for their perusal.

In regard to latrines, this matter is in a very unsatisfactory state. Outside the Township of Whakatane only three latrines exist in the whole, one near Whakatane and two at Ruatoki, which latter were only erected prior to the meeting of last March, because I threatened to wire Wellington to hold the meeting at Rotorua. A strong feeling exists against the erection of such places. A Taupo man was employed to build the two at Ruatoki, which are scarcely ever used. The pollution of water, &c., by excrement is of common occurrence. It will need somewhat severe measures taken in order to get these places erected. Waikirikiri is the only kainga that has promised to put latrines up. I have tried to get the Chairman of Council to erect one at his own place as an example, but he will not do so.

Respecting the building of new whares or cottages, it is observed that the majority of the Natives are anxious to possess wooden cottages, and that many have been erected within the last few years, notably at Ruatoki and Te Houhi. At some places, however, but few improvements have been made, as at Te Whaiti. In some cases this is the result of lack of means, money, or timber; but in the case of Ngati Whare of Te Whaiti and Ngati Manawa of Whirinaki, there is a distinct tone of hostility towards the Council. In such cases as the one reported by me in 1904, as existing at Te Whaiti, where, amid the most filthy surroundings, I found a youth apparently dying, it would doubtless be advisable that such be taken before the R.M. at Rotorua, as advised in Health Act sent to me by you.

In such kaingas as I have visited the sanitation cannot be regarded as anything but deplorable until such times as latrines are erected and used and all refuse collected and buried or burnt. As it is, one notes human excrement quite close to houses, and even among them, on paths, and on the watershed of water-holes from whence domestic supplies are drawn. The Council and Komiti Marae are very lax in these matters, in fact, they do but little to improve the state of villages. They prefer the *whakawa hara* line. Some change should be made at once in the conduct of this Council, but this can be verbally discussed at Rotorua.

The general health of these various peoples appears to have been fairly good during the past twelve months. In the case of deaths of several Native children which occurred here of late, I believe that carelessness of parents was an important factor. Children are allowed to eat anything—green fruit,

putrid meat, maize, and potatoes. When ill they are dosed with patent medicines or Native quack mixtures. "Monarch of Pain" is a favourite remedy here. Some of the children of the Ruatoki Native School have lately been taken to Ruatahuna, there to be put under the hands of a *tohunga*, not to cure them, for they are not ill, but to prevent them being ill.

I regret being unable to draw up a table of vital statistics, showing population of district, and proportion of births and deaths, &c., to such population. I have tried to induce the Council to compile a tribal roll, but so far have failed to do so.

The number of births registered in the Matatua District from the 1st January, 1904, to the 7th March, 1905, was sixty-nine. The number of deaths amongst the Natives registered during the same period was fifty-five. Several returns, however, are not yet in, hence these figures are not conclusive. So far the registration of these births and deaths has been optional. It should be made compulsory, with fines for non-registration within legal time.

But little good will be effected in this district until I am enabled to travel over the whole district several times in each year, to inspect villages, to explain registration, sanitation, wishes of Government, &c., to the people. The members of Council do not do these things well, nor are they to be depended on in other ways. Those members who frequently absent themselves should be dismissed. Finally, we must have a Chairman who will co-operate with me and not spend his time in indolence and attempts to *kawe mana*.

So far as I can ascertain, there appears to be but little drinking done in Native kaingas. A few fines are received from this source. The district constable at Whakatane supports this statement.

Tohungas: Regarding these gentry, I have already informed you that after a great deal of discussion, the Council resolved to charge each person £10 who administered *wai rakau* to Natives, but that, owing to the action, principally, of our unhappy Chairman, the whole resolution was abandoned, and things stand as they were in ante-bellum days.

However, as I have just received orders to attend the Rotorua Conference, I propose to discuss these and other matters more fully with you when we meet there.

ELSDON BEST,
Sanitary Inspector.

TE WAIKATO SANATORIUM.

SIR,— Department of Public Health, Cambridge.

I have the honour to submit my annual report for the period from the 1st April, 1904, to the 31st March, 1905.

The past year has been one of considerable progress in matters pertaining to this institution. Five new shelters, each containing four beds, an open-air dining-room with kitchen, bath-room, and nurses' dining-room attached, and necessary outbuildings, have been established. The new colony is situated some 300 yards from the main administrative block. This colony has been reserved for male patients who are either entirely without means or who are able only to contribute a small sum weekly towards their maintenance. The separate kitchen, dining-room, &c., were rendered necessary because it was impossible, owing to an intervening gully, to obtain a nearer site for the shelters. This colony is lighted by electricity, and has a constant-pressure water-supply laid on. The sewage is treated on the septic-tank system, the effluent being used for surface-irrigation.

The accommodation for female patients has been increased by four beds in one large shelter, and an improvement is in progress in connection with the verandah, which is being increased to 16 ft. in depth and provided with canvas blinds and other much-needed protection against the weather.

In the Southern, or, as it is now named, the Ward colony, water has been laid on to the dining-shelter, and sink and a new water-carriage drainage system with separate septic tank installed. The number of septic tanks in use (four), while apparently excessive, is unavoidable, from the hilly nature of the ground.

Five new bedrooms in a detached block have been built for the accommodation of the outdoor staff, their existing quarters having been previously greatly overcrowded.

Each dining-shelter has now been furnished with a closed sheet-iron slow-combustion stove of a Canadian pattern, burning wood; these stoves are much appreciated by patients during the cold and wet weather.

A cottage of five rooms has been built near the entrance gates for the use of the nurses, and an asphalt tennis-court provided for their recreation.

As regards the farm, the chief work has been the planting of an orchard of various fruit-trees, covering an area of about 3 acres; some vines have also been planted. The potato-crop was a partial failure owing to the blight, notwithstanding that spraying was carried out.

Some new paths have been made, and both these and some of the old ones have been tarred and sanded; the access to the new colony is still, however, capable of much improvement.

The water-supply has fortunately been ample during the summer, but as a precaution against a shortage, the dam has been raised about 2 ft.

A new cow-shed has been built on the top of the hill, so that the cows are now kept entirely away from the Sanatorium—a great advantage. The old cow-shed situated behind the stable was then converted into a house for the dynamo and accumulators, which it was found necessary to remove to a more central position than they formerly occupied at the bottom of the gully.

The increased number of lights required by the new shelters rendered more power necessary, and a 9½-horse-power oil-engine of English make was accordingly obtained. This also drives a circular saw, enabling a large quantity of fire-wood to be cut up, which has considerably lessened our use of coal. The old engine is still used for pumping the water from the dam to the reservoir on the top of the hill.

Improvements have been made in connection with the septic tank which treats the sewage from the main building by the addition of a secondary concrete tank divided into two loculi, the effluent being distributed over coke by means of three perforated iron pipes. These improvements were necessary owing to the offensive smell which was perceptible at times.

An office for the Resident Medical Officer has been added to the administrative building.

The following table shows the number of cases admitted and discharged during the year :—

Number of new patients admitted from the 1st April, 1904, to the 31st March, 1905	92
Number of old patients remaining under treatment from last year	31
Total number of cases treated during year	123
Total days of treatment, new cases only	10,539
Average duration of treatment, new cases (days)	114½
Discharged apparently cured or greatly improved	42
Discharged not improved	16
Discharged worse	7
Died	5
Remaining under treatment on the 31st March, 1905	53
Longest period of treatment (months)	17
Shortest period of treatment (days)	6

In the above table I have included the apparently cured with the greatly improved, since I believe it is impossible to assert that any patient has been cured until at least one year has elapsed without the disease recurring, the patient meanwhile following his usual employment. I regard the high percentage of " cures " as given by certain other institutions as entirely misleading, unless the above time-limit is understood.

I am sorry to have to again complain of the number of unsuitable cases sent in for treatment during the past year, not less than sixteen patients being in such a condition when admitted that there was no possibility of improvement. Some of these patients came from distant parts of the South Island, and the long fatiguing journey naturally hastened the end. The responsibility for this appears not infrequently to rest with the patient's own medical man, who should strenuously dissuade those in the far-advanced stage of consumption from coming here, since nothing but disappointment can ensue to all concerned.

As some misapprehension appears to exist in the minds not only of the public, but even of some members of our profession, as to which cases are likely to benefit here, it may be stated that no patient who shows a strongly marked tendency to pulmonary hæmorrhage, or who has widespread disease in both lungs, or advanced tuberculous disease of the larynx, should ever be sent here ; nor should a cure be looked for in cases where the disease has existed for two or more years. It would be well if patients were admitted on the understanding that for the first month they were, so to speak, on probation, and that if no improvement took place during that period they would be required to leave. An English writer on sanatoria has said, " The sanatorium should not be expected to receive hopeless cases ; these, if not treated at home, should enter a different class of institution—the home or refuge for incurables—but in the meantime, institutions for their reception are as necessary as sanatoria, both for the sake of the public and for that of the patient." When one looks back on the number of patients who have had to be discharged as incurable during the past twelve months, each of whom if still alive is a possible focus for the spread of the disease, the truth of the above statement is self-evident.

It is probable that the number of patients reported as improved would have been larger but for the very unfavourable weather during last spring and early summer. Heavy rains and strong winds, both of which are harmful to consumptives, prevailed during this period. The treatment is mainly by fresh air, rest, and graduated exercise and feeding. Practically the whole of the patients' time is spent in the open air or in shelters which are so constructed as to afford the maximum of fresh air combined with protection from rain and wind. Rest is prescribed during the first days after admission, and in all cases where fever or dyspepsia are present. All patients lie down for an hour before and after dinner and the evening meal.

Exercise is in most cases limited to walking, the distance varying with the patients' strength from a few yards to four miles or so daily, the regulation pace being about two miles an hour. In going uphill patients are enjoined to stop and rest if they feel themselves getting out of breath. Respiratory exercises, which chiefly consist of methodical deep inspirations with simple arm-exercises calculated to expand the chest, are employed in cases where the disease is quiescent. I am inclined to think from observation, however, that no good but rather harm results from these exercises where the disease still active.

The only outdoor game permitted is croquet, and cards are only allowed as a solace during wet weather.

Some of the convalescent male patients have, not without difficulty, been persuaded to undertake some gardening for an hour or so daily, and they have benefited both physically and morally. It is sometimes hard to persuade some of these that they need do anything except eat and sleep, and there is small risk of their unduly exerting themselves at this kind of exercise.

There are three chief meals daily, milk, soup, or cocoa being given between, and a light supper at about 8.15 p.m. Patients are encouraged to take a reasonable quantity of food, but overfeeding is not held to be necessary. I have lately taken meals occasionally with the patients, so as to satisfy myself that a proper quantity of food is being consumed, and that the quality and the cooking are up to the standard.

Frequent, and, if possible, daily, bathing and the use of the " loofah " is enjoined, but in bedridden cases the wet rub is given instead. Woollen clothing is advised, and the patients now sleep between blankets, it being found impossible to keep cotton sheets dry during the winter. Those patients who have adopted the habit of going barefooted have found that amongst other advantages they are less liable to suffer from cold feet.

The routine use of drugs is avoided as far as possible, and the indiscriminate consumption of malt and oil has not been found specially advantageous. Weighing is done once a week, and there is keen competition as to who will score the top weight.

Each patient is seen daily, and his chest examined at frequent intervals. Bacteriological examination of the sputa showed that tubercle bacilli were present in eighty-nine out of the ninety-two new cases admitted. Great importance is attached to the proper collection and disinfection of the sputa. The disinfecting agent now used is a 1-in-2,000 solution of corrosive sublimate.

In favourable cases the effect of the open-air treatment is soon apparent; both appetite and weight increase, night-sweats, if present, disappear, and in feverish cases the body-temperature and pulse-rate gradually fall to normal, the cough and expectoration diminish, and complete or partial drying-up of the moist sounds heard on auscultation takes place. If none of these effects are observed during the first month the prospects of ultimate recovery must be looked upon as extremely doubtful. Further, if the unfavourable symptoms increase, the patient is advised, in his or her own interests, to return home.

I should here like to draw attention to the prevalence of defective teeth among the patients, especially of the poorer class, although by no means confined to these. If they are unable to properly masticate their food it is naturally impossible for them to profit by their stay here to the fullest extent. It would be well to advise patients when they apply for admission that they should pay a visit to the dentist and have their teeth examined and put in good order.

I am very glad to be able to report the completion of the road to Cambridge. The greater portion of this road last winter was in an execrable state, and language often failed to express our feelings when travelling over it; however, it is now gravelled or metalled for the whole distance, it being noticeable that the gravelled part, while infinitely more comfortable to travel over, stands the rather heavy traffic as well or better than the metal. The coming winter will now have no terrors for us.

Early in January we received an official visit from His Excellency the Governor and Lady Plunket, who were accompanied by the Hon. the Minister of Public Health. In commemoration of their visit the new colony has been christened " Plunket," the other male colony " Ward," while the remaining, or women's colony, it is proposed to call " Mason " after yourself, in recognition of your constant efforts in furthering the crusade against consumption.

I have, &c.,

C. H. R. Pentreath, B.A., M.B., B.C. (Cantab.),
Medical Superintendent.

The Chief Health Officer, Wellington.

PATHOLOGICAL REPORT.

Department of Public Health, Wellington, 20th July, 1905.

Dr. Mason, Chief Health Officer.

We have the honour to submit the following report on the work done in the Pathological Laboratory during the past year :—

The materials received for examination during the year totalled 716, a decrease of 23 on those submitted the previous year. There was a slight increase in the number of sputa examined for tubercle —321 as against 308, and a decrease in number of tissues examined by section—122 as against 136.

The number of urines (96) and swabs for diphtheria (38), by a coincidence, were exactly the same as the previous year.

We have pleasure in again acknowledging the skill and attention which Mr. G. H. Barker, laboratory assistant, has devoted to the preparation of these materials for examination.

J. A. Gilruth, Pathologist.
R. H. Makgill, Bacteriologist.

TABLE SHOWING RESULT OF EXAMINATIONS OF PATHOLOGICAL SPECIMENS.

Material.	Object of Examination.	Positive.	Negative.	Total.
Sputum	For tubercle	104	217	321
"	For hydatids	3	1	4
"	For influenza bacillus	1	..	1
Total sputa examined		..	..	326
Purulent and other discharges	For pyogenic organisms	4	5	9
" "	For tubercle	1	..	1
" "	For gonococci	9	6	15
" "	For plague	1	..	1
" "	For parasites	1	2	3
" "	For other conditions	3	..	3
Total discharges examined		..	..	32
Throat swabs	For diphtheria	16	22	38
"	For other conditions	..	..	1
Total throat swabs examined		..	..	39
Blood	For typhoid (Widal's)	13	17	30
"	For other conditions	..	..	8
Total blood samples		..	..	38
Tissues examined by sections, &c.	For malignancy	36	63	99
" "	For tubercle bacillus	3	2	5
" "	For plague	2	10	12
" "	For other conditions	5	1	6
Total tissues examined		..	..	122
Fæces	Bacteriologically	..	..	2
"	For parasites only	..	..	2
Total fæces examined		..	..	4
Vomit	Bacteriologically	..	..	1

URINES EXAMINED.

Method.	What sought.	Positive.	Negative.	Total
Bacteriologically	Tubercle	4	33	37
Microscopically	Gonococcus	..	2	2
"	Deposits	6	5	11
Chemically	Albumen	7	12	19
"	Sugar	4	9	13
"	Other conditions	1	1	2
Chemical estimations	Urea	12	..	12
Total urines examined		..	..	96

ANIMALS EXAMINED.

Rats (8).—For parasites two were examined. For plague five were examined, in one of which plague bacillus was found. For trypanosonum one was examined, and the organism discovered.

Cats (3).—For diphtheria three were examined, but in none was the disease found.

Rabbits (1).—For hydatids one was examined, and the parasite found.

Fish (1).—For tumour growing in a fish was examined.

Insect.—The larvæ of an insect were examined and identified.

Guinea-pigs.—Fourteen guinea-pigs were used during the year for inoculation; twelve in investigating the presence or absence of tubercle bacillus in sputa or urines; one to test the virulence of a culture of diphtheria, and one to identify a pyogenic organism.

Total animals examined, 28.

MISCELLANEOUS SPECIMENS.

Water-samples.—Nine were examined: Seven samples were examined to ascertain their bacteriological condition, three being from public supplies and the remainder private; two other samples were examined for parasites only.

Dust, &c.—One sample from a room in which a tubercular patient had died was examined for tubercular bacillus, but without success. In a sample of wall-paper from a similar room, the bacillus was readily discovered, the patient having been in the habit of spitting on the wall. The bacteriological condition of a sample of plasticine used in a school was investigated.

Vaccine-cultures.—The bacteriological condition of ten samples of vaccine was investigated, a report on which appears elsewhere.

Food-stuffs.—In all, eleven samples were examined: Dried milk, four samples bacteriologically; rabbits, one sample for hydatids; fish, one sample for tumour; sardines, one box bacteriologically; cordials, three samples bacteriologically.

The following table shows the tumours examined, classified according to region and nature of growth :—

—	Digestive System.		Respiratory System.		Reproductive System.			
	Tongue, Lips, and Mouth.	Stomach.	Larynx.	Lungs.	Uterus.	Ovary.	Breast.	Testicle.
Carcinoma	4	1	..	1	2	1	9	..
Sarcoma	1	..	..	..	1	..	..	..
Simple tumours ..	6	1	3	..	5	1	5	1

—	Urinary System.		Organs of Special Sense.	Sympathetic System.	Integumentary System.	Locomotive System.	Total.
	Kidney.	Bladder.	Eye.	Glands.	Skin.	Muscles, Bones, &c.	
Carcinoma	1	..	..	4	3	..	26
Sarcoma	..	..	4	2	1	1	10
Simple tumours ..	1	2	..	1	4	2	32

In thirty-three cases negative results were obtained.

By the examination of purulent and other discharges the following results were obtained: Gonococcus detected in urethral discharge in nine out of fourteen samples examined; pyogenic organisms were detected and classified in four out of ten specimens of pus, &c.; hydatids were found in one out of three samples of pus from abscess-cavities. In all, thirty-two such specimens were submitted for examination.

REPORTS OF PUBLIC ANALYSTS.

AUCKLAND.

SIR,— Auckland, 3rd June, 1905.

I have the honour to submit a report of the work done at my laboratory under the Food Adulteration Prevention Acts during the year ending the 31st March, 1905. The number of samples examined were 78 in all, the particulars of which are given in the accompanying sheets.

Of 63 samples of milk examined 7 were adulterated by the addition of water. One sample of cream was heavily adulterated with boracic acid. Of 6 samples of potable water I condemned the use of 5 for reasons given.

I have, &c.,

The Chief Health Officer, Wellington. J. A. POND, F.C.S., Colonial Analyst.

Return of Analyses at the Analytical Laboratory, Auckland, for the Year ended the 31st March, 1905.

Department or Person from whom Sample received.	Date received.	Nature of Sample.	Adulteration suspected, or for what analysed.	Result of Analysis.
	1904.			
Police ..	April 8 ..	Milk	Water	Adulterated with added water to 21·65 per cent.
" ..	" 8 ..	"	"	Adulterated with added water to 22 83 per cent.
District Health Office ..	June 1 ..	Water	For purity ..	Condemned. Both water and bottle dirty.
Ditto ..	" 20 ..	" (potable), two bottles	"	Water questionable. Bottles contaminated.
Agricultural ..	" 23 ..	Milk	Water	Solids not fat, 8.26 per cent.; fat 3·6 per cent.: total solids, 11·86 per cent. Court upholds conjoint solids above 11·5 per cent.
" ..	" 23 ..	"	"	Very rich milk.
" ..	" 23 ..	"	"	Rich milk.
" ..	" 23 ..	"	"	"
		"		
District Health Office ..	Aug. 27 ..	Water (potable) ..	For purity ..	Results satisfactory — permitted its utilisation.
Ditto ..	July 25 ..	Effluent from septic tank	Constituents ..	Showing seriously contaminated material.
" ..	Oct. 3 ..	Water (potable) ..	For purity ..	Unsatisfactory — condemned use.
Agricultural ..	Oct. 7 ..	Milk	Water	Above standard. Total solids, 11·68 per cent.
" ..	" 7 ..	"	"	Total solids, 11·49 per cent.; fat, 3·2 per cent.
Auckland Boro' Council	" 6 ..	"	"	Total solids, 12·0 per cent.; fat, 3·0 per cent.
Ditto ..	" 6 ..	"	"	Total solids, 12 55 per cent.; fat, 3·8 per cent.
" ..	" 6 ..	"	"	Total solids, 12·99 per cent.; fat, 4·5 per cent.
" ..	" 6 ..	"	"	Total solids, 12·69 per cent.; fat, 3·7 per cent.
" ..	" 6 ..	"	"	Total solids, 11·87 per cent.; fat, 3·0 per cent.
" ..	" 6 ..	"	"	Total solids, 12·11 per cent.; fat, 3·2 per cent.

Return of Analyses at the Analytical Laboratory, Auckland—continued.

Department or Person from whom Sample received.	Date received.	Nature of Sample.	Adulteration suspected, or for what analysed.	Result of Analysis.
Auckland Boro' Council	Oct. 6 ..	Milk	Water	Below standard. Total solids, 10·94 per cent.; fat, 2·9 per cent.
Ditto ..	" 6 ..	"	"	Total solids, 11·74 per cent.; fat, 3·1 per cent.
" ..	" 6 ..	"	"	Total solids, specific gravity, 1021·9; about 40 per cent. cream.
" ..	" 6 ..	" ..	"	Total solids, 12·53 per cent.; fat, heavy.
" ..	" 6 ..	"	"	Below standard. Total solids, 10·68 per cent.; fat, 3·5 per cent.
" ..	" 6 ..	"	"	Total solids, 11·78 per cent.; fat 3·2 per cent.
" ..	" 6 ..	"	"	Total solids, 12·53 per cent.; fat, large.
" ..	" 6 ..	"	"	Total solids, 11·92 per cent.; fat, 5·1 per cent.
" ..	" 6 ..	"	"	Total solids, 11·64 per cent.; fat, 2·8 per cent.
" ..	" 6 ..	"	"	Below standard. Total solids, 10·83 per cent.; fat, 3·2.
" ..	" 6 ..	"	"	Total solids, 11·86 per cent.; fat, 4·2 per cent.
" ..	" 13 ..	"	"	Total solids, 11·85 per cent.; fat, 3·2 per cent.
" ..	" 13 ..	"	"	Rich milk. Fat, 3·4 per cent.
" ..	" 13 ..	"	"	Total solids, 11·58 per cent.; fat, 3·13 per cent.
" ..	" 13 ..	"	"	Rich milk. Fat, 4·9 per cent.
" ..	" 13 ..	"	"	Total solids, 11·85 per cent.; fat, 3·52 per cent.
" ..	" 13 ..	"	"	Total solids, 12·23 per cent.; fat, 3·20 per cent.
" ..	" 13 ..	"	"	Rich milk. Fat, 3·4 per cent.
" ..	" 13 ..	"	"	Total solids, 12·0 per cent.; fat, 2·91 per cent.
" ..	" 13 ..	"	"	Rich milk. Fat, 3·40 per cent.
" ..	" 13 ..	"	"	Total solids, 12·74 per cent.; fat, 2·47 per cent.
" ..	" 13 ..	"	"	Total solids, 12·76 per cent.; fat, 2·64 per cent.
" ..	" 13 ..	"	"	Rich milk. Fat, 3·20 per cent.
District Health Office	" 11 ..	Salt	Ptomaines, arsenic	
Ditto ..	" 11 ..	Scone	"	Negative results obtained with each sample—no trace of arsenic or antimony; no evidence of alkaloids.
" ..	" 11 ..	Contents of stomach, siphoned vomit	"	
Agricultural ..	Nov. 4 ..	Milk	Water	Total solids, 14·56 per cent.; fat, 5·7 per cent.
" ..	" 4 ..	"	"	Total solids, 13·44 per cent.; fat, 4·4 per cent.
" ..	" 4 ..	"	"	Total solids, 17·34 per cent.; fat, 9·63 per cent.
District Health Office	" 4 ..	Pepper	Foreign matter ..	No foreign starches. Ash, 1·1 per cent.; alcoholic ext., 8·8 per cent.; pepper pure.
Ditto ..	" 30 ..	Water (potable) ..	For purity ..	Condemned on account of vegetable *débris* in suspension.
" ..	" 30 ..	" ..	" ..	Ditto.
" ..	Dec. 22 1905. ..	Biscuits (plasmon) ..	Constituents ..	Starch, 55·5 per cent.; proteids, 21·2 per cent; fat, water, &c., 23·3 per cent.
" ..	Jan. 4 ..	Cream	Boracic acid ..	Contained boracic acid, 7·99 per cent., 55·95 gr. per 1 lb.
Auckland Boro' Council	Mar. 9 ..	Milk	Water	Rich milk—high above standard.
Ditto ..	" 9 ..	"	"	" "
" ..	" 9 ..	"	"	" "
" ..	" 9 ..	"	"	" "
" ..	" 9 ..	"	"	" "
" ..	" 9 ..	"	"	" "
" ..	" 9 ..	"	"	" "
" ..	" 9 ..	"	"	Total solids, 11·88 per cent.; fat, 3·1 per cent.
" ..	" 9 ..	"	"	Rich milk. Total solids, 12·10 per cent.; fat, 3·7 per cent.
" ..	" 9 ..	"	"	Rich milk. Fat, 3·1 per cent.
" ..	" 9 ..	"	"	"
" ..	" 9 ..	"	"	"
" ..	" 9 ..	"	"	"
" ..	" 9 ..	"	"	"
" ..	" 9 ..	"	"	" Fat, 3·3 per cent.
" ..	" 9 ..	"	"	Below stand. Total solids, 9·96 per cent.; fat, 2·6 per cent.
" ..	" 9 ..	"	"	Rich milk. Fat, 3·2 per cent.
" ..	" 9 ..	"	"	Slightly below standard. Total solids, 11·32 per cent.; fat, 3·5 per cent.
" ..	" 9 ..	"	"	Rich milk.
" ..	" 9 ..	"	"	"
" ..	" 9 ..	"	"	"
" ..	" 15 ..	"	"	Total solids, 11·84 per cent.; fat, 3·57 cent.
District Health Office	" 15 ..	Olive oil	"	Containing water—nothing deleterious.

J. A. Pond, F.C.S., Colonial Analyst.

WELLINGTON.

SIR,— Colonial Laboratory, Wellington, 14th May, 1905.

I have the honour to forward herewith returns of analyses made in this laboratory for the Department of Public Health during the year ended the 31st March, 1905. These returns show a total of sixty analyses of a varied character. I have, &c.,

J. S. MACLAURIN, D.Sc., F.C.S.,
Analyst to the Department of Public Health.

The Chief Health Officer, Department of Public Health, Wellington.

SIR,— Colonial Laboratory, Wellington, 14th May, 1905.

In compliance with section 38 of "The Adulteration Prevention Act, 1880," I have the honour to report that for the year ended the 31st March, 1905, the following analyses have been made :—

Nature of Sample.	Number of Samples.	Nature of Sample.	Number of Samples.
Milk	8	Groats	1
Ale, stout, and beer	15	Biscuits	2
Spirits	13	Jam	1
Buns, scones, and cakes ..	7	Lemon squash	1
Oatmeal	1	Medicine	1
		Total..	50

Of the milks 6 were adulterated, 5 with water and 1 with boracic acid. Three of the spirits were adulterated with water. The lemon squash contained salicylic acid, and the supposed medicine was merely water. The remaining samples were unadulterated.

I have, &c.,

J. S. MACLAURIN, D.Sc., F.C.S.,
Colonial Analyst.

The Chief Health Officer, Department of Public Health, Wellington.

Return of Analyses at the Analytical Laboratory, Wellington, for the Year ended the 31st March, 1905.

Department or Person from whom Sample received.	Date received.	Nature of Sample.	Adulteration suspected, or for what analysed.	Result of Analysis.
	1904.			
Inspector J. Johnston	April 20 ..	Water	General analysis ..	Water of inferior quality.
Education ..	„ 20 ..	Honey	Poison suspected ..	None found.
Inspector Johnston	„ 27 ..	Water	General analysis ..	Water of bad quality.
H. D. Atkinson	„ 28 ..	Coal	For sulphur determination	Contains 1·93 per cent. of sulphur.
Dr. H. M. Wilson	May 23 ..	Urine	Nature of colouring matter	Not identified.
J. O. Craik ..	„ 23 ..	Wines	General analysis ..	Wines of fair quality, but rather high in volatile acids.
Dr. Watson ..	„ 23 ..	Urine	Presence of calculi..	None found.
Insptr. Schauer	31 ..	Sewage	General analysis ..	
Wellington Hospital	June 13 ..	Pathological fluid	Free hydrochloric acid	Found 0·031 per cent.
Dr. Clark ..	„ 28 ..	Water	General analysis ..	Water of excellent quality.
Insptr. Schauer	July 5 ..	Buns	Alum	None found.
Chief Health Officer	„ 8 ..	Dried milk ..	General analysis ..	Milk of very good quality.
Dr. Hislop ..	„ 14 ..	Urine	For sugar ..	4·07 per cent. found.
Mrs. R. S. Bremner	„ 18 ..	Milk	General analysis ..	Watered.
Insptr. Schauer	„ 21 ..	Scones, &c. ..	Alum	None found.
Inspector Johnston	Aug. 9 ..	Water	General analysis ..	Water of fair quality.
G. T. Harris ..	„ 17 ..	Bread	„ ..	Bread of fair quality.
Insptr. Kendall	„ 18 ..	Water	„ ..	A bad water.
Inspector Dolby	„ 25 ..	„	„ ..	Fairly good quality.
Public Health Department	„ 25 ..	Urine	Nature of deposit ..	Acid urates.
Dr. Hislop ..	„ 27 ..	„	Sugar	Contained 3·9 per cent.
Inspector Middleton	„ 27 ..	Water	General analysis ..	Fairly good quality.
Inspector Kendall	„ 29 ..	Sewage	„ ..	
Dodson & Co...	Sept. 9 ..	Beer	„ ..	Beer of good quality.
H. D. Baker ..	„ 17 ..	Water	For contamination	Zinc found.
Dr. Hassell ..	„ 19 ..	„	General analysis ..	Contained large amount of organic matter.
Mr. Manthel ..	„ 26 ..	Oatmeal	For poison ..	None found.
D. Maroney ..	„ 26 ..	Ale and stout ..	General analysis ..	Samples of inferior quality.
J. H. Hawkins	Dec. 6 ..	Lemon squash ..	Salicylic acid ..	Found 0·06 per cent.
W. M. Howe ..	„ 4 ..	Medicine	Supposed medicine..	Found to be merely water.
Remington Bros	„ 10 ..	Water	For poison ..	Zinc found.
Dr. Frengley ..	„ 12 ..	Septic tank effluent	General analysis ..	
Dr. Makgill ..	„ 15 ..	Jam	Mineral poison ..	None found.
H. W. Rapley..	„ 16 ..	Water	General analysis ..	Large amount of organic matter.
Chief Health Officer	„ 17 ..	Medicine	„ ..	

Return of Analyses at the Analytical Laboratory, Wellington—continued.

Department or Person from whom Sample received.	Date received.	Nature of Sample.	Adulteration suspected, or for what analysed.	Result of Analysis.
	1905.			
Dr. Mackin ..	Jan. 20 ..	Urine	Sugar	No. 1=0·55 per cent.; No. 2=0·9 per cent.
Dr. Ross ..	" 25 ..	Contents of stomach	Strychnine ..	None found.
Chief Health Officer	" 26 ..	Remedy for seasickness	General analysis ..	Contained sodium bromide and potassium tartrate.
Inspr. Brownlie	Feb. 9 ..	Septic tank effluent	" ..	
Dr. Gilmer ..	" 20 ..	Groats	Poison	None found.
Dr. Mackin ..	" 28 ..	Urine	Sugar	"
Fresh Food & Ice Company	Mar. 2 ..	Milk	General analysis ..	
Dr. Mason ..	" 15 ..	"	" ..	Above standard.
Dr. Makgill ..	" 21 ..	Water	" ..	
Inspector Johnston	" 22 ..	"	" ..	Water of excellent quality.
Dr. Valintine..	" 26 ..	"	" ..	

J. S. Maclaurin, D.Sc., F.C.S., Analyist.

Canterbury.

Sir,— Brittan Street, Linwood, Christchurch, 11th April, 1905.

I have the honour to send you under separate cover the returns of analyses made during the year ending the 31st March, 1905.

Referring to the cocoas analysed on the 10th August, 1904, I would be glad to know for further guidance if the "homœopathic cocoas" are expected to contain 20 per cent. of cocoa-fat like the pure cocoas. I ask because homœopathic cocoas are understood to be mixed with starchy matters, &c., and they are priced accordingly; but as they are almost always prepared from commercial cocoas which do not contain much over 20 per cent. of fat, the homœopathic preparations of them do not come up to the standard of fat required.

In reference to limejuices analysed on the 10th August, 1904, some of them show a great difference in the amount of citric acid present, one being below 3 per cent. This is caused through there being concentrated limejuices broken down with water. In my opinion it would be best to have a strength fixed.

I have, &c.,
A. A. Bickerton,
Colonial Analyst.

Dr. Mason, Chief Health Officer, Wellington.

Return of Analyses at the Analytical Laboratory, Christchurch, for the Year ended 31st March, 1905.

Department or Person from whom Sample received.	Date received.	Nature of Sample.	Adulteration suspected, or for what analysed.	Result of Analysis.
	1904.			
Health ..	Mar. 31 ..	Disinfectant ..	Disinfecting power	Phenols 56 per cent., neutral oil 42 per cent., bases 2 per cent.
" ..	" 31 ..	" ..	"	Phenols 56 per cent, neutral oil 40 per cent, bases 4 per cent.
" ..	" 31 ..	" ..	"	Phenols 94 per cent., neutral oil 4 per cent., bases 2 per cent.
" ..	" 31 ..	" ..	"	Phenols 98 per cent. as carbolic acid in acid form.
" ..	" 31 ..	" ..	"	Phenols 54 per cent., neutral oil 42 per cent., bases 4 per cent.
" ..	" 31 ..	" ..	"	Phenols 11 per cent., equal to about 20 per cent. of fluid added to powder.
" ..	" 31 ..	" ..	"	Phenols 12 per cent., equal to about 20 per cent. of fluid added to powder.
" ..	" 31 ..	" ..	"	Phenols 17 per cent., equal to about 20 per cent. of fluid added to powder.
" ..	" 31 ..	" ..	"	Phenols 19 per cent., equal to about 20 per cent. of fluid added to powder.
Customs ..	April 15 ..	Acetic acid ..	Tariff	57 per cent. acetic acid.
" ..	" 15 ..	" ..	"	58 "
" ..	" 15 ..	" ..	"	57 "
" ..	" 15 ..	Bay rum ..	"	5 per cent. solution of glycerine in water, with a little extract of scented plant.
" ..	" 15 ..	Liquid colouring ..	"	29 per cent. saccharine (calculated as cane sugar).
" ..	" 22 ..	Acetic acid (glacial)	"	97 per cent. acetic acid, 55·4° Fahr. melting-point (not glacial).
" ..	" 22 ..	"	"	98 per cent. acetic acid, 56° Fahr. melting-point (not glacial).
Police ..	May 4 ..	Alleged beeswax ..	Genuineness ..	80 per cent. solid paraffin, mixed with 20 per cent. of other matters, chiefly beeswax, with a little colouring matter.

Return of Analyses at the Analytical Laboratory, Christchurch—continued.

Department or Person from whom Sample received.	Date received.	Nature of Sample.	Adulteration suspected, or for what analysed.	Result of Analysis.
Health	May 15 ..	Water	Purity	Free ammonia, 0·013; album. ammonia, 0·006 parts per million; chlorine, 0·20 gr. per gallon; phosphates and nitrates, nil.
" ..	" 15 ..	"	"	Free ammonia, 0·03; album. ammonia, 0·01 parts per million; chlorine, 0·42 gr. per gallon; phosphates and nitrates, nil.
" ..	" 15 ..	"	"	Free ammonia, 0·10; album. ammonia, 0·03; chlorine, 0·42 gr. per gallon; phosphates and nitrates, nil. No. 1 is a superior first class soft water; No. 2 has been slightly contaminated with matter; No. 3 is badly contaminated with vegetable organic matter.
" ..	" ..	Bread	Explanation of bad taste	The bread was free from alum, but tasted sour and musty. In my opinion this was caused by the action of bacteria from insufficient cleanliness, and from want of care in duly keeping the plant sterilised.
Customs ..	" 23 ..	Acetic acid ..	Tariff	61 per cent. acetic acid.
" ..	" 23 ..	" ..	"	57 "
Health ..	June 2 ..	Water	Purity	Loss on ignition, 3·08; insoluble and saline matter, 2·94; chlorine, 0·98 gr. per gal.; free ammonia, 0·06; album. ammonia, 0·06 parts per million; traces of phosphates and nitrates.
" ..	" 2 ..	"	"	Loss on ignition, 5·88; insoluble matter, &c., 9·24; chlorine, 4·20; nitrate acid, 0·01 gr. per gal.; free ammonia, 0·066; album. ammon., 0·068 parts per million; phosphates, trace. Above indicates that the samples were contaminated with sewage or other animal matter—No. 2 decidedly so, and No. 1 to a less extent.
" ..	" 11 ..	"	"	Loss on ignition, 2·5; carb. lime and magnesia, 7·9; chlorine, 3·29 gr. per gal.; free ammon., 0·004; album. ammon., trace—parts per million; phosphates and nitrates, nil.
" ..	" 11 ..	"	"	Loss on ignition, 5·4; carb. of lime and magnesia, 12.4; chlorine, 2·4 gr. per gal.; phos., nil; nitrates, trace; free ammonia, 0·023; album. ammon., 0.02 parts per million.
" ..	" 11 ..	"	"	Loss on ignition, 3·0; carb. lime and magnesia, &c., 1·22; chlorine, 0·6 gr. per gallon; free ammon., 0·02; alb. amm., trace (parts per million.)
Customs ..	July 4 ..	Acetic acid ..	Tariff	55·54 per cent. acetic acid.
" ..	" 4 ..	" ..	"	55·4 "
Health ..	June 25 ..	Water	Purity	Volatile matter, 4·32; saline and insol. matter, 7·28; lime, 1·90; alkalies, 0·79; clay, 3·00; nitric acid 0·32; carb. acid, 1·5; chlorine, 1·23 gr. per gallon, trace of magnesia, iron, sulphates, and phosphates, nil; nitrites and sulph. hydrogen, oxygen absorbed in 4 hrs., 0·04 parts per 100,000; free ammonia 0·051 parts per million; alb. ammon. 0·080 parts per million. Contained suspended organic matter and clay reported contaminated with sewage.
" ..	" 25 ..	"	"	Volatile matter, 3·4; saline and insol. matter, 6·72; lime, 1·3; magnesia, 0·5; alkalies, 0·94; nitric anhd., 0·33; carb. acid, 1·1; chlorine, 1·47 gr. per gallon; traces of clay, phosph., and sulph., nil; nitrites and sulph. hydrogen, oxygen absbd. in 4 hrs., 0·07 per 100,000; free ammon. 0·074 parts per million; alb. ammon. 0·080 parts per million. Reported as contaminated with sewage.

Return of Analyses at the Analytical Laboratory, Christchurch—continued.

Department or Person from whom Sample received.	Date received.	Nature of Sample.	Adulteration suspected, or for what analysed.	Result of Analysis.
Health ..	June 25 ..	Water	Purity	Volatile matter, 3·64; saline and insol. matter, 7·28; lime, 1·5; alkalies, 1·5; nitric acid 0·6; carb. acid, 1·2; chlorine, 2·32 gr. per gallon; traces of magnesia, clay, sulphates, iron and phosphates, nil; nitrites and sulph. hydrogen, oxygen absbd. in 4 hrs., 0·08 parts per 100,000; free ammonia, 0·100 parts per million; alb. ammon., 0·080 parts per million. Reported as contaminated with sewage.
" ..	" 30 ..	"	"	Volatile matter, 14·56; saline and insol. matter, 51·24; zinc, 5·12; magnesia, 2·64; alkalies, 11·00; clay, 2·80; sulphuric anhd. 18·15; nitric anhd., 2·00 gr. per gallon; phosphoric acid present, chlorine, 6·26 gr.; trace of iron, nil; nitrous acid and sulphur. hydrogen, oxygen absorbed in 4 hrs., 0·7 parts per 100,000; free ammonia, 0·27 parts per million; album. ammonia, 0·041 parts per million. Reported practically as sewage.
" ..	" 30 ..	"	"	Volatile matter, 2·80; saline and insol. matter, 5·32; lime, 1.36; alkalies, 1·11; nitric anhd., 0·33; carbonic acid, 1·0; chlorine, 1·19 gr. per gallon; trace of magnesia, sulphates and phosphoric acid, nil; iron, nitrites and sulph. hydrogen, oxygen absorbed nil; free ammonia, 0·04 parts per million; album. ammonia, 0·03 parts per million. The presence of nitrates indicates part contamination with animal matter.
" ..	" 30 ..	"	"	Volatile matter, 5·16; sal. and insol. matter, 10·24; lime, 1·93; alkalies, 2 82; nitric anhd., 0·35; carb. acid, 1·5; chlorine, 1 4 gr. per gallon; traces of magnesia, sulph. and phosph., nil; iron, nitrites, and sulph. hydrogen, oxygen absorbed, traces; free ammonia, 0·034 parts per million; album. ammonia, 0·050 per million. The presence of nitrates indicates part contamination with sewage.
" ..	" 30 ..	"	"	Volatile matter, 5·7; saline and insol., 11·56; lime, 1·01; alkalies, 4·12; nitric anhd., 0·45; carb. acid, 1.4; chlorine, 5·04 gr. per gallon; traces of magnesia; sulphates and phosphates, nil; iron, nitrates, sulph. hydrogen, oxygen absorbed in 4 hrs. trace; free ammonia, 0 026 parts per million; alb. ammonia, 0·080 parts per million. The presence of nitrates and phosphates indicates contamination with animal matter.
" ..	" 30 ..	"	"	Volatile matter, 4·20; sal. and insol., 8 40; lime, 1·3; alkalies, 2·23; nitric anhd., 0·4; carb. acid, 1·6; chlorine, 2·59 gr. per gallon; traces of mag., sulph. and phosphates, nil; iron, nitrites, sulph. hydrogen, oxygen absorbed, nil; free ammonia, 0·026; alb. ammonia, 0·070 parts per million. The presence of nitrates and phosphates indicates part contamination with animal matter.
Police ..	July 9 ..	Salt, in paper ..	Poison	Contained 1 gr. white arsenic to each ounce of salt.
" ..	" 10 ..	Oatmeal	"	Contained about 1¼ gr. arsenic to each ounce of meal.
" ..	" 10 ..	Porridge, in glass jar	"	Contained arsenic.
" ..	" 10 ..	Vomit, in cup ..	"	Contained about ⅜ gr. arsenic in 6 oz. of vomit.
" ..	" 10 ..	Sugar, in tin ..	"	Contained ⅛ gr. arsenic to each ounce of sugar.
" ..	" 10 ..	Water, in bottle ..	"	Free from poison.
" ..	" 10 ..	Milk	"	"

Return of Analyses at the Analytical Laboratory, Christchurch—continued.

Department or Person from whom Sample received.	Date received.	Nature of Sample.	Adulteration suspected, or for what analysed.	Result of Analysis.
Police ..	July 11 ..	Stomach and other portions of human body	Poison	These contained arsenic equival nt to at least 3½ gr. of white arsenic. The contents of the stomach were alkaline, due to the presence of sodium carbonate. This would render the arsenic more soluble.
" ..	" 11 ..	Vomit	"	There were 12 oz. of this, and it had about 3 gr. arsenic. Vomit was also alkaline.
" ..	" 11 ..	Cerebos table salt ..	"	Free from poison.
" ..	" 11 ..	Salt from glass jar	"	"
" ..	" 11 ..	Oatmeal, in bag ..	"	Contained a large amount of arsenic, but the quality varied very much when taken from different parts of the bag.
" ..	" 11 ..	Porridge, in tin ..	"	Contained about ⅓ gr. arsenic to each ounce.
" ..	" 11 ..	Salt, in wooden box	"	Contained arsenic in various amounts in different parts of box. Out of a portion of this salt, that was slightly discoloured with iron, I picked a crystal of white arsenic showing streaks of a brownish colouring matter, and similar crystals and colouring matter existed in the box of "Rough on Rats."
" ..	" 11 ..	"Rough on Rats"..	"	Contained about 1½ oz. of almost pure white arsenic, coloured with a little oxide of iron.
" ..	" 14 ..	Clothing, in bag ..	"	Free from any trace of poison.
" ..	" 14 ..	"Rough on Rats"..	"	Chiefly white arsenic, coloured with grey organic matter.
" ..	" 15 ..	White precipitate ..	"	This was a compound of mercury and ammonia (poisonous).
" ..	" 15 ..	Poisoned wheat ..	"	Contained strychnine.
" ..	" 16 ..	Whisky	"	Free from poison.
Customs ..	" 20 ..	Con. vinegar ..	Tariff	52 per cent. acetic acid.
" ..	" 20 ..	Ess. " ..	"	58 "
" ..	" 20 ..	Wine	"	1·83 "
" ..	" 20 ..	"	"	0·69 "
Health ..	" 16 ..	Water	Purity	Volatile matter, 4·2; saline and insol., 7·56; lime, 2·12; alkalies, 1·61; sulph. anhd., 0·68 gr. per gallon; nitric anhd., 0·69 gr.; chlorine, 2·03 gr.; traces iron, clay, and phosphates; free ammonia, 0 064 parts per million; album. ammon., 0 044. Reported as not safe for drinking.
" ..	" 16 ..	"	"	Volatile matter, 2·30; saline and insol. matter, 9·52; lime, 2·12; alkalies, 2·06; sulph. anhd., 1·64; nitric anhd., 1·28; chlorine, 3·22 gr. per gallon: traces of iron, clay, and phosphates; free ammonia, 0·13; alb. ammonia, 0·07 parts per million. Condemned on the grounds of having 0·1 per million of ammonia and high nitrates.
" ..	" 16 ..	"	"	Volat. matter, 11·2; saline and insol. matter, 8·7; lime, 3·28; alkalies, 2·16; sulph. anhd., 0·57; nitric anhd., 0·57: chlorine, 2·52 gr. per gallon; traces of iron, clay, phosphates; free ammonia, 0·16; alb. ammon., 0·04 parts per million. Condemned for having over 0·1 parts of ammonia, and for excess of nitrates and organic matter.
" ..	" 16 ..	"	"	Volat. matter, 16·24; saline and insol. matter, 50·19; lime, 7·68; magnesia, 0·8; alkalies, 10.77; clay, 3·0; sulph. anhd., 15·38; nitrites anhd., 5·34; chlorine, 7·91 gr. per gallon; traces of iron, phosph.; free ammon., 1·80; alb. ammon., 0·41 parts per million. Very bad—condemned on all grounds.
" ..	" 16 ..	"	"	Volat. matter, 7·00 gr.; saline and insol, 7·82; lime, 1·72; alkal., 1·00; sulphates anhd., 3·64; nitrites anhd., 0·88; chlorine, 1·05 gr. per gallon; traces of iron, clay, phosphates; free ammon., 0·08 parts per million; alb. ammon., 0·11 parts per million. Total nitrogen being high indicates contaminated with animal matter.

Return of Analyses at the Analytical Laboratory, Christchurch—continued.

Department or Person from whom Sample received.	Date received.	Nature of Sample.	Adulteration suspected, or for what analysed.	Result of Analysis.
Health ..	July 16 ..	Water	Purity	Volatile matter, 1·4; saline and insol., 3·36; lime, 1·5; alkalies, 0·79; sulph. anhd., 0·57; nitrites anhd., 0·33 gr. per gal.; traces of clay and phosp.; free ammon., 0·56; alb. ammon., 0·02 parts per million. High nitrates, &c., indicate contaminated with sewage.
..	" 15 ..	"	.. ..	Volat. matter, 2·8; sal. and insol., 4·0; lime 1·3; alkalies, 0·77; sulph. anhd., 1·33; nit. anhd., 0·44; chlorine, 0·96 gr. per gallon; traces of iron and phosphates; free ammonia, 0·042; alb. ammonia, 0·014 parts per million; nitrates high.
" ..	" 15 ..	West Indies lime-juice.	Adulteration ..	Cit. acid, 4·69 per cent.; ash, 0·22 per cent.; salicylic acid, 5·6 gr. per gallon; sulph. and chlorides, traces; nit. acid, nil; borax, nil. Limejuice that has been concentrated and then diluted with water.
..	" 15 ..	Cocoa	" ..	Cocoa fat, 15·12 per cent.; total ash, 2·38 per cent; phosph. acid, 0·81 per cent.; matters soluble in water, 12·6 per cent. This sample has only 15 per cent of fat, whereas pure cocoa has from 45 to 50 per cent. of fat. The Adulteration Prevention Act states that all cocoa shall contain at least 20 per cent of cocoa-fat. In this sample the fat has been reduced by contraction, and about 40 per cent. of potato starch added.
..	" 15 ..	Vinegar	" ..	Acetic acid, 4·03 per cent.; extract, 2·46 per cent; ash, 0·18 per cent; mineral acid, nil. Taste and smell of malt vinegar.
" ..	" 15 ..	Pure tea	" ..	Extract, 42·2 per cent.; total ash, 6·6 per cent.; sol. ash, 3·56 per. cent.; moisture, 11·2 per cent. Leaves were genuine tea-leaves.
" ..	" 15 ..	Limejuice ..	" ..	Cit. acid, 2·92 per cent.; ash, 0·14 per cent.; sal. acid, 8·9 gr. per gallon; traces of sulphates and chlorides; borax, nil. Has been concentrated, and then diluted with water.
" ..	" 15 ..	Vinegar	" ..	Acetic acid, 56 per cent.; extract, 2·48 per cent.; ash, 0·3 per cent.; mineral acid, nil. Pure malt vinegar.
" ..	" 15 ..	Acetic acid ..	Tariff	58 per cent. acetic acid.
" ..	" 15 ..	"	"	50·4 per cent.
Customs ..	Aug. 17 ..	" ..	"	58 per cent. acetic acid.
Inspector of Weights and Measures.	" 9 ..	Cocoa	Adulteration ..	Cocoa-fat, 22·0 per cent.; matter sol. in cold water, 16·7 per cent.; total ash, 8·84 per cent.; sol. ash, 6·88 per cent.; phosph. acid, 2·12 per cent. A pure cocoa with about half its fat extracted.
Ditto ..	" 9 ..	"	General adulteration	Cocoa fat, 15·55 per cent.; matters sol. in cold water, 15·5 per cent.; total ash, 1·86 per cent.; sol. ash, 1·26 per cent.; phosph. acid, 0·68 per cent.; contained under 20 per cent. of fat. About half the fat in the cocoa has been extracted, and about 40 per cent. starch and a little sugar added.
" ..	" 9 ..	"	"	Cocoa fat, 24·0 per cent.; matters sol. in cold water, 14·64 per cent.; total ash, 6·92 per cent.; sol. ash, 4·92 per cent.; phosph. acid, 1·92 per cent. Pure, with about half the fat extracted.
" ..	" 9 ..	"	"	Cocoa fat, 27·00 per cent.; matters sol. in cold water, 13·4 per cent.; total ash, 6·54 per cent.; sol. ash, 4·34 per cent.; phosph. acid, 1·84 per cent. Pure, with a little less than half the fat extracted.
Customs ..	Sept. 2 ..	Vinegar	Tariff	4·8 per cent. acetic acid.
" ..	" 2 ..	Acetic acid ..	"	59·88 "
" ..	" 2 ..	" ..	"	56·08 "
Health ..	" 12 ..	Tea	Mineral adulteration	Free from adulteration.
" ..	" 12 ..	"	"	"

Return of Analyses at the Analytical Laboratory, Christchurch—continued.

Department or Person from whom Sample received.	Date received.	Nature of Sample.	Adulteration suspected, or for what analysed.	Result of Analysis.
Health ..	Sept. 27 ..	Piece of paper ..	To ascertain contents	Dusted with fine particles of permanganate of potash.
" ..	" 27 ..	" ..	"	Contained a few crystals of permanagate of potash.
Customs ..	" 27 ..	Vinegar	Tariff	12 per cent. acetic acid.
" ..	" 27 ..	"	"	59 "
" ..	" 27 ..	Acetic acid ..	"	56 "
Health ..	Oct. 5 ..	Water	Purity	Lost on ignition, 45·82 gr. per gallon; carb. sulph., nit., and phosph. of potash and soda, 10·21 gr.; zinc, mag., iron, silicates, &c., 11·55 gr.; sodium chloride, 15·17 gr.; free ammon., 11·4; alb. ammon., 37 parts per million. Is practically a sewage.
" ..	" 5 ..	"	"	Loss on ignition, 55·30 gr. per gallon; carb. sulph. nit. and phos. of potash and soda, 12·25 gr.; zinc, mag., iron, silicates, &c., 11·9 gr.; sod. chloride, 11·55 gr.; free ammon., 13·9 gr.; alb. ammon., 4·3 parts per million.
" ..	" 5 ..	.. ..	"	Loss on ignition, 7·53; lime, mag., iron, silic., 7·00; sod. chlor., 8·69; free ammon., 0·1; alb. ammon., 0·04. Second-class water, of doubtful purity.
" ..	" 5 ..	"	"	Loss on ignition, 10·6; sulph., nit., and phos. of potash and soda, 2·63 gr.; lime, mag., iron, silic., &c., 8·05; sod. chlor., 8·43 gr.; free ammon., 0·3; alb. ammon., 0·1 parts per million. Contaminated with sewage.
" ..	" 4 ..	"	"	Loss on ignition, 10·86; carb. sulph., nitrites, phos. of potash and soda, 3·85; lime, mag., iron, silic., &c., 5·95; sod. chlor., 8·99 gr.; free ammon., 0·5; alb. ammon., 0·4 parts per million. Contaminated with sewage.
" ..	" 5 ..	"	"	Loss on ignition, 38·05; carb. sulph., nit., and phos. of pot. and soda, 4·36; lime, mag., iron, sil., &c., 5·22 gr.; sod. chlor., 8·89 gr.; free amm., 0·7; alb. amm., 0·5. Contaminated with sewage.
Customs ..	" 5 ..	Acetic acid ..	Tariff	57 per cent. acetic acid.
" ..	" 5 ..	" ..	"	58·5 "
" ..	" 5 ..	Conc. vinegar ..	"	50 "
" ..	" 5 ..	Glac. acetic acid ..	"	97·89 per. cent. acetic acid; melting-point, 53° Fahr.
" ..	" 5 ..	" ..	"	57·5 per cent. acetic acid.
" ..	" 5 ..	" ..	"	99·55 per cent. acetic acid; melting-point, 60° Fahr. Passed as glacial.
" ..	" 5 ..	" ..	"	95 per cent. acetic acid; melting-point, 56° Fahr.
" ..	Nov. 8 ..	" ..	"	98 per cent. acetic acid; melting-point, 55° Fahr.
" ..	" 8 ..	Vinegar	"	36 per cent. acetic acid.
" ..	" 8 ..	Conc. vinegar ..	"	59·3 "
" ..	" 15 ..	Water	Purity	Volatile matter, 2·8; lime, 2·04; alkal., 3·1; silic., 1·7; sulph. acid, 0·72; nit. anhd., 0·5; carbon. acid, 1·1; chl., 4·7; traces of mag. and iron; free amm., 0·11; alb. amm., 0·06. Reported as not a very good water.
Health ..	" 18 ..	"	"	Vol. matter, 1·12; sal. and insol. matter, 1·96; lime, 0·82; alkal., 0·44; chl., 0·63 gr. per gal.; traces of iron and sulph.; free amm., 0·04; alb. amm., 0·036. Very good.
" ..	" 18 ..	" ..	"	Vol. matter, 1·11; sal. and insol. matter, 2·2; lime, 0·88; alkal., 0.38; chl., 0·56 gr. per gal.; traces of silic., iron, and sulphur. anhd., and carb. acid; free amm., 0·4; alb. amm., 0·3 parts per million. A very good water.
Customs ..	Dec. 4 ..	Conc. vinegar ..	Tariff	56 per cent. acetic acid.
" ..	" 12 ..	Vinegar	"	2·6 "
" ..	" 12 ..	Vinegar in process of forming	"	7·7 "
" ..	" 12 ..	Acetic acid ..	"	55·5 "

Return of Analyses at the Analytical Laboratory, Christchurch—continued.

Department or Person from whom Sample received.	Date received.	Nature of Sample.	Adulteration suspected, or for what analysed.	Result of Analysis.
J. R. Charlton, M.R.C.V.S.	Dec. 20 ..	Viscera of animal ..	Poisons	Found to be free from poisons other than decomposition products. A larger quantity than usual of iron was present, but was not likely to be cause of death, as contents of stomach were alkaline.
Customs ..	" 22 ..	Acetic acid ..	Tariff	57·3 per cent. acetic acid.
" ..	" 22 ..	" ..	"	57·2 "
" ..	" 22 ..	Glac. acetic acid ..	"	98·5 " 57·2° Fahr., melting-point.
" ..	" 22 ..	Inf. senega. conc. ..	"	32·91 per cent. proof spirit.
Health ..	" 30 ..	Water	Purity	Volat. matter, 3·36; sodium chl., 1·15; sil., iron, sulph. of lime, &c., 1·65 gr. per gal.; free amm. 0·66; alb. amm., 0·04 parts per million. A very good water.
	1905.			
Customs ..	Jan. 23 ..	Acetic acid ..	Tariff	56·4 per cent. acetic acid.
" ..	" 23 ..	" ..	"	58·7 "
" ..	" 23 ..	Vinegar	"	4·5 "
" ..	" 23 ..	Acetic acid ..	"	55·5 "
" ..	" 23 ..	Senega conc. ..	"	31·5 "
" ..	" 23 ..	Ext. belladonna ..	"	82 per cent. proof spirit.
" ..	" 23 ..	Ess. rehu ..	"	15 " overproof.
" ..	" 23 ..	Acetic acid ..	"	58 per cent. acetic acid.
" ..	Feb. 16 ..	" ..	"	57 "
" ..	" 16 ..	" ..	"	56 "
" ..	" 22 ..	" ..	"	58 "
" ..	" 22 ..	" ..	"	57·5 "
" ..	Mar. 9 ..	" ..	"	51·05 "
" ..	" 9 ..	" ..	"	57·7 "
" ..	" 9 ..	Manuka juice ..	"	Proof spirit, nil.
" ..	" 9 ..	Beer in process of conversion	"	1·1 per cent. acid.
" ..	" 9 ..	"Waidotte" ..	"	Soda ash, containing about 8 per cent. of soda ash.
Police ..	" 12 ..	White powder ..	Identification ..	Quinine.
Health ..	" 22 ..	Water (stagnant) ..	Amount of impurities	Volatile matter, 8·12 gr. per gallon; iron and alb., 3·04 gr.; sand, &c., 4·76 gr.; sodium chloride, 2·52 gr.; sulph. of potash 0·5 grs., lime and nitrates, traces; free amm., 0·5 parts per million, alb. ammonia, 1·0 parts per million. A soft water commencing to go stagnant.
Customs ..	" 29 ..	Acetic Acid ..	Tariff	60·4 per cent. acetic acid.
" ..	" " ..	" " ..	"	57·6 " "
" ..	" " ..	Ess. of vinegar ..	"	55 " "

A. A. Bickerton, Analyst.

Otago.

Sir,— University Laboratory, Dunedin, 29th May, 1905.

I have the honour to forward herewith my annual report of work done for the Government in this laboratory for the year ending the 31st March, 1905.

In submitting this report I beg to draw your attention to the results got in milk-analysis in this district. Out of 53 samples of milk 26 are found to be deficient in cream (butter-fat). Most of these deficiencies occur at the beginning of the period during which Mr. Brown, the Dairy Inspector, was taking samples; by the time he had finished the milk was nearly always fairly "whole."

I think the Dairy Inspector should be armed with full power to act energetically, as the milk supplied to this community is (much of it) of a very poor quality.

I have, &c.,
J. G. Black.

The Chief Health Officer, Department of Public Health, Wellington.

Return of Analyses at the Analytical Laboratory, Dunedin, for the Year ended the 31st March, 1905.

Department or Person from whom Sample is Received.	Date Received.	Nature of Sample.	Adulteration suspected, or for what analysed.	Result of Analysis.						
				Organic Nitrogen.	Nitrogen of Nitrates, Nitrites.	Nitrogen of Ammonia.	Total Nitrogen.	Total Organic Matter.	Chloride of Sodium.	Total solid Matter.
	1904.			Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.
Public Health	May 18 ..	Water	Impurities injurious to health	0·021	0·012	0·004	0·037	1·1	2·4	7·8
„	„ 18 ..	„	Ditto	0·04	0·024	0·003	0·067	2·1	1·6	6·7
„	„ 18 ..	„	„	0·035	0·021	0·002	0·056	2·8	1·58	7·9
„	„ 18 ..	„	„	0·027	0·02	0·003	0·050	2·4	2·5	7·7
„	„ 18 ..	„	„	0·018	0·018	0·001	0·037	1·8	1·8	9·1
				The above results are stated in grains per gallon. The organic nitrogen of Nos. 2 and 4 makes these objectionable for house-supply. These samples (2 and 4) showed a slight growth of slimy filament on standing six days in a warm place—an indication of very objectionable organic matter if intended for household use.						
	May 23 ..	Milk	Abnormalities ..	Water, 88·9; fat, 0·9; sugar, 2·3; casein and albumen, 6·8; ash 1·1. This is a very abnormal milk. The low fat may be accounted for by the abstraction of cream. The sample was curdled (only 80 gr. in all), forming a yellowish liquid and precipitated casein. A small streak of blood coloured part of the casein.						

All stated as grains per gallon.

								No. 1.	No. 2.	No. 3.	No. 4.
„	June 1 ..	Water	.. ..	Albuminoid nitrogen ..				0·023	0·019	0·03	0.033
„	„ 1 ..	„	.. ..	Nitrogen of ammonia ..				0·002	0·002	0·0018	0·0019
„	„ 1 ..	„	.. ..	Nitrogen of nitrates and nitrites				0·013	0·015	0·008	0·009
„	„ 1 ..	„ .. .	.. ..	Total organic matter ..				1·3	1·2	1·12	1·95
„	„ 1 ..	„	.. ..	Chloride of sodium ..				1·7	2·0	1·8	2·4
„	„ 15 ..	So-called lithia-water	Genuineness especially for lithia	Both samples identical and contain no lithia, nor any of its salts or compounds. They were found to be only ordinary "sodawater."							
„	„ 15 ..	Ditto	Ditto ..								
	July 4 ..	Lithia-water ..	Genuineness ..	This sample is identical with the above. No compound of lithium present.							

					Per Cent.		Per Cent.
Dairy Industries	„ 2 ..	Milk	Water or loss of cream	Total solids, 13·1;	butter fat,	3·2.
„	„ 18 ..	„	„	„	11·5;	„	2·1.
„	„ 23 ..	„	„	„	13·7;	„	2.98.
„	„ 23 ..	„	„	„	12·9;	„	2·56.
„	„ 23 ..	„	„	„	13·1;	„	2·78.
„	„ 23 ..	„	„	„	12·9;	„	2·5.
„	„ 23 ..	„	„	„	15·8;	„	4·5.
„	„ 23 ..	„	„	„	13·3;	„	3·1.
„	„ 23 ..	„	„	„	12·4;	„	2·1.
„	„ 23 ..	„	„	„	13·3;	„	2·8.
„	„ 23 ..	„	„	„	12·4;	„	3·16.
„	„ 23 ..	„	„	„	13·1;	„	2·7.
„	„ 23 ..	„	„	„	14·1;	„	3·4.
„	„ 23 ..	„	„	„	15·3;	„	3·5.
„	„ 23 ..	„	„	„	11·8;	„	1·8.
„	„ 23 ..	„	„	„	12·7;	„	2·75.
„	„ 23 ..	„	„	„	12·9;	„	3·0.
„	„ 23 ..	„	„	„	12·2;	„	2·7.
„	„ 28 ..	„	Water, removal of cream	„	14·6;	„	4·0.
„	Aug. 1 ..	„	Ditto	„	15·4;	„	4·2.
„	„ 1 ..	„	„	„	12·8;	„	2·7.
„	„ 1 ..	„	„	„	12·8;	„	2·5.
„	„ 1 ..	„	„	„	13·8;	„	3·1.
„	„ 1 ..	„	„	„	12·85;	„	3·0.
„	„ 1 ..	„	„	„	12·15;	„	2·5.
„	„ 1 ..	„	„	„	13·3;	„	2·8.
„	„ 3 ..	„	„	„	12·9;	„	2·7.
„	„ 6 ..	„	„	„	12·2;	„	2·8.
„	„ 6 ..	„	„	„	12·7;	„	2·7.
„	„ 6 ..	„	„	„	12·8;	„	2·6.
„	„ 1 ..	„	„	„	13·3;	„	3·0.
„	July 30 ..	„	„	„	13·0;	„	3·2.
„	Aug. 1 ..	„	„	„	14·0;	„	3·1.
„	„ 1 ..	„	„	„	13·5;	„	3·4.
„	„ 1 ..	„	„	„	13·2;	„	3·3.
„	„ 1 ..	„	„	„	12·3;	„	2·9.
„	„ 1 ..	„	„	„	13·1;	„	3·0.
„	„ 29 ..	„	„	„	13·8;	„	2 8.
„	„ 29 ..	„	„	„	12·9;	„	3·0.
„	„ 30 ..	„	„	„	13·1;	„	2·6.
„	„ 29 ..	„	„	„	12·9;	„	2·7.

Return of Analyses of the Analytical Laboratory, Dunedin, for the Year ended the 31st March, 1905—continued.

Department or Person from whom Sample is Received.	Date Received.	Nature of Sample.	Adulteration suspected, or for what analysed.	Result of Analysis.				
					Per Cent		Per Cent.	
Dairy Industries	Aug. 30 ..	Milk	Water, removal of cream	Total solids, 13·88; butter fat, 3·4.				
"	" 29 ..	"	Ditto	"	12·91;	"	3·0.	
"	" 29 ..	"	"	"	13·9;	"	2·8.	
"	Sept. 1 ..	"	"	"	13·8;	"	3·25.	
"	" 1 ..	"	"	"	13·3;	"	3·21·	
"	" 1 ..	"	"	"	12·9;	"	3·25.	
"	Aug. 30 ..	"	"	"	14·7;	"	4·2.	
"	" 30 ..	"	"	"	12·9;	"	3·0.	
"	" 30 ..	"	"	"	13·1;	"	3·2.	
"	" 29 ..	"	"	"	13·17;	"	2·9.	
"	" 29 ..	"	"	"	14·1;	"	4·1.	
"	" 29 ..	"	"	"	12·8;	"	2·2.	
"	May 28 ..	Opium	Opium constituents	More morphia and meconic acid than proper to "opium."				
	1905.			Moisture. Per Cent.	Ash. Per Cent.	Piperine. Per Cent.	Resin. Per Cent.	
"	Feb. 11 ..	White pepper ..	Pepper constituents and matters foreign to pepper ..	12·2	1·2	5·73	1·99	
"	" 11 ..	Black pepper ..	Ditto	11·8	4·6	4·6	1·75	
"	" 11 ..	White pepper ..	"	12·1	1·25	5·71	2·0	
"	" 11 ..	" ..	"	12·2	1·19	5·71	2·0	
"	" 11 ..	" ..	"	12·1	1·19	5·72	2·01	
"	" 11 ..	" ..	"	12·2	1·2	5·71	1·98	
"	" 11 ..	" ..	"	12·1	1·2	5·70	2·05	
"	" 11 ..	" ..	"	12·79	1·7	5·45	1 87	
"	" 11 ..	" ..	"	13·1	1·5	5·3	1·78	
Police, Dunedin	" 11 ..	" ..	"	13·5	1·45	4·1	1·44	Contains from 12 to 15 per cent. of starch matter (other than pepper-starch).
"	" 11 ..	" ..	"	12·2	1.2	5·7	1·99	
"	" 11 ..	Black pepper ..	"	11·7	4·85	4·59	1·77	
"	" 11 ..	White pepper ..	"	13·3	1·41	4·2	1·51	12 to 15 per cent. of starch matter (other than pepper-starch).
"	" 11 ..	" ..	"	12·21	1·2	5·7	2·0	
"	" 11 ..	Black pepper ..	"	11·79	4·8	4·69	1 73	
"	" 11 ..	White pepper ..	"	13·0	1·5	5·3	1·8	
"	" 11 ..	" ..	"	12·4	1·2	5·6	1·9	
"	" 11 ..	" ..	"	12·1	1·25	5·73	2·02	
"	" 11 ..	" ..	"	12·78	1·7	5·46	1·88	
Taken by myself locally for comparison	" 11 ..	" ..	"	11·1	1·21	5·5	2·0	
	" 11 ..	" ..	"	11·12	1·22	5·5	2·01	
	" 11 ..	Black pepper ..	"	12·1	4·91	4.61	1·75	
Dairy Industries	" 11 ..	Water ..	Impurities ..	Similar in all respects to Dunedin City water and quite suitable for washing milk-cans and for other dairy purposes.				
"	" 11 ..	" ..	"					
Public Health	" 18 ..		" ..	Total solid residue, 7·0; organic matter, 1·4. Usable.				
"	" 18 ..	"	" ..	Total solid residue, 10·8; organic matter, 3·4. Bad.				
"	" 18 ..	"	" ..	Total solid residue, 13·58; organic matter, 1·4. Usable.				
"	" 18 ..	"	" ..	Total solid residue, 7·0; organic matter, 2·3. Bad.				
"	" 18 ..	"	" ..	Total solid residue, 7·6; organic matter, 3·0. Bad.				
"	" 18 ..	"	" ..	Total solid residue, 8·8; organic matter, 2·7. Bad.				
"	March 27 ..	"	Impurities and Composition	Sea-water; 4·2 mgs. of oxygen required for the organic matter of 1 litre.				
"	" 1 ..	"	Impurities ..	Organic matter, 3·17; organic nitrogen, 0·045. Bad.				
"	" 1 ..	"	" ..	Organic matter, 2·33; organic nitrogen, 0·06. Bad.				
"	" 1 ..	"	..	Organic matter, 3·1; organic nitrogen, 0·07. Bad.				

JAMES G. BLACK, Analyst.

By Authority: JOHN MACKAY, Government Printer, Wellington.—1905.