1909.

NEW ZEALAND.

PUBLIC HEALTH DEPARTMENT

(ANNUAL REPORT OF THE).

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

CONTENTS.

Department of Public Health,
Wellington, 3rd September, 1909.

MY LORD,—

I have the honour to transmit herewith, for Your Excellency's information, the report of the Department of Public Health for the year 1908–9.

I have, &c.,
D. BUDDO,
Minister of Public Health.

His Excellency the Right Hon. Baron Plunket, K.C.V.O.,
Governor of New Zealand.

The CHIEF HEALTH OFFICER to the MINISTER OF PUBLIC HEALTH.

SIR,— Department of Public Health, Wellington, 31st May, 1909.

I have the honour to forward you the following reports of the work done by the various officers during the past year.

A great deal of valuable work has been done. The general health of the Dominion has been good. There has been no epidemic of infectious disease of any great magnitude. Diphtheria has appeared in various districts, but, fortunately, the death-rate has been low. Outbreaks of enteric fever have taken place in several places, the most important being that which occurred in Gisborne. There were a large number of cases in a short time. The Department has for many years been urging upon the people of that city the urgent necessity there was for the installation of a proper system of sewerage. The recent outbreak has worked for good, in that it has brought acutely before the citizens the wisdom of bringing their fine city into line with others of similar size. A series of public meetings were held, and great interest was shown in the addresses delivered by His Worship the Mayor, Dr. De Lisle, and myself. A thorough clean-up was made; a sealed-pan system of collecting the nightsoil was at once inaugurated, and negotiations were at once begun with the object of installing a water-carriage system. Altogether I feel most hopeful regarding the early undertaking of a proper system of sewage-disposal.

Various loans have been raised for works pertaining to public health in several of the large and many of the small towns, and generally the progress has been very satisfactory.

CONSUMPTION.

New Zealand still keeps a front place in the war against this disease. The Dominion is slowly but surely being provided with sanatoria, open-air shelters, &c., wherein the poor consumptive can be cared for.

South Canterbury has fixed on a site near Fairlie, and Otago has purchased a fine property near Palmerston South. When every Hospital Board will have made provision for its sick, then we may expect to see a marked decrease in the incidence of the disease. A considerable amount of money has been spent on such places, and now and then the question is asked—and it is quite proper that it should be asked—"Are we getting a fair return for our expenditure?" At the request of the Nelson Hospital Board I drew up a statement covering this aspect of the question, which was delivered in the form of an address at Nelson on the 5th May. The following account is taken from the Nelson *Evening Mail*:—

FIGHTING CONSUMPTION.

Visit of the Chief Health Officer.

Dr. Mason met the Hospital and Charitable Aid Board yesterday afternoon, and gave a most interesting and comprehensive address on consumption. Owing to the vast importance of the subject and the eminence of the speaker, the address is reproduced in full, with the exception of a few comparative tables.

GENTLEMEN,—I am glad, indeed, to have this opportunity of meeting you. The question which has arisen in your minds is one which is worthy of the consideration of any Board which takes more than a passing interest in the welfare of those who come under its care. Like many other methods of treatment, the so-called "open-air treatment of consumption" was urged by its authors sometimes in such language as to make the public believe that in it was to be found a method by which not only

could all the afflicted be cured, but that an effectual check could be made against the spread of the disease generally. Large sums of money and much time and energy have been spent in all parts of the world upon open-air sanatoria, annexes, and hospitals in this belief. Disappointment has been occasioned sometimes, and doubts have arisen in the minds of those upon whom the charge of the sick has been cast, as to whether as much good has resulted as was expected, and the question raised is a very proper one for you to ask, and worthy of the most careful consideration of all who have the best interests of the community at heart.

I suggest that the question be considered from at least two aspects. We are agreed, and the people of Nelson—and you are the custodians of the public money—have shown that you quite realised the greatness of the toll which consumption exacts. You were one of the first Boards to do something to endeavour to check the ravages of this disease : you gave an earnest of your belief by erecting a suitable annexe for the treatment of persons suffering from this disease, and therefore I need not labour that point with you. It will be well, however, even at the risk of repeating a well-known tale, to direct your attention once more to what consumption is doing to the human race. Here in New Zealand, although we have almost the lowest death-rate from this disease in the world, there died in 1907 from tuberculosis 856 persons. Now, if we multiply this number of deaths by four, which is held by most authorities to be the figure which gives the best indication as to the actual number suffering from the disease, you will see that in this sparsely populated country, with barely a million of people, there are, roughly speaking, 3,400 suffering from tuberculosis, and therefore needing care. There can be no doubt as to the power of the enemy, and therefore Boards such as yours are justified in spending money to combat it. Now, this leads us to the consideration of how a campaign against the disease should be best conducted. Obviously, our chief endeavour should be, as John Locke said, "Prevention is better than cure, and much cheaper," as in all other spheres of medicine, to prevent as much as cure. Consumption, as most of you know, is caused by a small organism called the tubercle bacillus, a little chap first identified by that celebrated German scientist Koch in 1882. It is difficult to convey in ordinary language any idea of the size of the bacillus. If, however, you take the small letter "i" as it appears in your daily papers, and place alongside it a pillar four miles high, you will get some faint conception of the size of the tubercle bacillus compared to a man. You can understand, therefore, how it is that in the spit of an infected person there may be thousands of germs each capable of setting up the disease in another person. It has further to be borne in mind that the vast majority of cases which occur in any but children have been contracted from some one suffering from the disease. This is not the place to speak of the difference of opinion which obtains among some observers as to the manner in which the patient receives his infection. Personally, I am convinced that in the vast majority of instances the vehicle of infection in adult cases is the spit of an infected person. This view has been recently emphasized by that gentleman who discovered the bacillus—Koch. Whether we believe the disease is caught by inhaling the germs or swallowing them is of small concern if we recognise that the destruction—absolute destruction—of the infected sputum is the main safeguard against the spread of the disease. It has further to be remembered that bad hygienic conditions, such as ill-ventilated homes, damp localities, want of suitable food, and irregular habits are the most powerful factors which lessen one's power of resistance to consumption. That being so, there can be no question but that, whether a stay in a sanatorium or an annexe completely cures or not, it must form one of the most powerful adjuncts to any or all other methods of treatment which may be employed.

A sanatorium cannot cure all cases any more than anything else can, but you must see that, apart from any question of cure, it plays a most important part in that most important of all things—prevention. Their value, therefore, is not to be measured by the cures turned out.

Trudeau has shown "that rabbits inoculated with tuberculous material and confined in dark damp places rapidly succumb to the disease, while others inoculated in similar fashion, but allowed to approach their natural state of running wild, either recovered or manifested but very slight lesions." You can see, therefore, that though a cure may not be effected in all instances, or in most even, still, you are offering to the poor unfortunate sufferers the best—nay, the only—set of conditions which will give them a chance. Again, you see the futility of attempting to measure the value of your annexe by the number of cures sent out. Common humanity requires that we do something for the care of the indigent sick of any disease. If, therefore, you had not made the excellent provision which you have done, you would have had either to treat such cases in your general hospital or have paid for their maintenance and attendance outside. We, the healthy, have to maintain the sick who have no money, or who have money, for that matter; because, after all, the person who is unable to work for his living has either to depend upon what he has earned from the community or on what his friends have. Whichever way we look at it, the cost of treatment and maintenance must come out of the general sum of wealth of the community. In deciding, therefore, whether your annexe is a justifiable work, you have to bear in mind that you would, in any case, have had to look after the indigent consumptive; and thus the question resolves itself into whether it is wiser to set up this special room where the sufferer will have the best chance of recovery, or to mix the cases up in the general ward or maintain them in their homes at the expense of the Charitable Aid Board. When the problem is put in this form there can, I think, be no question of the wisdom of doing as you have done.

The points we have to keep clearly before us are,—

(1.) That consumption is an infectious disease, spread from one person to another.

(2.) That healthful surroundings such as are embraced in the so-called "open-air treatment" offer a great protection against infection, and help towards a cure, even where a person has some lessened power of resistance towards the disease.

(3.) That the lessons learned in a sanatorium are such as offer the best protection against the spread of consumption generally.

(4.) And, as a matter of fact, the community has in any case to look after the consumptive.

If, therefore, we could claim no absolute cures we should still have justified the setting-up of your annexes; but, as a matter of fact, we can claim more, and as time goes on the benefits of such places will not only appear greater, but will actually be so. At this point I would like to direct your attention to a fact which is apt to be overlooked, more especially in view of the campaign which is now being prosecuted, and that is, that the death-rate from tubercle is gradually decreasing, and has been so for many years. Look at this table of England and Wales :—

Quinquennia.	Death-rate per 10,000.
1866–70	24·4
1871–75	22·1
1876–80	20·4
1881–85	18·3
1886–90	16·3
1891–95	14·5
1896–1900	13·2
1901–5	12·1

A fall, you see, of almost half during the period 1866–1905. I want to emphasize this, because many people seem to imagine that the disease has only recently been discovered, and that the efforts which are being made to check it are indicative of the fact that the disease is increasing. These figures show you that it is not so, and that we should take heart and go on with the good work. Speaking on this aspect of the problem, one writer states, " In so far therefore as England and Wales are concerned, it would appear that if the decline in the phthisis death-rate continues . . . ere long it will result in the total extinction of the malady; that the malady may, indeed, follow the course taken by such diseases as leprosy, relapsing fever, typhus fever, malaria, &c., all of which have for the time being, at any rate, disappeared from the country."

Bearing intimately upon this is another point which I would wish to state with all the power I can, and that is that consumption is a curable disease. As far back as 1672 Harvey wrote, " It is a great chance, we find, to arrive at one's grave in this English climate without a smack of consumption, death's direct door to most hard students, divines, physicians, philosophers, deep lovers, zealots in religion." Then, too, there is the saying of the famous German : " *Jederman hat am ende ein bischen tuberculose* " — everybody has a bit of tubercle in him — a proposition, as Bulstrode says, which is largely supported by *post-mortem* records, which show that among the poorer a considerable proportion of persons have at some time or other developed tuberculosis possibly without being aware of it, but have nevertheless become, in effect, cured of the disease.

For the sake of the many brave men and women who are fighting this disease and the men, such as you, who are lending a helping hand, I would like this fact remembered : consumption is a curable disease. But while it is true that consumption is a curable disease, it does not follow that all cases of consumption can be cured, but still must we do something. To my mind, some—I would say a good deal—of the disappointment which some of us have suffered with regard to the sanatorium treatment of the disease has arisen through our not keeping this distinction clear in our minds. It stands to reason that if it has taken a person twelve or eighteen months to reach a certain stage in the disease, some such similar period of time must elapse ere we can hope for betterment or cure. For a person who has lost a third of one lung through consumption to expect a cure in the sense that one may get in a case of ordinary inflammation of the lungs is foolish. Highly specialised tissue, such as the lung is composed of, can rarely be reproduced. This difficulty in regrowing destroyed limbs and special tissues is the penalty we pay for being at the top of the animal kingdom. The crab can grow another leg, but the man cannot. And so it is that, even under the best conditions, the hole in the lung, when it does heal, heals with lower-grade stuff, and is usually lost as a breathing-machine for all time. Fortunately, however, a man can manage to get along fairly well with something less than his full breathing-area, if he has a little training; but—and this is a fact we have to remember—many are so far gone before they come under the care of the sanatorium officer that it is obvious that nothing permanent in the way of cure can be hoped for. These are the cases which have raised the doubt in your minds as to the wisdom of the expenditure upon the annexe. Such cases it is which all the world over have caused honest workers to halt and wonder if some mistake has not been made. Personally—and I speak from an intimate knowledge of the life-history of a great number of cases—I have no hesitation in saying that even in these advanced cases sanatoria have justified themselves. What we want, however, if we are to get the best out of such institutions, is that we must get the cases early.

The intimate association of phthisis and overcrowding has been recognised for many years, and there are numerous illustrations of such association. In certain aspects overcrowding may be regarded as one of the expressions of poverty, but although overcrowding is almost always associated with poverty, it does not follow that poverty is always associated with overcrowding. With regard to association of phthisis and overcrowding, it would be well to keep in mind the fact that persons already tuberculous naturally tend to drift to overcrowded districts. But there are indications that this is not by any means the whole explanation of the observed association of the two conditions. It was shown by Carnelley, Haldane, and Anderson that in Dundee, in houses with four rooms and upwards, the death-rate from phthisis was 32 per 10,000, as compared with a death-rate of 55·2 in houses with three rooms, 64·1 in houses with two rooms, and 74·4 in houses of one room.

It is in securing early cases of phthisis for sanatorium treatment that Germany would seem to be in advance of most countries, a circumstance due, no doubt, in no small degree to the far-reaching system of compulsory insurance of workpeople against sickness and incapacity which is in force in the German Empire. By means of this system the workman, when attacked by tuberculosis, has a legal claim on insurance funds for medical treatment and maintenance in his own case, and for the support

also of his family. Thus it comes about that he can do so without social disqualification such as is associated with receipt of charitable aid or of charity—without, that is, forfeiting in any degree his sense of self-respect, he can procure at once, at the very outset of his malady, treatment requisite for himself, and at the same time maintenance of those belonging to him.

We must gain the confidence of the man or woman " who has nothing the matter with him or her." Let us get them just when the " little cough " starts, when the first wasting begins, and we shall soon see that our sanatoria and annexes, with their full, free, healthful life, will enable the sufferer who has taken but few steps on the downward path to retrace them—will prevent such cases from becoming serious, and send the man or woman back to the world of work as well able to fight the battle of life as he or she ever was. But to do this we must get the cases in the early stage, and to effect this we must educate the people. Neither law nor regulation will bring this about. We must persuade the people to come to us as soon as they decide, or are informed, they suffer from this disease. We must persuade them to try our open-air treatment—take advantage of your annexe and the kindly treatment of your medical officer *before*, and not *after*, they have tried the various vaunted cure-alls. If we can persuade them to do this, the question I have tried to answer will never be asked again.

As one American writer puts it, " It is with very real sense of melancholy that one contemplates the long death-roll of those of the world's great men and women who have succumbed ultimately to the tubercle bacillus, which is, and has been through countless generations, by far the most potent of all death-dealing agencies. Had it not been for this detestable parasite Bastien-Lepage might have given us another Joan of Arc to feast our eyes upon; Rachel might for many years have continued to permeate the spirits of her audience with the divine fire that was in her. Our navy [remember, the writer is an American] did well enough in the 1812 war, as all the world knows; but what a rip-roaring time there would have been if Paul Jones had lived to take a hand in it. We might be reading more of Stephen Crane's splendid war-stories; we might have had more of Robert Louis Stevenson's delicious lacework; Schiller might have given us another 'Song of the Bell'; we might have taken another 'Sentimental Journey' with Laurence Sterne; Harry Guyler Bunner might have continued to delight us and to touch our hearts; John Keats might have given us another 'Endymion.' Had the tubercle bacillus permitted, Nevin might have vouchsafed us another 'Euryanthe Overture'; Chopin might have dreamed another 'First Polonaise'; and the tender flute-notes of Sydney Lanier might even now be heard. Marie Constantinova Bashkirtseff, Xavier Bichat, John Godman, René Théophile Hyacinthe Laënnec, Henry Purcell, John Sterling, Henry Timrod, Artemus Ward, Henry Kirke White, Henry David Thoreau, Baruch Spinoza, John Addington Symonds, Prosper Mérimée—such names as these are but a moiety among those of the world's nobility whose precious lives were cut off in their prime by the 'great white plague.' "

Now, one of the greatest characteristics of pulmonary tuberculosis is its tendency to attack and to kill those at the working, marriageable, and reproductive periods of life—that is to say, at ages when loss of working-capacity inflicts the greatest economic losses upon the community; and if we can do anything to check this great economic loss we will have deserved well of our time and generation. That we are on the right road I am perfectly convinced, and I hope that the points I have brought before you to-day will have made you, who have put your hands to the plough, realise that, although the furrow may be long and the soil somewhat stony, success must come if you do not become faint-hearted.

We are sometimes apt to look upon the money spent upon the poor soul who has no hope of cure as wasted, but when we remember that some of the greatest men who ever lived—men who have done great things for literature, science, and the finer arts—have suffered and, in many instances, died from the disease, we shall see the necessity for trying not to regard the sufferer from such a disease as consumption in the same way as we do a person suffering from another infectious disease.

As genial Tom Hood used to say, " I have spat more blood and made more jokes than any man that ever lived," and so he had; and who will dare say that the world was not the better for his kindly humour. From every point of view you can justify what you have done. From a humanitarian aspect your annexe can be justified; from an economical one you have done good work for the community which has placed you in a position of trust. We want to go further, however, if we are to obtain the best results. We must provide suitable employment for those who have been cured. The man who has been stricken by this fell disease, and who has recovered, must for ever live in the light of his frailty, and it is for us to secure him an opportunity whereby he may again become a wage-earning individual. This we can do by establishing labour colonies, as the Government has done at Karere, where ex-patients are employed at tree-planting. This you can do by setting aside fruit, poultry, or bee farms, where the man or woman who desires to recover his individuality as a working unit in the economic world can take a place. The care, the cure, and the destination of the consumptive is a work, to which I have given many years of my life, and I am as firmly convinced now as ever I was that sanatoria, annexes, and working colonies are the most powerful factors wherewith to fight the " great white plague."

Dr. Mason gave figures to show the results which had been obtained in some of the sanatoria and annexes. At the sanatorium in Durham, in six years, 17·7 per cent of the patients were cured, 6·22 per cent. greatly improved, 13·8 improved, and 0·2 died. At the Leeds Sanatorium, in six years, 40·6 per cent. were cured, 42·2 greatly improved, no deaths. At Bowden Sanatorium, in four years, 5·9 per cent. were cured, 20·5 greatly improved, 29·4 improved, deaths 0·7. In Devon and Cornwall, in four years, 52·4 cured, 10·3 greatly improved, 23·2 improved, 2·1 deaths. At Bradford, in two years, 31·5 per cent. were cured, 30·4 greatly improved, 15·2 improved, 1·1 had died. At Crossley, in two years, 15·6 per cent. were cured, 20·3 greatly improved, 26·7 improved, and 1·2 had died. These results, on the whole, were most satisfactory, and there was nothing to suggest that the money spent had not been well spent. With regard to New Zealand, the cures at Te Waikato Sanatorium for the last two years had been, roughly, 21·6 and 41·3 per cent.; while at Otaki Sanatorium quite

recently a number of patients had been sent out quite recovered. There were fallacies into which we may fall if we start to deduce averages from the small number of cases which have been treated in New Zealand. He knew men who had been steadily at work for years who were considered likely to die when they entered the sanatorium. As good a work was being accomplished in the sanatoria of New Zealand as in any of the older countries. He believed in working colonies being established for those patients who find a difficulty in getting employed after leaving the institutions. At the camp at Karere the men were provided with tents and bedding, and a nurse was in charge. They provided food for themselves out of the wages paid them for tree-planting, the camp being worked in conjunction with the Lands Department, while the State benefited by the planting of the trees.

Dr. Mason, in concluding, invited questions, and in replying laid stress on the fact that the ex-patients of a properly conducted sanatorium were no source of danger whatever. It was the ignorant consumptive who was the source of danger. In dealing with fruit-culture, Dr. Mason said the spraying of the trees would not affect the ex-patient. It would be excellent from the patent's point of view; but it was no good, for the people would not buy the fruit. There was absolutely no danger, for the patients were well trained; but the people would not believe that. He suggested that the ex-patients should be put to growing vegetables for the general hospital. There were also bee-keeping and poultry. There were some of the bravest men in the ex-consumptive camps. The local patients could with advantage be set to work about the grounds of the annexe. He did not agree with the compulsory isolation of cases. Consumption could not be treated as leprosy, as it was too vast. It was desirable, of course, but totally impossible. With regard to spitting, most municipalities passed by-laws to this effect, but people did not trouble enough about it.

In regard to altitude, they had to bear in mind that consumption made itself known in a very great number of ways, and different treatment was needed for various patients. There had been a great improvement in regard to boardinghouses lately.

On the motion of the Chairman, seconded by Mr. Grace, Dr. Mason was accorded a very hearty vote of thanks for meeting the Board. Dr. Mason's whole-hearted work in the great cause was most heartily eulogised.

The following resolution, proposed by Mr. Sheat and seconded by Mr. Field, was carried unanimously: "That it be a strong recommendation to the Minister for Public Health that the Government be asked to provide central institutions in which patients who have been discharged from consumptive sanatoria might be provided with employment, and that the Board expresses its willingness to pay such sum as may be necessary to reimburse the Government any loss that may be incurred in maintaining patients sent by them to such institutions."

TE WAIKATO SANATORIUM.

Te Waikato still continues its beneficent work. Those who complain about the expenditure should visit the place, inquire into its working, and hear what the patients say. I should be sorry to see its sphere of usefulness curtailed.

KARERE.

The expenditure at Karere has been most successful. The only fault is that the encampment is too small. The work of cutting tea-tree scrub is hardly suitable for "cured" consumptives, but the tree-planting is about as good as one could get.

Some misconception has arisen with regard to the financial aspect of this experiment. It would seem that some critics were under the impression that because it had been stated that one man had made 8s. a day, 8s. per day was the standard wage. That is not so. The patients are paid at the same rate per 1,000 trees planted as the ordinary planter is paid. If he plant 500 trees he gets 4s., and so on *pro rata*. There is no question of the State giving a full day's pay to a man who has only earned half. The man gets what he earns. Out of his earnings he pays for his food and his share of running the camp. The Department provides the tents and all necessary buildings; also a sister and a nurse, to supervise the work from a remedial point of view.

Only those in intimate contact with the lives of the men and the women who pass through our sanatoria know what a "hopeless dawn" the day they leave the institution "cured" seems. Though well, they are debarred by reasons of prudence from engaging in indoor work, and their physical condition does not permit of their competing in the open mart of unskilled labour. What are they to do? Friends tire of keeping them; the lodginghouse-keeper is sorry, but his other clients complain, and so they must seek shelter where their neighbours are less exigeant. This shelter he finds only amongst the poorest. Ill fed, poorly clothed, dispirited at his non-finding of work, he soon falls back, his cough returns, and—to put it briefly—all the money, care, and skill that has been expended upon him is, from a public health point of view, wasted. It would have been cheaper—nay, in some senses it would have been kinder—to have shut the door upon him when he first knocked.

"Karere" is truly the "forerunner" and the "bringer of hope." The experiment has shown that it pays to look after our sick. Several who have been "hardened off" at Karere have gone back to their ordinary work quite recovered.

Where all have done such good work it is unfair to differentiate, but I am certain that both the Medical Superintendent and the Matron will agree that to Sister Urquhart's care, skill, and devotion the success of our first experiment is due.

KAREBE: THE PLANTING CAMP FOR "CURED" CONSUMPTIVES.

KAREBE: DINING SHELTER.

To face page 6.

I had hoped that this year would have seen us able to answer in the affirmative the petition to you by the "cured" women patients. If the lot of the man suffering from consumption is hard, truly the path of the woman is often awful in its hopelessness. I speak of those who are poor, and have few friends. A housemaid or a dressmaker, perhaps dependent entirely upon her earnings, falls sick. Grant that she has been able to get early admission to a sanatorium, and that she recovers, where can she go to earn a livelihood? It has only to be mentioned that she has come from a sanatorium and her way is barred to her former occupation. Some one, either the central authority or the several Hospital Boards, should provide a farm where such poor souls could work. If a place and shelters were provided by the Government, the various Boards would, I am sure, contribute. The Nelson Board has already affirmed its willingness to do so. Until suitable work is provided—such as bee-keeping, poultry-raising, early flower-growing, &c.—for the "cured" woman, much of the good done in the sanatoria and annexes will be wasted.

New Zealand has done much to check the enemy, but she or her wealthy philanthropists must do more. The Secretary of every Hospital Board could supply arguments in favour of what I am urging which would wring the hearts of any who listened. As I have pointed out in previous reports, it pays a country, even when accounts are reckoned in the language of the ledger and the stock exchange, to look after its sick. It is difficult, however, to persuade the man in the street that when one part of a machine saves generally, its savings should be shown clearly as credits in the machine accounts. The clear duty of the sanitarian is to keep on urging the reforms which scientific argument and the experience of other countries show to be good. He may fail if he does indicate the better way, but most assuredly he will have failed absolutely and irrevocably if he hesitate to do what he considers his duty. We have a chance in a small country like this to effectually stamp out consumption if we continue our efforts, but the campaign, like all others worthy of engagement, entails self-sacrifice.

I would like to take this my last official opportunity of recording my high appreciation of the great work which Dr. Roberts, Miss Rochefort, and the staff have carried out at Te Waikato.

Melbourne Conference.

I have had the honour of representing the Government at many important scientific Conferences, but without doubt the one held in Melbourne in October of last year was the greatest. The high honour done in appointing me President of the Public Health Section was a tribute to the value of the pioneer work which has been done in New Zealand. A detailed account of the work done will be found in the Transactions of the Conference published by the Victorian Government. If the resolutions passed affecting public health be ever carried out great good will result. I append a copy of my presidential address.

District Reports.

These have not all come to hand as I write, but in them you will find the full details of the special works which have been carried out by the various officers.

Vital Statistics.

I regret to say that the valuable data supplied by the Registrar-General is usually not available till late in the year. In consequence of my appointment to the staff of the High Commissioner in London, I will be unable to deal with and analyse them.

I wish to express my thanks to all the officers for the good work done during the last year.

I have, &c.,

J. M. Mason, M.D., F.C.S., D.P.H.Camb.,
Chief Health Officer for New Zealand.

The Hon. Minister of Public Health, Wellington.

APPENDICES.

APPENDIX I.—GENERAL STATISTICS FOR THE YEAR 1908–9.

PART I.—VITAL STATISTICS.

For the following statistics relating to birth, death, and marriage rates the Department is indebted to the returns of the Registrar-General.

Births.

The number of births registered during 1908 was 25,940, or 27·45 in every 1,000 persons living. The number of births is 846 in excess of that for the year 1907, an increase of 3·37 per cent. From 1882 until the year 1899 there was a regular fall in the rate. The births registered in a year number 19,846 in 1884, and, after falling to 17,876 in 1892, have risen to 25,940 in 1908 as stated above.

The number of male children born during 1908 was 13,369, and of female children 12,571.

The following table shows the number registered, the birth-rate calculated on the total population, and comparison with the average rate for 1882–86 taken as 100. Indications of a gradual increase are apparent, the improvement since 1899 being 9·28 per cent. on the rate per 1,000 in that year.

Births, Number and Rate.

Year.	Total Number of Births registered.	Birth-rate.		Year.	Total Number of Births registered.	Birth-rate.	
		Per 1,000 of Population.	Compared with Rate in 1882–86 taken as 100.			Per 1,000 of Population.	Compared with Rate in 1882–86 taken as 100.
1882–86	19,410	35·40	100	1897	18,737	25·96	73
				1898	18,955	25·74	73
1887	19,135	32·09	91	1899	18,835	25·12	71
1888	18,902	31·22	88	1900	19,546	25·60	72
1889	18,457	30·07	85	1901	20,491	26·34	74
1890	18,278	29·44	83	1902	20,655	25·89	73
1891	18,273	29·01	82	1903	21,829	26·61	75
1892	17,876	27·83	79	1904	22,766	26·94	76
1893	18,187	27·50	78	1905	23,682	27·22	77
1894	18,528	27·28	77	1906	24,252	27·08	76
1895	18,546	26·78	76	1907	25,094	27·30	77
1896	18,612	26·33	74	1908	25,940	27·45	77

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 1889–1908 show a decline in the proportion of births to every marriage in the preceding year from 4·93 to 3·03, as below :—

Year.	Marriages.	Legitimate Births.	Proportion of Births to every Marriage solemnised in the Preceding Year.
1888	3,617	...	...
1889	3,632	17,845	4·93
1890	3,797	17,675	4·87
1891	3,805	17,635	4·64
1892	4,002	17,283	4·54
1893	4,115	17,514	4·37
1894	4,178	17,824	4·33
1895	4,110	17,711	4·24
1896	4,843	17,778	4·32
1897	4,928	17,911	3·70
1898	...	18,154	3·68
1898	5,091	...	...
1899	5,461	18,006	3·54

Year.	Marriages.	Legitimate Births.	Proportion of Births to every Marriage solemnised in the Preceding Year
1900	5,860	18,640	3·41
1901	6,095	19,554	3·34
1902	6,394	19,734	3·23
1903	6,748	20,835	3·26
1904	6,983	21,737	3·22
1905	7,200	22,600	3·24
1906	7,592	23,120	3 21
1907	8,192	23,937	3·15
1908	...	24,835	3·03

If the average result be taken out for the ten years 1889–98, it will be found to represent 4·36 births to a marriage. Dealing similarly with the figures for 1899–1908 the result is an average of 3·26, so that regarded annually or decennially there is a decided fall to be observed.

New Zealand had in 1880 the highest birth-rate in Australasia (40·78); in 1900 the case was reversed; but in 1908 the New Zealand rate was higher than that of Queensland, New South Wales, Victoria, and South Australia.

The movement over ten years is calculated as under :—

Birth-rates per 1,000 *of Population.*

Country.	1899.	1900.	1901.	1902	1903.	1904.	1905.	1906.	1907.	1908.
Queensland	27·31	30·21	28·53	27·89	24·62	27·13	25·92	26·31	26·98	26·99
New South Wales ...	27·34	27·43	27·78	27·20	25·41	26·81	26·79	27·12	27·22	26·86
Victoria	26·71	25·82	25·77	25·23	24·46	24·65	24·83	25·14	25·16	24·71
South Australia ...	25·51	25·78	25·39	24·85	23·43	24·70	23·82	23·54	23·82	24·59
Western Australia ...	30·64	31·46	30·34	30·27	30·26	30·33	30·29	30·01	29·40	29·25
Tasmania	25·98	28·25	28·60	29·23	28·62	29·60	29·33	29·82	29·50	30·90
New Zealand	25·12	25·60	26·34	25·89	26·61	26·94	27·22	27·08	27·30	27·45

Although New Zealand had in 1899 the lowest birth-rate in Australasia, the rate for 1908 was higher than the average for the Commonwealth, 26·35 per 1,000 of population.

Sexes of Children born.

The figures show that during each year since 1886 there has been a preponderance of births of male children. It would appear, however, that this excess of male births is not sufficient to compensate for the heavier mortality which occurs among that sex. Of the total population in 1871 there were 70·52 females to every 100 males, but in 1908 the proportion of the females to 100 males had risen to 88·24.

Year.	Number of Births of		Proportion of Births of Males to every 100 Females.
	Males.	Females.	
1888	9,641	9,261	104·1
1889	9,514	8,943	106·4
1890	9,293	8,985	103·4
1891	9,377	8,896	105·4
1892	9,101	8,775	103·7
1893	9,310	8,877	104·9
1894	9,472	9,056	104·6
1895	9,493	9,053	104·9
1896	9,511	9,101	104·5
1897	9,600	9,137	105·1
1898	9,615	9,340	102·9
1899	9,724	9,111	106·7
1900	10,107	9,439	107·1
1901	10,471	10,020	104·5
1902	10,653	10,002	106·5
1903	11,217	10,612	105·7
1904	11,762	11,004	106·9
1905	12,109	11,573	104·6
1906	12,397	11,855	104·6
1907	12,835	12,259	104·7
1908	13,369	12,571	106·3

Twin Births.

There were 284 cases of twin births (568 children) and 2 cases of triplets registered in 1908. The number of children born was 25,940; the number of mothers was 25,652: thus, on an average, one mother in every 90 gave birth to twins, against 102 in 1907, 114 in 1906, 97 in 1905, and 93 in 1904.

The proportion of plural births per 1,000 of all births during the past five years, was,—

Year.	All Births.	Plural Births.	Plural Births per 1,000 of all Births.
1904	22,766	242	10·63
1905	23,682	245	10·35
1906	24,252	215	8·87
1907	25,094	244	9·72
1908	25,940	286	11·03

Illegitimacy.

The births of 1,105 children were illegitimate: thus 43 in every 1,000 children born were born out of wedlock, against 46 in 1907.

The rates of illegitimacy in Australasia are quoted. That for 1907 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.
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	6·89	7·12	5·74	4·01	4·36	5·82	4·52
1905	7·00	7·37	5·61	4·37	4·19	5·52	4·57
1906	7·68	7·04	5·58	4·00	4·78	5·78	4·67
1907	7·31	7·04	5·62	4·10	3·89	5·86	4·61

These figures show the proportion of illegitimate births to every 100 births for New Zealand to be fairly steady during the period 1898–1907; the difference amounts only to 0·38 per cent. on a comparison of the first and last years.

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 1908 was 7,276, as against 7,018 for the previous year. The birth-rates last year were,—

	Birth-rates per 1,000 of Mean Population.	
Auckland City	30·56	
" and seven suburban boroughs	...	28·48
Wellington City	27·60	
" and three suburban boroughs	...	27·76
Christchurch City	28·43	
" and three suburban boroughs	...	27·39
Dunedin City	25·48	
" and six suburban boroughs	...	24·66

By the inclusion of the suburbs the rate is raised at Wellington, but lowered at Auckland, Christchurch, and Dunedin. It will be observed that, excluding suburbs, Auckland has the highest rate Christchurch next highest, Wellington and Dunedin following. The birth-rate for the Dominion last year was 27·45 per thousand. Auckland, Wellington, and Christchurch are thus over the average, and Dunedin below it.

The birth-rates for two of the central boroughs last year show a fall when compared with 1907. In Christchurch the rate fell from 30·47 to 28·43, in Dunedin from 25·69 to 25·48, but rose in Auckland from 29·63 to 30·56, in Wellington from 27·53 to 27·60. The rates for five years, 1904 to 1908, are,—

	Births per 1,000 of Population.				
	1904.	1905.	1906.	1907.	1908.
Auckland (without suburbs) ...	31·08	30·06	29·96	29·63	30·56
Wellington " ...	26·77	29·72	27·85	27·53	27·60
Christchurch " ...	27·53	29·70	28·19	30·47	28·43
Dunedin " ...	22·40	23·90	28·96	25·69	25·48

Marriages.

The marriages for 1908 show an increase on the number for the previous year. The number was 8,339, or 147 more than in 1907. The rate per 1,000 of the population was 8·82 as against 8·91 in 1907. It is shown by the table following that there has been considerable increase in the marriage-rate, which has been above the standard during each of the last thirteen years :—

Marriages, Number and Rate.

Year.	Total Number of Marriages registered.	Marriage-rate.		Year.	Total Number of Marriages registered.	Marriage-rate.	
		Per 1,000 of Population.	Compared with Rate in 1882–86 taken as 100.			Per 1,000 of Population.	Compared with Rate in 1882–86 taken as 100.
1882–86	3,663	6·68	100	1897	4,928	6·83	102
				1898	5,091	6·91	103
1887	3,563	5·97	89	1899	5,461	7·28	109
1888	3,617	5·97	89	1900	5,860	7·67	115
1889	3,632	5·93	89	1901	6,095	7·83	117
1890	3,797	6·12	92	1902	6,394	8·01	120
1891	3,805	6·04	90	1903	6,748	8·23	123
1892	4,002	6·23	93	1904	6,983	8·26	124
1893	4,115	6·22	93	1905	7,200	8·28	124
1894	4,178	6·15	92	1906	7,592	8·48	127
1895	4,110	5·94	89	1907	8,192	8·91	133
1896	4,843	6·85	103	1908	8,339	8·82	132

The total number of marriages solemnised (8,339) does not include marriages where both parties are of the aboriginal native race, such persons being exempted from the necessity of complying with the provisions of the Marriage Act, although at liberty to take advantage thereof. Twenty-five marriages in which both parties were Maoris were contracted in 1908 in terms of the Act: 14 by Registrars, 3 by clergymen of the Church of England, 3 by Roman Catholic ministers, and 5 by ministers of the Church of the Latter-day Saints.

Ages of Persons married.

Of the persons married in 1908, 177 bridegrooms and 1,338 brides were under 21 years of age. Of the bridegrooms, four were between 17 and 18, and ten between 18 and 19. Of the brides, one was under fifteen, seven were between 15 and 16, and thirty-four between 16 and 17 years of age. The proportion of men married is greatest at the ages of 25 to 30, and of women at from 21 to 25 years.

Deaths.

The deaths in 1908 numbered 9,043, a rate of 9·57 in every 1,000 persons living, as against 10·95 in 1907. This is slightly below the average of the previous ten years, 9·93 per 1,000.

Comparative Death-rate for the Period 1898 *to* 1908

Country.	1898.	1899.	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.	1908.
New Zealand ...	9.84	10·24	9·43	9·81	10·50	10·40	9·57	9·27	9·31	10·95	9·57
Queensland ...	12·66	12·07	11·73	11·88	12·08	12·38	10·11	10·47	9·56	10·35	10·34
New South Wales	12·48	11·82	11·16	11·75	11·97	11·65	10·65	10·16	9·92	10·58	10·16
Victoria ...	15·94	14·28	12·75	13·22	13·40	12·90	11·92	12·10	12·42	11·66	12·53
South Australia*	13·06	12·14	10·64	11·11	11·79	10·71	10·22	10·14	10·34	9·72	9·84
Western Australia	16 05	13·76	12·92	13·36	13·63	12·60	11·91	10·83	11·87	11·17	10·86
Tasmania ...	13·51	12·25	11·05	10·52	11·00	11·92	11·04	10·29	11·24	11·14	11·71
England and Wales	17·5	18·2	18·2	16·9	16·2	15·4	16·2	15·2	15·4	15·0	...
Scotland ...	18·0	18·1	18·5	17·9	17·2	16·6	16·9	15·9	16·0	16·2	...
Ireland ...	18·2	17·7	19·6	17·8	17·5	17·5	18·1	17·1	17·0	17·7	...
Denmark ...	15·5	17·3	16·8	15·8	14·6	14·7	14·1	15·0	13·5	14·2	...
Norway ...	15·2	16·7	15·8	14·9	13·8	14·8	14·3	14·8	13 7	14·2	...
Sweden ...	15·1	17·7	16·8	16·1	15·4	15·1	15·3	15·6	14·4	14·6	...
Austria ...	24·9	25·6	25·3	24·0	24·7	23·8	23·7	25·0	22·5	...	...
Hungary ...	28·0	27·2	26·9	25·4	27·0	26·1	24·8	27·8	24·8	25·2	...
Switzerland ...	18·3	17·7	19·3	18·0	17·2	17·6	17·8	17·9	17·0	...	...
German Empire ...	20·5	21·5	22·1	20·7	19·5	20·0	19·6	19·8	18·2	...	...
Netherlands ...	17·0	17·1	17·8	17·2	16·3	15·6	15·9	15·3	14·8	14·6	...
France ...	20·9	21·1	21·9	20·1	19·5	19·2	19·4	19·6	19·9	20·2	...
Italy	22·9	21·9	23·8	22·0	22·2	22·4	21·1	21·9	20·8	20·8	...

* Excluding the Northern Territory.

Considering the range of 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 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 1908.

Ages.	Estimated Mean Population, 1908.	Number of Deaths, 1908.	Death-rate per 1,000, 1908.	Percentage of Population of Sweden, 1890 (Standard).	Index of Mortality in New Zealand per 1,000.
Under 1 year	23,721	1,761	74·24	2·55	1·89
1 and under 20 years	347,594	975	2·80	39·80	1·11
20 and under 40 years ...	357,328	1,477	4·13	26·96	1·11
40 and under 60 years ...	149,698	1,520	10·15	19·23	1·95
60 years and upwards... ...	66,722	3,310	49·61	11·46	5·61
Totals	945,063	9,043	9·57	100·00	11·67

A similar calculation for the States of the Australian Commonwealth has been made for 1907. 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 1907.	
	Index.	Actual.
Queensland...	14·60	10·39
New South Wales	14·31	10·58
Victoria	14·40	11·74
South Australia	13·33	9·93
Western Australia	15·66	11·17
Tasmania	14·87	11·14
New Zealand	13·35	10·95
" (1908)	11·67	9·57

For the purpose of considering the mortality in New Zealand more closely than can be done by means of crude death-rates, it is desirable to ascertain the rates at different age-periods of the population. The abnormally high rate in 1907, due to prevalence of epidemic diseases, is strikingly illustrated by comparison with the average for the previous five years. The rate for 1908 at all ages is slightly below the average, but the same as for the middle year of the period 1902–6.

Ages at Death.

The deaths occurring during 1908 are tabulated below in single ages up to five years, and from thence in groups, showing males and females separately :—

Ages.	Males.	Females.	Total.
Under 1 month	477	333	810
1 month and under 3 months	134	108	242
3 months ,, 6 ,, ...	205	142	347
6 ,, ,, 12 ,, ...	191	171	362
Total under 1 year	1,007	754	1,761
1 year	135	96	231
2 years	59	44	103
3 ,, ...	37	51	88
4 ,, ...	26	19	45
Total under 5 years	1,264	964	2,228
5 years and under 10 years	92	77	169
10 ,, 15 ,, ...	75	76	151
15 ,, 20 ,, ...	104	84	188
20 ,, 25 ,, ...	186	159	345
25 ,, 30 ,, ...	210	216	426
30 ,, 35 ,, ...	181	150	331
35 ,, 40 ,, ...	213	162	375
40 ,, 45 ,, ...	202	124	326
45 ,, 50 ,, ...	238	151	389

Ages.	Males.	Females.	Total.
50 years and under 55 years	258	137	395
55 „ 60 „	237	173	410
60 „ 65 „	284	207	491
65 „ 70 „	464	254	718
70 „ 75 „	515	260	775
75 „ 80 „	415	264	679
80 „ 85 „	241	130	371
85 „ 90 „	115	86	201
90 „ 95 „	22	30	52
95 „ 100 „	7	15	22
100 years	1	..	1
Totals	5,324	3,719	9,043

The average age at death of persons of either sex, in each of the ten years 1899–1908, was as follows :—

	Males.	Females.		Males.	Females.
1899 ...	37·73 years.	33·54 years.	1904 ...	41·47 years.	38·44 years.
1900 ...	40·31 „	36·14 „	1905 ...	43·03 „	39·13 „
1901 ...	41·64 „	37·68 „	1906 ...	44·39 „	39·35 „
1902 ...	41·07 „	34·88 „	1907 ...	40·43 „	36·66 „
1903 ...	39·56 „	35·43 „	1908 ...	42·50 „	39·14 „

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

The total number of deaths registered for the four centres in 1908 was 2,643—viz., 2,143 in the cities, and 500 in the suburbs.

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

	Death-rates per 1,000 of Mean Population.
Auckland City	12·43
„ and seven suburban boroughs	10·41
Wellington City	9·18
„ and three suburban boroughs	9·10
Christchurch City	9·70
„ and three suburban boroughs	9·52
Dunedin City	11·93
„ and six suburban boroughs	10·50

If the deaths for the cities, including suburban boroughs, be compared for five years, the figures are as below. It will be observed that the rates for 1908 are substantially lower than those for 1907, which last were, however, unusually high.

	Deaths per 1,000 of Population.				
	1904.	1905.	1906.	1907.	1908.
Auckland (including suburbs)	10·20	10·52	9·90	11·43	10·41
Wellington „	10·43	10·21	9·19	11·28	9·10
Christchurch „	10·44	10·89	11·25	14·37	9·52
Dunedin „	11·82	10·12	11·35	12·02	10·50

If the number of deaths of infants under one year be excluded, the mortality among the rest of the population is found to have been for 1907 and 1908 in the following ratio to the 1,000 living :—

	1907.	1908.
Auckland (including suburbs)	8·76	8·07
Wellington „	8·06	6·83
Christchurch „	10·52	7·66
Dunedin „	9·60	8·66

Infantile Mortality.

Subjoined is a classified statement of the deaths of infants under one year during 1908, 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.				
1908 ...	Male	477	134	205	191	1,007
	Female	333	108	142	171	754
		Deaths to the 1,000 Births.				
1908 ...	Male	35·68	10·02	15·33	14·29	75.32
	Female	26·49	8·59	11·30	13·60	59·98

Seventy-five out of every thousand of male children born, and sixty of every thousand females, are found to have died before attaining the age of one year. The mortality was thus one in thirteen of male children and one in seventeen of females 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 also be seen from the figures that the chances of living during the first year of age are greater for female than for male infants. Thus, during the year 1908 there were—

100	deaths of males to	74	deaths of females	under 1 month of age;
100	,,	86	,,	from 1 to 3 months of age;
100	,,	74	,,	from 3 to 6 months of age;
100	,,	95	,,	from 6 to 12 months of age;
100	,,	80	,,	under 12 months of age.

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.		
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	292	289	1,463	20,491	71·4
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
1905	714	285	290	310	1,599	23,682	67·5
1906	717	247	244	298	1,506	24,252	62·1
1907	763	446	500	519	2,228	25,094	88·8
1908	810	242	347	362	1,761	25,940	67·9
Means of ten years ...	687	312	338	356	1,693	22,309	75·9

NOTE.—The total number of deaths of infants for the period included in the table is 16,930.

The principal causes of mortality in children under one year for New Zealand are given, with the numbers of deaths for five years from such causes. Diarrhœa and enteritis stand first in order of importance, premature birth next, followed by marasmus or debility. Here it is seen how much mortality is attributed to these causes according to the medical certificates.

Deaths of Children under One Year.—Causes, 1904 to 1908.

Causes.	Number of Deaths from each Cause.					Percentage of Total.				
	1904.	1905.	1906.	1907.	1908.	1904.	1905.	1906.	1907.	1908.
Whooping-cough ..	27	2	17	207	31	1·67	0·13	1·13	9·29	1·76
Convulsions	95	96	90	84	76	5·88	6·00	5·98	3·77	4·32
Bronchitis and pneumonia	148	207	170	269	148	9·16	12·95	11·29	12·08	8·40
Diarrhœa and enteritis	383	285	232	557	418	23·70	17·82	15·40	25·00	23·74
Premature birth ..	291	360	337	359	388	18·01	22·51	22·38	16·11	22·03
Marasmus, &c. ..	273	258	267	303	264	16·89	16·14	17·73	13·60	14·99
Other causes ..	399	391	393	449	436	24·69	24·45	26·09	20·15	24·76
Totals	1,616	1,599	1,506	2,228	1,761	100·00	100·00	100·00	100·00	100·00

The proportions of deaths of children under one year of age to every 100 births at the chief centres are,—

	1907.	1908.
Auckland (including suburbs)	9·72	8·19
Wellington ,, ...	11·78	8·17
Christchurch ,, ...	12·62	6·78
Dunedin ,, ...	9·54	7·45

Again, the percentage of deaths of children under 5 to the total number of deaths is—Auckland, 28·89; in Christchurch, 23·32; in Wellington, 30·70; in Dunedin, 21·92.

The District Health Officer for Auckland gives the following statistics for his district in connection with infant mortality:—

Auckland and suburban boroughs—

Deaths of infants under one year	173
,, between one year and five years	50
	223

Deaths of Children under One Year to every 100 *Births for Five Years.*

	Auckland City.	Auckland and Suburban Boroughs.
1904	6·93	7·01
1905	10·13	9·15
1906	9·92	8·58
1907	10·55	9·72
1908	8·62	8·19

The foregoing are the figures relating to Auckland and the suburban boroughs. I have, however, caused to be compiled some data regarding all the children under one year of age whose deaths have been recorded at the office of the Registrar of Deaths, Auckland, and from the larger figures thus obtained some interesting results appear.

The total number of deaths of children under one year registered at Auckland during 1908 was 257. Of these, 143 were males and 114 females.

Analysing the deaths with regard to causation, I find that of the 257 deaths, probably 164 resulted from causes which might be prevented, namely:—

Inanition, infantile debility		15
Marasmus, asthenia, atrophy, heart-failure		36
Malnutrition, dry-nursing, want of breast-milk		10
Enteritis, dysentery, diarrhœa		92
Dentition, convulsions		11
Total		164

The causes of the remaining 93 deaths may be classified thus:—

Premature and parturition		37
Congenital and unclassified		17
Tuberculosis	3	
Syphilis	2	
Tetanus	3	
Meningitis	9	
	—	17
Whooping-cough	5	
Bronchitis and pneumonia	17	
	—	22
Total		93
Deaths of children under one year registered in Auckland		257

The Registrar of Births here (Mr. Culpan) informs me that he already remarks good results from the operation of the Infant Life Protection Act of 1907, under section 20 (2), requiring the occupier of the house to give notice of any birth in a city or borough within seventy-two hours thereof, or within twenty-one days in any other case. These notices are accepted in any written form, on any slip of paper. It operates beneficially in this way: that what has to be done *at once* is usually *done*, while what may be deferred fourteen days, twenty-one days, sixty-two days, is often postponed indefinitely, and so may not be done at all. The receipt of these casual informal notices enables the Registrar to insist upon the full detailed registration within the proper period. Result, more complete registration records.

The following table taken from the report of the District Health Officer, Wellington, relates to the infant mortality in that district:—

Infantile Mortality to every 100 *Births.*

	Wellington City.	Wellington and Suburbs.	Average of Four Centres, including Suburbs.
1904	9·55	9·53	8·94
1905	10·02	9·62	8·66
1906	7·11	7·19	7·61
1907	11·85	11·78	10·91
1908	8·24	8·17	7·84
Mean for five years	9·35	9·25	8·79

The District Health Officer, Christchurch, comments thus on the infantile mortality:—

For the year ending 31st December, 1908, the infantile mortality in Christchurch—that is, the proportion of deaths of children under one year of age to every 100 births—reached the low figure of 6·78, which was the lowest in the four centres. There were only 8 deaths from infantile diarrhœa and

enteritis for the year ending 31st March, and of these, only 4 occurred during the last summer. No doubt the summer, not being so dry as the two previous summers, was not so favourable to a high infantile mortality. Some credit must also be given to the Society for the Promotion of the Health of Women and Children. The work of this society is largely increasing. There are now two fully qualified Plunket Nurses employed in Christchurch, and about 200 infants have been attended by them during the year. In addition to the personal visits paid within the radius of two miles from the Post-office, a large number of cases are dealt with outside this area and in the country districts, by supplying written advice and pamphlets, and by advice given to those who apply at the office of the society. A branch of this society has been recently formed in Timaru.

CAUSES OF DEATH.

The Registrar-General reports as follows on the causes of death for the year :—

The classification of causes of death in 1908 was made for the first time in New Zealand according to the Bertillon Index of Diseases. This system has been adopted by the Commonwealth of Australia and the principal European and American countries. It is highly desirable for comparative purposes that uniformity of statistical method should obtain when possible.

The new system differs materially from that hitherto in use, and comparisons of certain causes of mortality in 1908 and previous years are impossible owing to changes in the classification of minor diseases. This applies more particularly to diseases of the digestive, nervous, respiratory, and circulatory systems. There are, however, certain principal causes of deaths which are unaffected and retain their comparative value, such as cancer, tubercular diseases, typhoid fever, whooping-cough, measles, influenza, scarlet fever, diabetes, appendicitis, liver and puerperal diseases, suicide, and old age.

Although it is not possible to exhibit a classified comparison with previous years on this occasion, a table is given of some of the principal causes of death during the past five years.

Cause.	Number of Deaths.					Proportion of 10,000 of Mean Population.				
	1904.	1905.	1906.	1907.	1908.	1904.	1905.	1906.	1907.	1908.
Typhoid fever	73	45	48	53	90	0·86	0·52	0·54	0·58	0·95
Measles	10	8	12	101	19	0·12	0·09	0·13	1·10	0·20
Scarlet fever	13	10	18	25	60	0·15	0·11	0·20	0·27	0·63
Whooping-cough	35	3	26	307	42	0·41	0·03	0·29	3·34	0·44
Influenza	113	70	132	223	64	1·34	0·80	1·47	2·43	0·68
Tuberculosis of the lungs ..	598	496	556	612	607	7·08	5·70	6·21	6·66	6·42
Other forms of tuberculosis	201	182	164	244	232	2·38	2·10	1·83	2·65	2·45
Cancer	571	566	623	674	657	6·76	6·51	6·96	7·33	6·95
Diabetes	90	79	104	87	100	1·06	0·91	1·16	0·95	1·06
Simple meningitis ..	102	119	138	130	136	1·21	1·37	1·54	1·41	1·44
Convulsions of children under 5 years of age	114	116	106	104	96	1·35	1·33	1·18	1·13	1·02
Apoplexy	292	299	272	330	341	3·46	3·44	3·04	3·59	3·61
Pneumonia	406	425	444	572	453	4·80	4·89	4·96	6·22	4·80
Gastritis and enteritis ..	383	379	335	518	478	4·53	4·36	3·74	5·64	5·06
Diarrhœal diseases ..	193	128	97	314	198	2·28	1·47	1·08	3·42	2·20
Cirrhosis of liver	53	40	44	42	52	0·63	0·46	0·49	0·46	0·55
Appendicitis	..	53	69	86	81	..	0·61	0·77	0·93	0·86
Bright's disease and acute nephritis	200	242	241	268	263	2·37	2·79	2·69	2·92	2·78
Violence, suicide	100	89	83	102	103	1·18	1·02	0·93	1·11	1·09
,, accident ..	598	525	575	611	570	7·08	6·03	6·42	6·65	6·03
Other causes	3,942	4,187	4,252	4,663	4,401	..	..	..	..	..
Totals	8,087	8,061	8,339	10,066	9,043	95·70	92·66	93·11	109·52	95·69

For purposes of comparison with previous years it is necessary to confine attention to certain special causes of death. These are exhibited for 1908 and the four previous years in numbers, and also in proportion to each 10,000 of the mean population. Diseases of the circulatory system, though numerous, are avoided, owing to the fact that in former years it has been the practice, when the cause of death was certified as heart disease with another possibly fatal complaint the latter has been preferred. Under the new system the reverse is the case. The number of deaths occurring from bronchitis is similarly affected. Hydatids, formerly grouped under the heading "Parasitic," are now assigned to the location of the disease. These and many other changes in the classification might be borne in mind when comparisons with former years are sought.

Typhoid Fever.

Deaths from this cause numbered 90 in 1908, against 53 in the previous year, the average for five years being 62.

Measles.

The outbreak of this complaint in 1907, causing 101 deaths, was not recurrent in 1908 when only 19 deaths were recorded.

Scarlet Fever.

The number of deaths from scarlet fever in 1908 was 60. This is the greatest number shown in any one year with the exception of 1903, when there were 131 deaths from this complaint. The average annual mortality for the ten years 1893–1902 was 8·6.

Whooping-cough.

There were 42 deaths in 1908, 307 in 1907, and 26 in 1906.

Influenza.

This was less prevalent in 1908 than in any other year of the period shown, only 64 deaths being recorded.

Tuberculosis.

Deaths from phthisis numbered 607 or 6·42 per 10,000 of the population, against 612 deaths or 6·66 per 10,000 in 1907, and 556 deaths or 6·21 per 10,000 in 1906. The average for the past ten years was 582, or 6·99 per 10,000.

Year.	Deaths from Phthisis.	Rate per 10,000.	Year.	Deaths from Phthisis.	Rate per 10,000.
1899	593	7·91	1904	598	7·08
1900	577	7·56	1905	496	5·70
1901	596	7·66	1906	556	6·21
1902	617	7·73	1907	612	6·66
1903	570	6·95	1908	607	6·42

Reference to the following table will show that 360 persons known to have been born in the Dominion died during 1908 from phthisis, a proportion of 5·58 per 10,000 of the estimated native-born white population, and 133 persons resident for fifteen years or over succumbed to the disease.

Deaths from Phthisis, 1908.

Length of Residence in New Zealand.	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	...	...	...	...	2	...	...	...	...	...	2
1 to 6 months	...	...	...	...	3	...	1	...	...	...	4
6 to 12 months	...	...	...	4	2	3	...	...	...	...	9
1 to 2 years	...	...	...	2	1	...	...	...	...	...	3
2 to 3 years	...	...	...	4	1	3	...	1	...	...	9
3 to 4 years	...	...	..	1	4	3	1	...	...	...	9
4 to 5 years	...	...	...	2	1	1	1	...	...	...	5
5 to 10 years	...	...	...	...	4	5	...	1	...	...	10
10 to 15 years	...	...	...	1	2	2	1	...	1	...	7
15 to 20 years	...	...	...	...	...	6	3	2	...	...	11
20 to 25 years	...	...	...	...	2	1	4	1	...	...	8
25 years and upwards	...	...	...	...	4	7	23	16	13	3	66
Not known	...	...	...	4	3	10	6	...	3	...	26
Born in Dominion	...	1	1	1	44	53	37	7	2	1	...	147
Totals	...	1	1	1	62	82	78	47	23	18	3	316
Females.											
Under 1 month	...	...	...	...	...	...	...	...	...	...	...	...
1 to 6 months	...	...	...	...	...	1	...	1	...	..	...	2
6 to 12 months	...	...	...	...	...	...	...	...	...	...	...	...
1 to 2 years	...	...	...	...	...	4	...	...	...	...	...	4
2 to 3 years	...	1	...	...	...	3	...	...	...	...	...	4
3 to 4 years	...	...	...	...	...	2	...	...	...	...	...	2
4 to 5 years	...	...	...	...	...	1	...	...	...	...	...	1
5 to 10 years	..	...	...	...	...	4	2	...	...	...	...	6
10 to 15 years	...	...	...	...	2	1	...	1	...	...	...	4
15 to 20 years	...	...	...	...	2	...	...	...	...	1	...	3
20 to 25 years	...	...	...	...	...	3	...	1	...	1	1	6
25 years and upwards	...	...	...	...	...	6	8	15	5	3	2	39
Not known	...	...	...	...	1	2	1	2	1	...	...	7
Born in Dominion	...	4	2	6	74	85	34	7	1	...	...	213
Totals	...	5	2	6	79	112	45	27	7	5	3	291
Totals of both sexes	...	6	3	7	141	194	123	74	30	23	6	607

Deaths and Death-rates from Tuberculosis and Percentage of Total Deaths, 1899–1908.

Year.	Mean Population.	Number of Deaths from Tubercular Diseases.	Rate per 10,000.	Percentage of Total Deaths from all Causes.
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
1905	870,000	678	7·79	8·41
1906	895,594	720	8·04	8·63
1907	919,105	856	9·31	8·50
1908	945,063	839	8·87	9·28

Ages of Persons who died from Tubercular Diseases, 1908.

Ages.	Males.	Females.	Total.	Ages.	Males.	Females.	Total.
Under 5 years	50	40	90	45 years and under 50	26	19	45
5 years and under 10 ..	11	7	18	50 ,, 55	24	10	34
10 ,, 15 ..	9	16	25	55 ,, 60	17	6	23
15 ,, 20 ..	30	39	69	60 ,, 65	11	4	15
20 ,, 25 ..	51	64	115	65 ,, 70	10	4	14
25 ,, 30 ..	48	83	131	70 ,, 75	13	1	14
30 ,, 35 ..	52	42	94	75 ,, 80	3	3	6
35 ,, 40 ..	56	33	89				
40 ,, 45 ..	36	22	58	Total deaths ..	446	393	839

In comparison with England and Wales and the States of the Australian Commonwealth the deaths from tuberculosis per 1,000 of the population was lower in Queensland, New South Wales, and Tasmania than in New Zealand.

Death-rates from Tuberculosis and Percentage of Total Deaths, 1907.

	Death-rates (per 1,000) from Tuberculosis.	Percentage of Total Deaths.
England and Wales	1·61	10·70
New South Wales	0·80	7·61
Victoria	1·16	9·91
Queensland	0·73	7·02
South Australia	0·95	9·59
Western Australia	0·96	8·63
Tasmania	0·86	7·76
New Zealand	0·93	8·50

Cancer.

There were 657 deaths assigned to this cause in 1908, a proportion of 6·95 per 10,000 persons, the average number and rate for the five years 1904–8 being 618 and 6·9 respectively. Deaths of males numbered 363 and of females 294 The death-rate from cancer is not so great as that from tubercular diseases, but its increasing tendency is a matter of grave concern.

Number of Persons who died from Cancer, the Proportion per 10,000 *Persons living, and the Percentage of all Deaths.*

Year.	Deaths from Cancer.	Total Deaths, all Causes.	Deaths from Cancer per 10,000 of Living Persons.	Percentage of Total Deaths due to Cancer.
1899	468	7,680	6·24	6·09
1900	430	7,200	5·63	5·97
1901	515	7,634	6·62	6·75
1902	536	8,375	6·72	6·40
1903	582	8,528	7·10	6·82
1904	571	8,087	6·76	7·06
1905	566	8,061	6·51	7·02
1906	623	8,339	6·96	7·47
1907	674	10,066	7·33	6·70
1098	657	9,043	6·95	7·27

The part of the body mostly affected among males is the stomach, and among females the generative and mammary organs.

Cancer: Seat of Disease.

Seat of Disease.	Males.	Females.	Total.
Mouth, lip, tongue, throat, neck	81	17	98
Stomach	110	61	171
Intestines, rectum	61	44	105
Kidneys, bladder, urethra, &c.	21	4	25
Liver	54	40	94
Female genital organs	..	53	53
Breast	..	31	31
Other organs	36	44	80
	363	294	657

Ninety-six per cent. of the deaths were at the ages 35 years and upwards, and 61 per cent. at the ages 60 years and upwards.

Ages of Persons who died from Cancer, 1908.

Ages.	Males.	Females.	Total.	Ages.	Males.	Females.	Total.
Under 5 years	2	2	4	45 years and under 50	21	29	50
5 years and under 10 ..	1	1	2	50 „ 55	31	32	63
10 „ 15 ..	1	1	2	55 „ 60	28	41	69
15 „ 20 ..	1	..	1	60 „ 65	55	50	105
20 „ 25 ..	2	1	3	65 „ 70	75	40	115
25 „ 30 ..	5	3	8	70 „ 75	58	28	86
30 „ 35 ..	5	4	9	75 „ 80	44	29	73
35 „ 40 ..	6	9	15	80 years and upwards	13	8	21
40 „ 45 ..	15	16	31		363	294	657

Diabetes.

There were 100 deaths in 1908, a rate of 1·06 per 10,000, the average for the first five years being 92 and 1·03 respectively.

Simple Meningitis.

This disease caused 136 deaths in 1908, against 102 in 1904, and an average of 125 for the five years.

Convulsions of Children.

It would appear that the mortality from this cause is decreasing. The rate, measured by the total population for comparative purposes, has gradually declined from 1·35 per 10,000 in 1904 to 1·02 in 1908. The proportion of deaths per 10,000 children living under 5 years of age was 11·66 in 1904 and 8·78 in 1908.

Apoplexy.

The number of deaths from this cause increased during the past five years from 292 in 1904 to 341 in 1908, and the rate per 10,000 from 3·46 to 3·61.

Pneumonia.

There were 453 deaths in 1908, against 572 in 1907, and 406 in 1904. Excepting occasional fluctuations due to exceptional climatic conditions, the rate per 10,000 remains fairly constant at about 4·9.

Gastritis and Enteritis.

Although there were fewer deaths last year than in 1907, the number (478) and the rate (5·06 per 10,000) remains unusually high. About 75 per cent. of the deaths are of children under 5 years of age.

Diarrhœal Diseases.

Of the 198 deaths last year 158 were of children under 5 years of age, a proportion of 14·45 per 10,000 living at those ages, against 15·36 in 1904.

Cirrhosis of Liver.

There were 52 deaths in 1908, as compared with an average of 46 for the five years 1904–8.

Appendicitis.

Prior to 1905 this complaint was tabulated among "Other Diseases of the Digestive System." There were 81 deaths in 1908, against 86 in 1907, 69 in 1906, and 53 in 1905.

Bright's Disease and Nephritis.

Of the 263 deaths last year 204 were certified as Bright's disease and 59 as acute nephritis. The rate for 10,000 living for 1908 was 2·78, against an average of 2·71 for the last five years.

Puerperal Diseases.

In 1908 the deaths certified to these causes numbered 119. Included in the number were: Accidents of pregnancy, 18; puerperal septicæmia, 46; other accidents of childbirth, 55. The number of deaths to every 1,000 confinements for each of ten years is shown.

Year.	Death of Mothers of every 1,000 Confinements.	Year.	Death of Mothers of every 1,000 Confinements.
1899	4·57	1904	4·66
1900	3·84	1905	4·22
1901	4·39	1906	3·91
1902	5·33	1907	4·62
1903	5·86	1908	4·04

Violence.

The deaths from external violence, apart from suicide, numbered 570 in 1908—males 448, females 122. The rate per 10,000 living was 7·08 in 1904, 6·03 in 1905, 6·42 in 1906, 6·65 in 1907, and 6·03 in 1908. Drowning caused 23 per cent. of the total, and 25 per cent. of the male deaths by accident. The various forms of accidental deaths in 1908 are shown in the following table :—

Accidental Deaths, 1908.

Cause of Death.	Males.	Females.	Total.
Fractures	35	14	49
Shooting	9	1	10
Other accidental injuries	223	36	259
Burns, scalds	22	31	53
Insolation	4	1	5
Electric shock	1	..	1
Accidental drowning	113	19	132
Inanition	2	..	2
Inhalation of noxious gases	4	3	7
Other accidental poisoning	15	4	19
Other external violence	20	13	33
Total deaths	448	122	570

Suicide.

The suicidal deaths in 1908 were 103—males 89 and females 14. The rate per 10,000 living was 1·09 in 1908, against an average of 1·07 for the past five years. The means most frequently resorted to by males was shooting, and by females, poison and hanging. The following table shows the means of self-destruction employed :—

Suicides, 1908.

Mode of Death.	Males.	Females.	Total.
Poison	14	4	18
Hanging or strangulation	18	4	22
Drowning	9	2	11
Firearms	27	1	28
Cutting-instruments	15	3	18
Other modes	6	..	6
Total suicides	89	14	103

Causes of Deaths in the Auckland District.

Dr. Purdy reports as follows :—

Zymotic Diseases.

Auckland and suburban boroughs—	
Diarrhœal diseases	99
Influenza	4
Typhoid-fever	21
Scarlet fever	2
Diphtheria	4
Whooping-cough	5
Croup	1
Measles	..
Other zymotic diseases	3
	139

Eleven of the deaths from enteric fever occurred in the last three months of the last departmental year, 5 in April, and 3 in May. Thus, 19 of the 21 deaths are the aftermath of the epidemic which was fully reported upon in last annual report. It is noticeable also that of the 99 deaths from diarrhœal diseases all but 11 occurred within the same period.

Phthisis and other Tubercular Diseases.

The record for five years is as follows :—

1904	55 deaths.
1905	49 „
1906	52 „
1907	66 „
1908	52 „

Diseases of the Respiratory Organs.

The year 1908 exhibits reduced figures in relation to all chest troubles as compared with the previous year; probably the lower rainfall and drier atmosphere as compared with the previous year had much to do with the improvement. There were 78 deaths from this cause.

CAUSES OF DEATH IN THE WELLINGTON DISTRICT.

The following table relating to the deaths from infectious diseases in Wellington was compiled by Dr. Frengley :—

Causes of Death from Zymotic and Other Diseases.

	Wellington and Suburbs.		Total of four Centres,
	1908.	1907.	1908.
Diarrhœa	41	23	191
Measles	2	15	7
Diphtheria	6	9	13
Scarlet fever	16	9	21
Enteric fever	5	..	28
Influenza	3	17	22
Whooping-cough	1	28	7
Dysentery	1	..	4
Septicæmia	3	..	13
Syphilis	4	..	10
Puerperal septicæmia	1	..	16
Tubercle	73	69	260
Cancer	48	50	202

VACCINATION.

The vaccinations registered for the last ten years are us 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 1 Year of Age to Total Births. Per Cent.
1908	3,346	1,249	25,940	4·82
1907	5,328	1,961	25,094	7·81
1906	3,602	1,810	24,252	7·46
1905	3,818	2,079	23,682	8·78
1904	18,368	2,323	22,766	10·20
1903	11,683	5,566	21,829	25·50
1902	8,763	2,611	20,655	12·64
1901	3,768	1,984	20,491	9·68
1900	4,525	3,151	19,546	16·12
1899	5,133	3,379	18,835	17·94

PART 2.—INFECTIOUS DISEASE.

RETURN SHOWING THE NUMBER OF CASES OF INFECTIOUS DISEASE REPORTED TO THE PUBLIC HEALTH DEPARTMENT THROUGHOUT THE DOMINION DURING THE YEAR ENDING 31ST MARCH, 1909.

Summary for Whole Dominion.

Nature of Disease.	Health Districts.								Total.
	Auckland.	Hawke's Bay.	Wellington.	Marlborough.	Nelson.	Westland.	Canterbury.	Otago.	
Enteric fever	241	103	119	2	9	11	51	25	561
Scarlet fever	142	208	722	19	43	57	386	606	2,183
Diphtheria	101	67	192	42	3	35	99	85	624
Blood-poisoning ..	77	28	46	..	..	1	71	48	271
Tuberculosis	176	45	206	7	10	17	86	170	717
Hydatids	..	..	5	1	..	2	13	9	30
Totals ..	737	451	1,290	71	65	123	706	943	4,386

The following tables and remarks relating to the incidence of infectious disease in the Dominion during the year are taken from the annual reports of the Health Officers for the various districts :—

Auckland District.

Infectious-disease Notifications.

The cases of infectious disease occurring in this public health district during the departmental year, which I had to refer to in my last report as being largely in excess of those occurring during any of the preceding five years, are this year at something like their normal.

1904–5	620
1905–6	616
1906–7	642
1907–8	1,071
1908–9	737

Compared with last departmental year, the following are the figures in cases notified :—

—	Enteric.	Scarlet Fever.	Diph-theria.	Tubercu-losis.	Blood-poisoning.	Plague.	Total.
			Decreases.				
Auckland City	22	35	18	2	7	2	86
Suburban boroughs	18	21	34	..	..	..	73
Road districts	26	15	9	9	..	..	49
Country districts	45	71	2	19	8	..	145
Hospital, shipping, &c.	1	3	1	..	..	..	5
	112	135	64	30	15	2	358
			Increases.				
Suburban boroughs	..	..	..	6	13	..	19
Road districts	..	..	..	..	2	..	2
Hospital, shipping, &c.	..	..	..	2	1	..	3
	..	..	..	8	16	..	24
Net decrease	..	..	..	..	..	..	334

The following table exhibits the distribution of the cases :—

Summary of Notifications of Infectious Diseases from 1st April, 1908, to 31st March, 1909.

—	Enteric Fever.	Scarlet Fever.	Diphtheria.	Tuber-culosis.	Blood-poisoning.	Total.
Auckland City	66	35	25	45	27	198
Birkenhead Borough	..	3	..	..	..	3
Devonport Borough	..	4	1	..	2	7
Grey Lynn Borough	24	4	5	4	3	40
Mount Eden Borough	8	7	6	12	7	40
Newmarket Borough	7	2	..	..	3	12
Northcote Borough	..	..	..	..	1	1
Onehunga Borough	2	4	1	2	4	13
Parnell Borough	..	14	4	7	3	28
Arch Hill Road District	1	1	..	2	2	6
Avondale Road District	2	..	1	2	3	8
Eden Terrace Road District	2	6	2	4	..	14
Epsom Road District	1	2	1	1	1	6
Mount Albert Road District	8	3	1	5	1	18
One-tree Hill Road District	..	1	..	1	..	2
Point Chevalier Road District	7	..	..	..	..	7
Remuera Road District	..	1	1	1	2	5
Tamaki West Road District	..	..	..	1	..	1
Bay of Islands County	1	..	..	1	..	2
Coromandel County	..	..	..	12	1	13
Hobson County	3	..	1	..	1	5
Hokianga County	3	1	1	7	1	13
Kawhia County	1	..	..	..	..	1
Manukau County	2	4	1	5	1	13

Summary of Notifications of Infectious Diseases from 1st April, 1908, to 31st March, 1909—continued.

—	Enteric Fever.	Scarlet Fever.	Diphtheria.	Tuber-culosis.	Blood-poisoning.	Total.
Mangonui County	..	..	1	9	2	12
Ohinemuri County	10	..	1	..	4	15
Opotiki County	1	1	..	..	..	2
Otamatea County	3	4	1	..	..	8
Piako County	3	1	..	1	..	5
Raglan County	1	..	..	1	..	2
Rotorua County	5	1	..	2	..	8
Thames County	8	1	4	2	..	15
Taupo County	10	2	1	1	..	14
Tauranga County	8	..	6	7	..	21
Waikato County	2	3	..	2	1	8
Waipa County	6	8	10	5	2	31
Waitemata County	8	6	2	3	..	19
Waitomo County	2	..	..	4	..	6
Whakatane County	2	..	1	5	..	8
Whangarei County	8	5	9	6	1	29
Frankton Township	2	..	..	..	..	2
Cambridge Borough	1	4	..	..	..	5
Hamilton Borough	4	..	8	4	1	17
Te Aroha Borough	1	4	..	1	..	6
Thames Borough	2	..	1	4	1	8
Waihi Borough	6	9	3	..	..	18
Auckland Hospital	6	..	2	..	..	8
St. Helens Hospital	..	..	..	..	1	1
Mental Hospital	2	..	..	5	..	7
Gaol and police	2	..	..	..	..	2
Shipping and oversea	..	1	..	2	1	4
Totals	241	142	101	176	77	737
City of Auckland	66	35	25	45	27	198
Suburban boroughs	41	38	17	25	23	144
Suburban road districts	21	14	6	17	9	67
Country districts	103	54	51	82	16	306
Auckland Hospital	6	..	2	..	..	8
St. Helens Hospital	..	..	..	..	1	1
Mental Hospital	2	..	..	5	..	7
Gaol and police	2	..	..	..	..	2
Shipping and oversea	..	1	..	2	1	4
Totals	241	142	101	176	77	737

Table showing Monthly Occurrence of Infectious Disease.

—	Enteric Fever.	Scarlet Fever.	Diphtheria.	Tubercu-losis.	Blood-poisoning.	Total.
1908.						
April	50	14	13	13	8	98
May	54	16	9	11	11	101
June	23	12	10	17	8	70
July	10	18	4	8	5	45
August	8	16	12	22	10	68
September	6	18	4	27	7	62
October	8	11	12	11	4	46
November	9	17	11	20	7	64
December	9	5	4	14	4	36
1909.						
January	19	7	8	13	1	48
February	11	3	6	12	6	38
March	34	5	8	8	6	61
Totals	241	142	101	176	77	737

The following cases were sent to the General Hospital by order of the Department :—

Enteric fever	70
Scarlet fever	26
Diphtheria	24
Tonsilitis	1
Tuberculosis	3
Blood-poisoning*	18
Measles	1
	143

* Including puerperal septicæmia, tetanus, and erysipelas.

Enteric Fever.

The cases of enteric fever recorded throughout the health district for the past five years are :—

1904–5	180
1905–6	172
1906–7	153
1907–8	353
1908–9	241

As set forth in a preceding table, the city, suburban boroughs, and road districts, and the country districts as a whole, all exhibit a decrease as compared with the previous year. The total, however, is some 60 or 70 cases more than the average of earlier recent years, and this is to be accounted for by reason of the epidemic of the summer of 1907–8 in Auckland and suburbs not having quite died out in the early months of this departmental year, and by outbreaks in several country districts, notably in the Counties of Tauranga, Thames, Waitemata, Ohinemuri, Whangarei, Waipa, and Taupo, which, though they swell the total for the year, were not extensive.

Two cases in Waikato district were attributed to infection from mussels.

In connection with an outbreak early this year at Point Chevalier, where, as well as in the neighbouring district of Avondale, a house-to-house inspection was made, investigation showed that the mode of dissemination was in all probability fly-convection.

The accompanying charts show the incidence of enteric fever in Auckland and suburbs in relation to meteorological conditions—(1) for eight years, and (2) each month of the year under review.

Scarlet Fever.

Cases notified in the health district during the last five years are :—

1904–5	273
1905–6	240
1906–7	268
1907–8	277
1908–9	142

As shown in a previous table, there is a very appreciable and satisfactory decrease in the case-rate throughout the health district. Auckland City, for example, has had but 35 cases, as against an average of 79 cases per annum during the preceding five years ; indeed, the case-rate last year in Auckland City is the lowest during any year since notifications have been recorded by the Department.

Diphtheria.

Notifications recorded for the health district during the last five years are :—

1904–5	63
1905–6	97
1906–7	103
1907–8	165
1908–9	101

The case-rate may be regarded as having returned to the normal, the reduction from the heavy record of the previous year having been experienced generally throughout the city, boroughs, and the road and country districts, Waipa and Whangarei Counties being the only districts where an undue number of cases occurred.

Tuberculosis.

The cases notified during the last five years are :—

1904–5	86
1905–6	86
1906–7	96
1907–8	198
1908–9	176

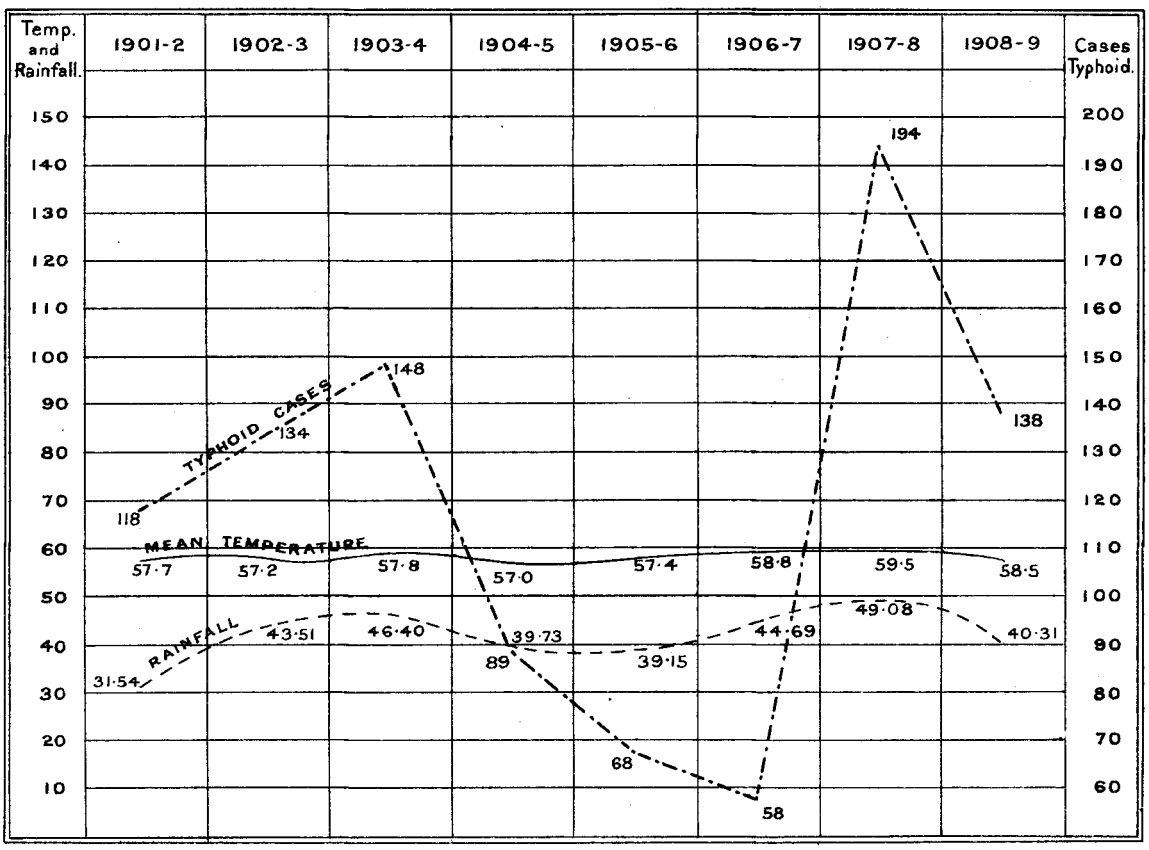
The greater number of cases notified during the last two years are, no doubt, to be accounted for by the necessity to notify this disease being more fully recognised, and not to any real increase in the case-rate. This view is borne out by the fact that in Auckland and suburban boroughs (in spite of appreciably increased population) the actual deaths from the disease have not increased in the last five years, and that the deaths from phthisis have been reduced throughout the Dominion from 8·11 per 10,000 of the population in 1898 to 6·66 per 10,000 in 1907.

ENTERIC FEVER AND METEOROLOGICAL CHARTS.

Auckland and Suburbs.

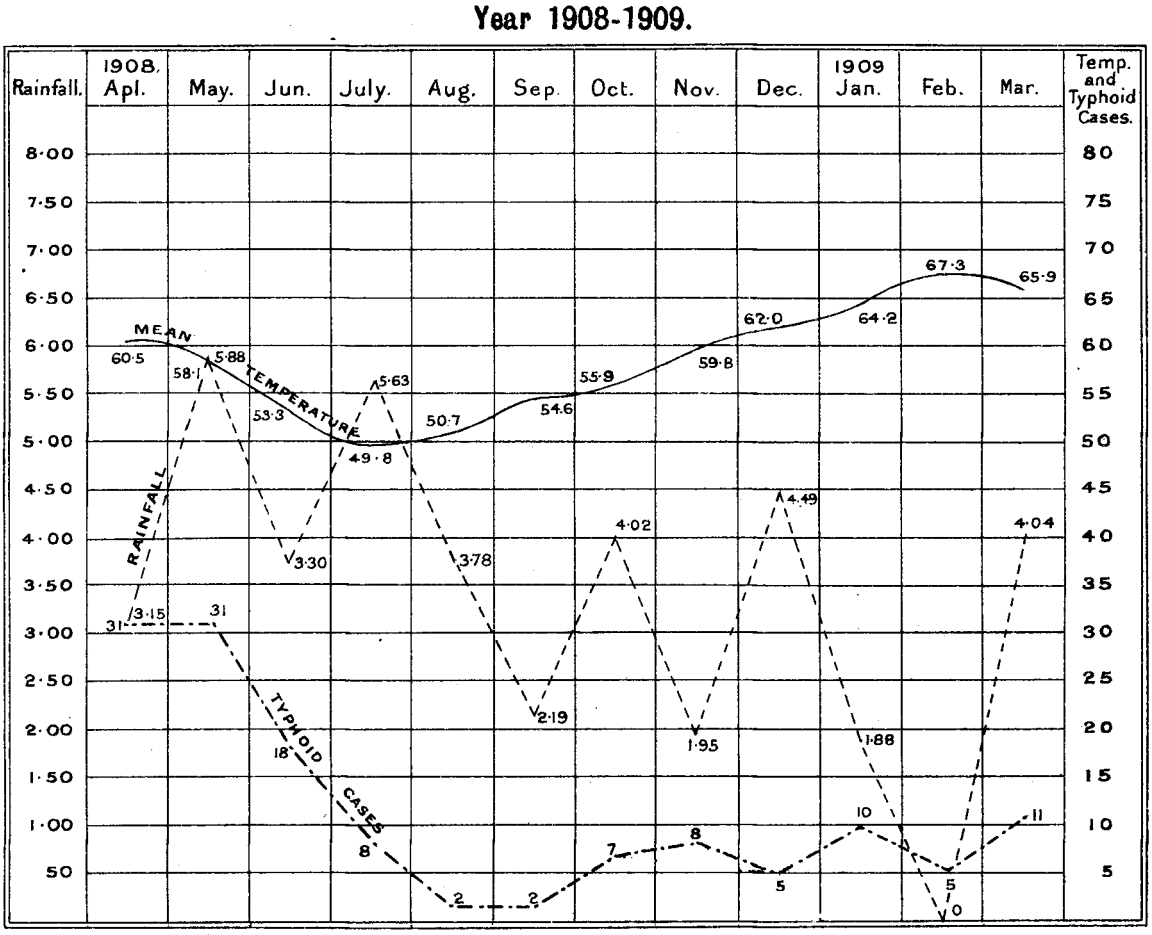
1.

Period of Eight Years, 1901 to 1909.



2.

Year 1908-1909.



1850—9/09—629.

Blood-poisoning.

Cases notified during the past five years are :—

1904–5	16
1905–6	21
1906–7	19
1907–8	76
1908–9	77

Only in the diseases which are classified as blood-poisoning is an increase of cases of diseases such as are dealt with under the Public Health Act recorded in the Auckland District. In the Auckland report for 1904–5 it was observed, " By reason of the uncertainty as to what should be so notified under this heading, the figures obtained are of no statistical value." The increase in the returns for the last two years are no doubt to be largely accounted for by more complete notification, and now therefore may be regarded as one of some statistical value. This is noticeable in connection with the operation of the Midwives Act in regard to the various forms of puerperal septicæmia, of which cases notified have increased from 3 in 1905–6, 3 in 1906–7, to 23 in 1907–8, and to 29 in 1908–9, the increase being the result of more perfect notification.

Of the 77 cases recorded, 29 are puerperal septicæmia, 33 are erysipelas, 3 tetanus, and 12 various forms, or unclassified.

The number of cases of puerperal septicæmia is still, unfortunately, high in this district. They are distributed as follows: 10 in the city, 15 in the suburbs, and 4 in the country. From the 1st January to the 31st December, 1908, there were 7 deaths from this cause in Auckland and suburban boroughs.

In accordance with the procedure laid down under the Midwives Act, there were 13 cases in which 8 midwives were suspended from practice for a month, and 5 unregistered women in attendance warned not to practise.

I have reason to believe that cases of tetanus have occurred which have escaped notification, pointing to the desirability of tetanus being specifically noted as a notifiable disease.

Anthrax.

One case suspicious of anthrax was reported from the Warkworth district, where a man who had been handling a cow which died after a short illness had what clinically appeared to be a malignant pustule. The treatment with strong antiseptics before a bacteriological examination was made probably gave rise to a negative result. The carcase of the cow had been burned immediately after death, thus not allowing an opportunity for examination by Mr. Sanderson, the Government Veterinarian, who visited the locality with me.

Leprosy.

A case of leprosy was reported from a Maori bush camp away back from Maramarua, which was found to be tuberculosis of the foot. The boy, who was in a very neglected condition, was admitted to the Waikato Hospital.

Occupational Diseases.

Information was collected as to the incidence of pneumonokoniosis in the mining districts. In New Zealand provision is made by section 255 of the Mining Regulations for the supply of water for jet purposes in developmental work, the latter having been shown by the Transvaal Commission and other investigations to be a fruitful source of raising dust.

Especially at Waihi do the figures available show that, as far as this district is concerned, the miner are not affected to the same extent as on the Witwatersrand.

Thus, Mr. Mann, Registrar at Waihi, informs me that during the past ten years there have only been 30 deaths from respiratory diseases among miners in Waihi district. There are altogether 1,600 men engaged there in mining, 700 of whom are underground workers. That makes a yearly average of 1·87 per 1,000, contrasted with 1·6 per 1,000 for the four centres, including deaths from all ages above five years from respiratory diseases. Thus the Waihi figures confirm the general opinion prevailing there that miners' phthisis is not common in that town, as the conditions encourage wet mining. However, respiratory diseases are still a noticeable factor in the sickness-rate. Dr. Robertson, Superintendent of the Waihi Hospital, has supplied me with the following from the Hospital register :—

Respiratory Diseases in Waihi Hospital from 1904–8.

Age.	Phthisis.	Pneumonia.	Bronchitis.	Pleurisy.	Asthma.
	Males.				
1–10	..	10	1	..	..
11–20	1	4	..	1	..
21–30	2	13	2	1	..
31–40	3	9	2	3	..
41–50	3	3	5	4	3
51–60	..	4	4	..	1
61–70	1	..	10	1	..
71–80	..	1	2	..	..
Total	10	44	26	10	4
Miners in these totals	5	20	7	2	3

Respiratory Diseases in Waihi Hospital from 1904–8—continued.

Age.	Phthisis.	Pneumonia.	Bronchitis.	Pleurisy.	Asthma.
Females.					
1–10	3	6	2	..	..
11–20	2	2	1	..	..
21–30	3	3	1	3	..
31–40	2	3	..	..	..
41–50	..	1	..	..	..
51–60	..	..	..	..	..
61–70	..	..	1	..	..
70–80	..	..	1	..	..
Totals	10	15	6	3	..

At the ages from 21 to 60 it is noticeable that 60 men were affected with respiratory diseases as contrasted with 16 women during the same period.

Hawke's Bay District.

The following infectious diseases have been notified during the past year :—

Enteric.—Gisborne, 41 cases ; Napier, 11 ; Hastings, 4 ; Wairoa, 5 ; remainder of the district, 42 : total, 103.

Erysipelas and Blood-poisoning.—Gisborne, 4 cases ; Hastings, 8 ; Dannevirke, 2 ; Wairoa, 3 ; Napier, 2 ; Woodville, 1 ; remainder of the district, 8 : total, 28.

Scarlatina. — Woodville, 5 cases ; Napier, 34 ; Taradale, 8 ; Gisborne, 16 ; Waipawa, 4 ; Meeanee, 6 ; Ormondville, 23 ; Hastings, 10 ; Waipukurau, 9 ; Dannevirke, 58 ; Makotoku, 3 ; Clive, 1 ; Matamau, 5 ; Norsewood, 10 ; remainder of the district, 16 : total, 208.

Consumption and Tuberculosis.—Gisborne, 3 cases ; Nuhaka, 5 (all Maoris) ; Wairoa, 23 (mostly Maoris) ; Napier, 2 ; Hastings, 2 ; Dannevirke, 1 ; Mohaka, 2 (both Maoris) ; Ormondville, 1 ; Norsewood ; 1 ; Woodville, 1 ; remainder of the district, 4 : total, 45.

Diphtheria.—Gisborne, 19 cases ; Dannevirke, 5 ; Napier, 10 ; Hastings, 8 ; Woodville, 2 ; Makotuku, 2 ; Waipawa, 4 ; Taradale, 3 ; Norsewood, 3 ; Tolaga Bay, 1 ; Clive, 1 ; Frasertown, 1 ; remainder of the district, 8 : total, 67.

The following is a comparison of the number of enteric and diphtheria cases notified in the principal parts of the district during this and previous years :—

Year.	Napier.	Hastings.	Dannevirke.	Wairoa.	Woodville.	Gisborne.	Remainder of District.	Total.
Enteric.								
1903	35	3	3	5	..	26	10	82
1904	19	7	1	13	..	6	11	57
1905	6	2	5	*	2	12	16	43
1906	12	3	1	5	1	14	19	55
1907	3	5	1	9	..	10	23	51
1908	5	5	1	4	..	19	21	55
1909	11	4	..	5	..	41	42	103
Diphtheria.								
1903	5	4	1	..	..	3	22	34
1904	5	7	1	..	6	6	4	29
1905	7	19	2	..	4	9	3	44
1906	15	8	1	..	..	7	13	44
1907	5	14	..	3	..	15	6	43
1908	4	5	1	..	1	9	16	36
1909 .. .	10	8	5	..	2	19	23	67

* Not mentioned.

Analysis of the Above.

It will be observed that there has been a large increase in the number of cases of enteric this year over previous ones, and for this Gisborne and its surroundings are chiefly responsible. The 42 cases notified as having occurred in the remainder of the district, the majority are residents in Cook and Waiapu Counties. The other principal centres just keep to their average number of cases, though the population has augmented ; and Dannevirke, which has had one in each of the three previous years, has had none this, and may boast of its splendid isolation.

More cases of diphtheria have occurred in the district during the past year than in any previous one, and the increase is proportional as well as actual, for, though the population of the district is increasing fast, it is not sufficient to account for the extra cases. It is difficult to account for the 5 cases

in Dannevirke, which has previously been, comparatively, so free from the complaint. The quality of the water-supply is excellent, and the drainage is good.

Gisborne, which has a water-supply but no drainage and many sanitary shortcomings, is to the fore in diphtheria as well as enteric.

The number of cases of scarlatina notified has been larger than last year, but most of the cases have been of an excessively mild type, as evidenced by the few deaths. The mild cases are the chief factors in the spread of this affection, as they are seldom notified, and it is impossible to get control of them.

The number of cases of tuberculosis notified—45—is 7 less than last year. Again we have the same evidence as in former years of the spread of tuberculosis amongst the Native race. Out of 45 notifications I have received this year, 30—two-thirds—of the cases have occurred amongst the Maoris. Unless the Natives will bestir themselves, and determine to live such lives as will bid defiance to King Tubercle, it may be safely asserted that the end is not far off.

Number of Deaths from all Causes in this District during this and Previous Years.

Year.	Napier.	Hastings.	Dannevirke.	Woodville.	Wairoa.	Gisborne.	Remainder of District.	Total.
1903	153	56	31	17	9	96	90	452
1904	159	56	38	23	*	91	67	414
1905	140	61	31	15	*	115	70	452
1906	150	57	41	15	16	106	84	469
1907	145	55	63	11	16	109	54	463
1908	184	51	53	16	28	106	47	535
1909	198	70	67	18	9	144	56	562

* Not mentioned.

Deaths from the More Important Diseases during this and Previous Years.

Year.	Enteric.	Diphtheria.	Cancer.	Tuberculosis.	Scarlatina.	Erysipelas and Blood-poisoning.	Hydatids.	Total.
1903	5	..	17	33	*	6	*	61
1904	4	2	31	41	*	5	*	83
1905	2	..	26	56	*	3	*	87
1906	5	2	22	32	*	5	*	66
1907	3	5	45	52	3	4	*	112
1908	4	4	32	59	3	6	*	108
1909	5	2	23	31	8	10	4	73

* Not mentioned.

Of the 5 deaths from enteric, 2 occurred in Napier, 2 in Gisborne, and 1 in Wairoa.
Both deaths from diphtheria occurred in Napier.
Four out of the 8 deaths from scarlatina occured in Ormondville.
Hastings accounts for 4 deaths out of 10 from septicæmia, all of them being *post-partum* cases.

Wellington District.

Notification of Infectious Disease.

The following table shows the number of infectious cases notified throughout the district:—

——	Scarlet Fever.	Enteric Fever.	Diphtheria.	Tuberculosis.	Blood-poisoning.	Hydatids.	Totals.
Boroughs,—							
Carterton	8	..	..	..	..	..	8
Eastbourne	1	1	2	..	..	..	4
Eketahuna	1	..	..	1	..	..	2
Eltham	..	..	..	3	..	..	3
Feilding	5	1	..	3	1	..	10
Foxton	1	1	..	1	..	..	3
Hawera	2	3	1	..	2	..	8
Hutt	5	..	4	2	..	..	11
Inglewood	5	..	2	..	1	..	8
Karori	19	..	3	2	..	..	24
Levin	1	2	1	..	..	..	4
Marton	6	..	..	1	..	..	7

——	Scarlet Fever.	Enteric Fever.	Diphtheria.	Tuberculosis.	Blood-poisoning.	Hydatids.	Totals.
Boroughs—*continued.*							
Masterton	20	6	1	1	2	..	30
Miramar	10	..	3	1	..	..	14
New Plymouth	7	4	7	2	..	1	21
Onslow	10	..	2	1	..	..	13
Pahiatua	4	..	..	4	1	..	9
Palmerston North	15	5	1	13	8	1	43
Patea	2	1	1	3	1	1	9
Petone	3	..	12	4	..	..	19
Stratford	5	1	1	..	2	..	9
Taihape	7	1	..	1	..	..	9
Waitara	..	1	..	..	..	..	1
Wanganui	17	13	9	12	4	1	56
Wellington	354	34	84	87	9	..	568
Totals	508	74	134	142	31	4	893
Last year's figures	809	65	224	120	29	4	1,252
Town districts,—							
Bull's	..	..	11	2	..	..	13
Featherston	2	..	1	1	..	..	4
Fitzroy	..	1	..	1	..	..	2
Gonville	..	..	..	1	..	..	1
Johnsonville	2	..	..	..	..	..	2
Kaponga	1	1	..	..	..	..	2
Martinborough	..	5	1	1	1	..	8
Normanby	..	1	..	..	..	..	1
Rongotea	1	..	..	..	..	..	1
Upper Hutt	6	..	..	..	..	..	6
Totals	12	8	13	6	1	..	40
Last year's figures	28	5	8	6	2	..	49
Counties,—							
Akitio	1	..	..	..	..	..	1
Castlepoint	1	..	..	..	..	..	1
Clifton	1	..	..	2	1	..	4
Eketahuna	10	..	..	..	1	..	11
Featherston	10	1	..	2	1	..	14
Hawera	..	4	..	4	..	..	8
Horowhenua	5	3	7	2	1	..	18
Hutt	5	..	11	9	2	..	27
Kairanga	6	1	1	2	..	..	10
Kiwitea	11	1	3	1	..	..	16
Makara	..	..	2	..	..	..	2
Manawatu	18	..	..	4	..	..	22
Masterton	6	1	..	3	1	1	12
Mauriceville	5	..	..	..	1	..	6
Ohura	2	..	..	..	..	..	2
Oroua	2	1	4	2	1	..	10
Pahiatua	12	..	1	2	1	..	16
Patea	1	2	..	3	2	..	8
Pohangina	17	..	..	1	..	..	18
Rangitikei	25	2	4	5	..	..	36
Stratford	3	..	..	1	1	..	5
Taranaki	15	..	9	3	..	..	27
Waimarino	5	1	..	..	..	..	6
Waimate West	2	1	..	..	..	..	3
Wairarapa South	15	1	1	..	..	..	17
Waitotara	14	5	1	5	..	..	25
Wanganui	8	13	1	6	1	..	29
Whangamomona	2	..	..	1	..	..	3
Totals	202	37	45	58	14	1	357
Last year's figures	122	32	64	45	8	1	273

—	Scarlet Fever.	Enteric Fever.	Diph-theria.	Tuber-culosis.	Blood-poisoning.	Hydatids.	Totals.
Summary.							
Boroughs	508	74	134	142	31	4	893
Town districts	12	8	13	6	1	..	40
Counties..	202	37	45	58	14	1	357
Total, 1908	722	119	192	206	46	5	1,290
Total, 1907	959	102	296	171	39	5	1,574

It will be noted that there is a marked fall in the total number of notifiable-disease cases during the year. The numbers are, however, still much in excess of those for the year 1906.

Fewer scarlet-fever cases are mainly responsible for the decrease. Enteric fever has shown a tendency to recrudescence in Wellington and Wanganui. The epidemic at Martinborough came to an end with 5 cases at the beginning of the year—a total of 10.

The diphtheria figures are generally lower, Bull's being the only place where an epidemic manifested itself.

Tuberculosis: I do not attach much importance to the seeming increase in the number of cases of tuberculosis, in all cases affection of the lungs being reported. I am more inclined to attribute the increase to the more complete compliance of the medical attendants with the now used notification of this disease.

Much the same remark may be made in regard to the figures for blood-poisoning. The Midwives Act has brought into prominence the need for the notification of infective puerperal conditions.

Canterbury District.

In Table No. 1 every case notified in every house has been counted; in the other tables only one case has been counted to each house when two or more have been notified from the same house.

Table No. 1.—Infectious Disease.

—	Population.	Enteric Fever.	Scarlet Fever.	Diphtheria.	Tuberculosis.	Erysipelas.	Septicæmia.	Hydatids.
Akaroa County	3,712	...	...	...	...	3	...	...
Little River	...	...	...	1	...	...	...	...
Ashburton County	16,188	...	...	...	1	...	1	1
Ashburton	...	3	12	2	8	...	...	2
Rakaia	...	...	1	...	1	1	1	...
Methven and district	...	2	7	1	1	...	...	...
Tinwald	...	...	1	2	1	...	...	...
Ashley County	15,251	...	...	3	...	3	...	...
Amberley	...	...	1	1	...	...	...	...
Rangiora	...	...	...	4	...	1	...	...
Kaiapoi	...	...	...	2	2	3	1	...
Flaxton	...	...	1	..	...	...	...	...
Ohoka	...	...	2	...	...	...	...	...
Sefton	...	...	...	2	...	...	...	...
Oxford	...	...	...	1	...	...	1	...
Fernside	...	...	...	2	...	...	...	...
Waikari	...	...	...	1	...	...	...	...
Cheviot County	1,605	1	...	...	1	...	...	...
Geraldine County	7,712	...	5	...	...	...	...	...
Geraldine	...	1	2	1	..	1	...	1
Temuka	...	3	6	5	1	1	...	...
Winchester	...	...	...	1	1	...	...	...
Orari	...	...	5	3	..	...	...	...
Kaikoura County	1,747	...	...	...	...	...	...	...
Kaikoura	...	1	1	...	...	...	...	1
Levels County	14,284	1	8	2	...	4	...	...
Timaru	...	3	66	10	...	12	...	...
Mackenzie County	1,939	...	...	...	...	...	...	...
Fairlie	...	...	...	...	2	1	...	...
Selwyn County	96,626	...	6	...	2	4	...	1
Christchurch	...	14	37	34	39	16	5	2
Woolston	...	..	...	...	1	1	...	...
Heathcote	...	...	...	2	3	...	1	...
Riccarton	...	1	5	3	3	1	...	1
Spreydon	...	...	1	1	...	...	...	2
Lyttelton	...	1	3	6	13	3	...	1

Table No. 1.—Infectious Disease—continued.

—	Population.	Enteric Fever.	Scarlet Fever.	Diphtheria.	Tuberculosis.	Erysipelas.	Septicæmia.	Hydatids.
Selwyn County—*continued.*								
Sumner	...	3	2	2	...	...	...	...
Lincoln	...	...	1	...	..	...	...	..
Templeton	...	2	...	1	...	...	...	...
Belfast	...	...	1	...	1	...	1	...
Leeston	...	...	...	1	...	...	...	...
Doyleston	...	...	1	...	...	...	..	...
Lake Coleridge	...	1	...	...	...	...	...	...
Waimate County...	8,310	1	64	...	...	...	...	1
Waimate	...	6	79	1	2	1	...	...
Studholme Junction	...	...	14	...	...	...	...	...
St. Andrews	...	1	9	...	...	1	...	...
Waitaki County	10,773	...	24	1	1	2	...	...
Oamaru	...	1	6	1	1	...	...	...
Hampden	...	...	1	..	...	...	...	...
Herbert	...	1	4	...	1	...	...	...
Glenavy	...	...	6	...	...	...	...	...
Hakataramea	...	...	4	2	...	1	...	...
Maheno	...	4	...	...	...	...	...	...
Totals	...	51	386	99	86	60	11	13
Totals in Christchurch and district	...	15	43	40	46	18	6	5
Mean of Last Five Years.								
Totals	...	46	228	80	105	26	11	...
Totals in Christchurch and district	...	13	59	31	49	10	3	...

Table No. 2.—Scarlet Fever.

—	Apl.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Totals.
Christchurch	6	6	3	3	4	1	1	1	2	3	...	...	30
Riccarton	1	1	...	...	...	...	1	...	...	...	1	...	4
Spreydon	...	...	...	...	...	...	...	1	...	...	...	...	1
Lyttelton	...	...	...	...	2	1	...	...	...	...	2	...	5
Redcliffs	...	...	...	1	...	...	...	...	...	...	...	1	2
Lincoln	...	...	...	...	...	1	...	...	...	...	...	...	1
Selwyn County	...	...	...	2	...	1	...	..	...	...	...	2	5
Kaikoura	...	1	...	...	...	...	...	...	...	...	...	...	1
Amberley	...	...	...	...	...	...	...	...	...	1	...	...	1
Ashley County	...	...	...	1	...	...	...	...	...	1	...	...	2
Methven	...	...	1	2	1	2	...	...	...	...	...	1	7
Rakaia	...	...	...	...	...	1	...	...	...	...	...	...	1
Ashburton...	2	3	...	1	...	...	2	...	1	3	1	...	13
Tinwald	...	...	...	...	...	...	...	...	...	...	...	1	1
Peel Forest	...	...	...	...	1	...	...	...	...	...	...	...	1
Geraldine	1	1	...	...	...	...	...	...	...	...	1	...	3
Orari	...	...	1	1	1	...	...	...	...	...	...	...	3
Temuka	2	...	2	...	...	1	1	1	...	1	...	...	8
Pleasant Point	...	...	...	...	...	...	...	1	...	...	...	...	1
Levels County	...	...	1	2	...	2	...	...	...	...	...	...	5
Timaru	2	3	5	6	9	11	8	5	...	1	3	1	54
Waimate County	4	4	12	8	7	1	1	1	...	...	...	...	38
Waimate Borough	8	14	10	8	4	4	2	...	1	1	...	...	52
St. Andrews	...	1	2	...	...	2	1	1	...	1	...	...	8
Studholme Junction... ...	3	...	1	1	1	...	...	...	...	...	...	...	6
Waitaki County	...	4	...	...	1	1	1	1	...	2	1	...	11
Oamaru	...	...	2	...	1	2	...	1	...	...	1	...	7
Hampden	...	...	...	...	...	...	...	...	...	1	...	...	1
Herbert	...	...	1	1	...	...	...	...	...	...	...	...	2
Glenavy	1	...	2	...	2	1	...	...	...	...	...	...	6
Hakataramea	...	1	...	1	...	1	1	...	...	...	...	...	4
Totals	30	39	43	38	34	33	19	13	4	15	8	6	282
Totals in Christchurch and district	7	7	3	3	4	1	2	2	2	3	1	..	35

There were 386 cases in 282 houses, as compared with 205 cases in 108 houses in 1907. In Christchurch and district there were 43 cases in 35 houses, as compared with 57 cases in 51 houses in 1907. For the increase in the total number the South Canterbury District is chiefly responsible, as was the case last year. In Waimate and district cases were continually cropping up during the last year, and in the autumn and winter a fairly widespread epidemic occurred. The accommodation at the infectious-disease annexe at the Waimate Hospital was strained to the utmost, and accommodation for fresh cases where isolation was necessary could only be provided by sending convalescent cases from time to time to the Talbot Hospital in Timaru. There were also at the same time a fair number of cases in Timaru, but, owing possibly to the majority of cases being taken to the Talbot Hospital, no large epidemic occurred.

Age and Sex Distribution.

In 197 cases in the district in which the age was known the following is the age and sex distribution :—

Under 5 Years.		5–10.		10–15.		15–20.		20–30.		30–40.		Over 40.	
M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
21	22	21	32	20	32	4	13	10	11	2	5	1	3

In 372 cases out of 386 notifications, 150 were males and 222 females.

Table No. 3.—Enteric Fever.

——	Apl.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Totals.
Christchurch	2	1	1	...	...	4	...	1	2	1	1	1	14
Riccarton	...	...	...	...	...	...	...	...	1	..	...	...	1
Sumner	...	...	1	...	...	...	...	...	1	...	1	...	3
Lyttelton	...	...	...	...	1	...	...	...	...	...	...	...	1
Templeton	...	...	...	...	...	...	...	...	...	2	...	...	2
Lyndhurst	...	...	...	...	...	...	...	...	...	2	...	...	2
Kaikoura	1	...	...	...	...	...	...	...	...	...	...	..	1
Cheviot	...	...	...	...	...	...	...	...	1	...	...	...	1
Lake Coleridge	..	...	...	...	...	...	...	...	...	...	1	...	1
Ashburton	1	...	...	...	...	...	...	..	1	...	...	1	3
Temuka	...	...	1	...	...	...	...	...	...	...	2	...	3
Timaru	...	...	...	1	...	1	1	...	...	1	...	...	4
St. Andrews	...	...	1	...	...	...	...	...	...	...	...	...	1
Waimate County	...	...	...	...	...	...	...	1	..	...	...	...	1
Waimate Borough	...	...	1	...	...	...	2	1	2	...	...	...	6
Herbert	..	...	...	...	...	...	...	1	...	...	..	...	1
Oamaru	1	..	...	...	...	...	...	...	...	...	...	...	1
Maheno	...	...	...	...	1	...	1	...	2	...	...	...	4
Totals	5	1	5	1	2	5	4	4	10	6	5	2	50
Totals in Christchurch and district	2	1	1	...	...	4	...	1	3	1	1	1	15

The number of cases, 50, is less than last year, in which there were 79 cases, though greater than the two previous years, in which there were only 32 and 31 cases respectively.

Table No. 4.—Diphtheria.

——	Apl.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Totals.
Christchurch	1	4	1	3	2	5	3	2	2	2	1	6	32
Riccarton	2	...	...	...	...	...	1	...	...	...	...	...	3
Spreydon	1	...	...	...	...	...	...	...	...	...	...	...	1
Heathcote	...	1	...	...	1	...	...	...	...	...	...	...	2
Sumner	...	...	1	...	...	...	...	...	...	...	1	...	2
Lyttelton	1	...	...	2	...	...	1	1	1	...	...	...	6
Ashley County	...	2	1	1	...	1	1	1	...	...	...	...	7
Amberley	1	...	...	...	...	...	...	...	...	...	...	...	1

Table No. 4—Diphtheria—continued.

——	Apl.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Totals.
Rangiora	3	1	...	...	...	...	...	...	...	...	...	...	4
Oxford	...	1	...	...	...	...	...	...	...	...	...	...	1
Kaiapoi	1	...	...	...	...	1	...	...	...	...	...	...	2
Templeton	..	1	...	...	...	...	...	...	...	...	...	...	1
Leeston	...	...	...	...	1	...	...	...	...	...	...	...	1
Little River	...	...	...	...	...	...	...	...	...	...	...	1	1
Methven	...	...	...	...	1	...	...	...	...	...	...	...	1
Ashburton	1	1	...	...	...	...	...	...	...	...	...	...	2
Tinwald	...	...	...	...	...	...	...	...	...	1	1	...	2
Winchester	...	...	...	...	...	1	...	...	...	...	...	...	1
Geraldine	...	...	...	...	...	...	...	...	1	...	...	...	1
Orari	...	1	...	...	...	...	1	...	...	...	1	...	3
Temuka	1	2	...	...	...	...	...	...	...	1	1	...	5
Levels County	...	...	1	...	...	...	...	1	...	...	...	...	2
Timaru	...	1	4	1	1	2	...	1	...	...	...	..	10
Waimate	...	...	...	...	...	1	...	...	...	...	...	...	1
Otaio	...	1	...	...	...	...	...	...	...	...	...	...	1
Oamaru	...	...	...	...	...	1	...	...	...	...	...	...	1
Hakataramea	...	...	1	...	...	...	...	...	...	...	...	..	1
Viewfield	...	...	...	1	...	...	...	...	...	...	...	...	1
Totals	12	16	9	8	16	12	7	6	4	4	5	7	96
Totals in Christchurch and district	4	5	1	3	3	5	4	2	2	2	1	6	38

The total, 96 cases, is about the same as last year, in which there were 95 cases. It is probable that a large number of the cases notified are not true cases of diphtheria: the medical practitioners often notify cases, quite rightly, which they suspect may be diphtheria, but which would probably turn out not to be diphtheria in a large number of cases, if a bacteriological examination was always made.

Epidemics in Schools.

Two applications were received from the Otago Education Board for the certificate of the District Health Officer that 10 per cent. of the children were affected by an infectious disease, and both applications were granted.

Mortality.

The following notifications were received at this office: Enteric fever, 8—Christchurch, 1; Ashburton, 3; Cheviot, 1; Timaru, 3. Diphtheria, 3—Christchurch, 2; Timaru, 1. Scarlet fever, 12—Christchurch, 1; Timaru, 4; Waimate, 5; Oamaru, 2. Measles, 3—Christchurch, 1; Oamaru, 1 Timaru, 1. Tuberculosis, 148—Christchurch, 77.

Leprosy.

In September a third case of leprosy was sent to Quail Island. The patient was a Maori, a male adult from the North Island. A third cottage was erected for his accommodation, at a cost of about £100, in the neighbourhood of the other buildings in which the other two lepers had been accommodated. In September the other Maori who had been sent to Quail Island last year was released.

Tuberculosis.

Eighty-six notifications of tuberculosis were received during the year, as compared with 83 last year. 148 notifications of death were received from the Registrars in the district, as compared with 105 last year. Of these, 77 deaths occurred in Christchurch and district, as compared with 52 deaths in 1907, and 28 in 1906. I do not think much importance can be attached to the increased number of deaths in Christchurch, as it is probably only a coincidence, and the average of the number of years will probably remain the same. According to the returns of the Registrar-General, there were 179 deaths from tuberculosis in the Canterbury Provincial District for the year ending 1907. As this does not include the Counties of Amuri, Cheviot, Kaikoura, and Waitaki, the inclusion of which would probably bring the number up to about 200, it seems certain that some of the Registrars are not carrying out their duties in notifying the Health Department of deaths from tuberculosis.

OTAGO AND SOUTHLAND DISTRICTS.

The following table shows the evidence of infectious disease in the principal boroughs and counties:—

Table No. I.—Return showing Number of Notified Cases of Infectious Diseases from 1st April, 1908, to 31st March, 1909.

Disease.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Total.
Dunedin.													
Scarlet fever	3	6	8	7	11	8	11	7	10	3	4	3	81
Tuberculosis	7	3	2	1	5	1	2	..	5	1	..	..	27
Enteric fever	..	..	..	..	..	2	..	..	..	1	..	2	5
Diphtheria	3	3	2	1	1	1	1	..	..	..	..	..	12
Blood-poisoning	2	1	8	1	1	..	..	..	2	..	..	..	15
Hydatids	..	..	..	..	1	..	..	..	..	..	1	..	2
South Dunedin.													
Scarlet fever	..	1	4	2	4	5	3	2	2	2	..	..	25
Tuberculosis	1	..	1	2	1	..	2	3	..	..	..	1	11
Enteric fever	..	..	..	..	..	..	..	..	1	..	..	..	1
Diphtheria	2	..	3	..	1	..	2	..	..	..	..	..	8
Blood-poisoning	..	..	..	1	1	..	..	..	..	..	..	..	2
Hydatids	..	..	..	..	..	..	..	..	..	..	..	..	..
Caversham.													
Scarlet fever	..	2	..	..	..	1	4	3	4	..	2	2	18
Tuberculosis	1	1	..	..	1	..	1	..	2	1	..	..	7
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	1	1	1	..	1	..	..	1	1	6
Blood-poisoning	..	..	..	..	1	..	..	..	..	..	..	..	1
Hydatids	..	..	..	..	..	..	..	..	..	..	1	..	1
Mornington.													
Scarlet fever	..	..	..	..	..	1	1	1	1	2	2	..	8
Tuberculosis	..	2	..	..	..	1	..	..	2	..	..	..	5
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	2	..	..	..	..	2	..	4
Blood-poisoning	1	..	2	1	..	..	..	..	..	..	..	..	4
Hydatids	..	..	..	..	1	..	..	..	..	..	..	..	1
Roslyn.													
Scarlet fever	3	1	1	..	2	1	1	2	..	..	..	..	11
Tuberculosis	..	..	..	..	..	1	..	..	..	..	..	..	1
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	1	1	..	..	..	2
Blood-poisoning	..	..	..	..	..	..	..	..	1	..	..	..	1
Hydatids	..	..	..	..	..	..	..	..	..	..	..	..	..
St. Kilda.													
Scarlet fever	..	2	2	..	2	1	..	..	..	..	..	..	7
Tuberculosis	..	..	..	..	1	..	..	1	..	1	1	..	4
Enteric fever	..	..	..	..	..	..	..	1	..	..	..	1	2
Diphtheria	..	..	..	..	1	1	..	..	..	..	..	..	2
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
Hydatids	..	..	..	..	..	..	..	..	..	..	..	..	..
North-east Valley.													
Scarlet fever	1	2	..	3	2	12	17	11	5	1	1	2	57
Tuberculosis	1	..	..	..	..	1	1	..	..	..	..	1	4
Enteric fever	1	..	..	..	..	..	..	..	..	..	..	..	1
Diphtheria	..	..	1	..	1	..	..	1	1	..	1	..	5
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	1	1
Hydatids	..	..	..	..	..	..	..	..	..	..	..	..	..
Maori Hill.													
Scarlet fever	..	..	2	2	1	..	2	..	3	2	..	1	13
Tuberculosis	..	..	..	..	..	1	1	..	..	..	..	..	2
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	1	1	..	..	..	..	..	..	..	2
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
Hydatids	..	..	..	..	..	..	..	..	..	..	..	..	..
West Harbour.													
Scarlet fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Tuberculosis	..	..	..	..	..	..	..	..	..	..	..	..	..
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	1	1
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
Hydatids	..	..	..	..	..	..	..	..	..	..	..	..	..
Port Chalmers.													
Scarlet fever	..	..	1	1	..	1	..	..	..	..	1	..	4
Tuberculosis	..	..	..	..	..	..	..	..	..	..	..	..	..
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	1	1	1	1	..	..	..	..	4
Blood-poisoning	1	..	..	..	..	1	..	..	..	..	..	..	2
Hydatids	..	..	..	..	..	..	..	..	..	..	..	..	..
Invercargill.													
Scarlet fever	6	21	16	11	25	24	16	21	15	21	7	10	193
Tuberculosis	1	1	..	..	..	..	1	1	..	..	1	..	5
Enteric fever	..	..	..	..	..	1	..	..	..	..	1	..	2
Diphtheria	..	..	..	1	..	1	..	..	..	..	1	1	4
Blood-poisoning	..	3	1	..	1	1	..	..	..	..	..	..	6
Hydatids	..	..	..	..	..	..	..	..	..	..	..	..	..
Taieri County.													
Scarlet fever	1	2	..	..	3	..	1	..	..	1	..	1	9
Tuberculosis	5	1	3	4	4	3	6	4	3	9	1	4	47
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	1	..	..	..	..	..	..	1	..	2
Blood-poisoning	..	..	1	1	1	..	..	..	..	1	..	..	4
Hydatids	..	..	1	..	..	..	..	..	..	..	1	..	2
Tuapeka County.													
Scarlet fever	2	1	6	..	..	2	..	..	1	..	..	8	20
Tuberculosis	..	..	1	..	..	1	..	..	..	..	1	..	3
Enteric fever	..	..	..	..	..	1	..	..	..	..	..	..	1
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
Hydatids	..	..	..	..	1	..	..	..	..	..	..	..	1
Bruce County.													
Scarlet fever	..	..	..	1	..	1	..	..	1	1	1	3	8
Tuberculosis	1	..	..	1	..	..	..	2	..	1	1	1	7
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	1	1
Diphtheria	..	..	..	..	..	..	..	1	..	..	1	2	4
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
Hydatids	..	..	..	..	..	..	..	..	..	..	..	..	..
Lake County.													
Scarlet fever	5	6	2	2	..	..	1	..	..	2	..	..	18
Tuberculosis	..	..	..	..	..	..	..	..	..	..	..	..	..
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
Hydatids	..	..	..	..	..	..	..	..	..	..	..	..	..
Peninsula County.													
Scarlet fever	..	..	..	..	1	1	1	..	..	..	..	..	3
Tuberculosis	..	2	..	..	..	1	..	..	..	..	..	..	3
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
Hydatids	..	..	..	..	..	..	..	..	..	..	..	..	..
Maniototo County.													
Scarlet fever	1	..	..	..	..	..	..	..	..	1	2	1	5
Tuberculosis	..	..	..	..	..	2	..	..	..	..	..	..	2
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	1	1
Hydatids	..	..	..	..	..	..	..	..	..	..	..	..	..
Wallace County.													
Scarlet fever	..	1	4	6	5	..	..	1	2	5	1	..	25
Tuberculosis	..	..	..	..	1	1	3	..	..	..	..	..	5
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	1	1
Diphtheria	..	..	..	..	..	..	..	..	1	..	..	..	1
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
Hydatids	..	1	..	..	..	..	..	..	..	..	..	..	1
Waikouaiti County.													
Scarlet fever	..	..	..	..	..	1	1	..	..	1	..	..	3
Tuberculosis	1	..	..	..	1	1	..	..	..	..	2	..	5
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	2	..	..	..	1	..	..	..	..	..	..	3
Hydatids	..	..	..	..	..	..	..	..	..	..	..	..	..
Southland County.													
Scarlet fever	1	9	8	6	8	9	9	6	5	8	5	10	84
Tuberculosis	1	2	1	..	5	4	3	..	2	1	2	..	21
Enteric fever	1	..	..	1	1	..	1	..	..	..	..	..	4
Diphtheria	3	..	..	4	4	2	1	1	2	1	1	6	25
Blood-poisoning	1	..	1	..	2	..	..	..	..	..	..	..	4
Hydatids	1	..	..	..	..	..	..	..	..	..	..	..	1
Vincent County.													
Scarlet fever	5	5	1	..	..	..	..	..	..	1	..	..	12
Tuberculosis	..	..	..	..	..	1	..	..	..	..	1	..	2
Enteric fever	1	..	..	..	..	..	2	..	..	..	1	..	4
Diphtheria	..	..	1	..	..	..	..	..	..	..	..	1	2
Blood-poisoning	..	1	..	..	..	1	..	..	..	..	..	..	2
Hydatids	..	..	..	..	..	..	..	..	..	..	..	..	..
Waihemo County.													
Scarlet fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Tuberculosis	1	..	..	1	..	..	1	1	1	..	..	..	5
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	1	..	..	..	..	..	..	..	..	1
Hydatids	..	..	..	..	..	..	..	..	..	..	..	..	..
Clutha County.													
Scarlet fever	..	..	1	..	..	..	..	..	..	..	1	..	2
Tuberculosis	..	..	1	..	..	..	..	1	..	..	1	1	4
Enteric fever	..	..	..	..	..	..	..	..	1	1	1	..	3
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	1	..	..	..	..	..	..	1	2	
Hydatids	..	..	..	..	..	..	..	..	..	..	..	..	..

These may be summarised as follows :—

Scarlet fever	606
Enteric fever	25
Tuberculosis	170
Diphtheria	85
Blood-poisoning	48
Hydatids	9
Total	943

Marlborough District.

Seventy-one cases of infectious diseases were notified during the year, with a total of 5 deaths, as follows :—

	Cases Reported.	Deaths.
Scarlet fever	19	..
Enteric fever	2	1
Diphtheria	42	1
Tuberculosis	7	3
Hydatids	1	..
Total	71	5

Scarlet Fever.—Although 19 cases were reported, this disease never assumed an epidemic form. The individual cases were scattered and isolated.

Enteric or Typhoid Fever.—Improved sanitary conditions have been mainly responsible for reducing this disease to a minimum. Only 2 cases have been reported through the year. In past years typhoid raged like a scourge on more than one occasion in this province.

Diphtheria.—Forty-two cases of diphtheria were reported during the year, the disease assuming the nature of an epidemic, which, however, was fortunately of a very mild type, there being only 1 death. The first notifications of the disease were received from Blenheim, from which town a total of 16 cases have been reported. Other cases were reported from Onamalutu, 1; Tua Marina, 1; Seddon, 4; Rai Valley, 1; Havelock, 1; Renwick Town, 3. Finally, the disease spread to Picton, where 15 cases were reported, necessitating the closure of the schools for several weeks. In bygone years diphtheria raged in a most virulent form on several occasions in Marlborough, whole families being wiped out by it. The present epidemic has been of a much milder type, and its virulence has been lessened owing to the free use of antitoxin by the medical practitioners of the district.

Nelson District.

In this district notifications were received of the following infectious diseases :—

——	Scarlet Fever.	Enteric Fever.	Diphtheria.	Tubercle.
Nelson Borough	14	8	3	4
Waimea County	22	1	..	..
Collingwood	..	..	..	1
Fern Flat	..	..	..	1
Takaka	7	..	..	1
Riwaka	..	..	..	1
Motueka	..	..	..	2
Total	43	9	3	10

Westland District.

Infectious diseases were notified as follows :—

——	Boroughs.						Counties.			
	Greymouth.	Hokitika.	Westport.	Ross.	Kumara.	Brunnerton.	Buller.	Inangahua.	Grey.	Westland.
Scarlet fever	..	1	37	3	..	..	14	..	1	1
Enteric fever	..	1	..	..	..	1	..	..	2	7
Diphtheria	..	..	..	..	..	..	25	10	..	..
Phthisis	3	..	..	..	..	..	..	..	..	..
Pulmonary tubercule ..	..	..	..	..	..	..	..	14	..	..
Hydatids	..	..	2	..	..	..	..	..	..	..
Pyæmia	..	..	..	1	..	..	..	..	..	..

Diphtheria.—An epidemic occurred at Charleston, beginning in November. Twenty-four cases in all were notified, 3 of which proved fatal.

Scarlet Fever.—A marked outbreak occurred at Westport early in the year. In all, 37 cases were notified from this town.

PART 3.—ACCOMMODATION FOR INFECTIOUS DISEASES.

Dealing with the question of provision for infectious diseases in their several districts, the following extracts from the reports of the District Health Officers are of interest :—

Auckland District.

Accommodation for Infectious Diseases.

During the year the buildings erected some years ago for the treatment of infectious diseases have been removed from the Auckland Domain. In spite of the completion of the new infectious-diseases hospital in 1907 and the erection of the observation cottage, these buildings, which were originally erected for temporary use, had to be retained during the typhoid epidemic of 1907–8. One of these buildings has been re-erected on the Hospital reserve at Point Chevalier, where it is available in the event of an outbreak of smallpox, completing the scheme laid down six years ago.

The North Auckland Hospital Board.—Representations having been made as to there being no provision for the isolation of infectious cases at Whangarei, where occasionally persons visiting the town suffering from infectious disease had been dependent on the chance of securing accommodation in boardinghouses, the North Auckland Hospital Board has erected an infectious-diseases hospital at a cost of £950.

Tauranga.—During the epidemic of typhoid early in 1908, a temporary fever hospital was established in Tauranga, at which 7 cases were treated. Three visits were made, in order to arrange a satisfactory solution for the payment of these, the hospital not having been established in accordance with the routine laid down in the Public Health Act. At a special meeting of delegates from the Tauranga Borough Council and County Council, the Opotiki Town Board and County Council, the Whakatane County Council, and the Bay of Plenty Hospital and Charitable Aid Board, at which Lieut.-Colonel Roberts, S.M., presided, at the request of the Hon. the Minister of Public Health, it was eventually agreed that the Hospital and Charitable Aid Board pay 75 per cent. of the amended claims, in all amounting to £300, and the Tauranga Borough Council 25 per cent. Tauranga Borough and County have since been gazetted as a district for the erection of an infectious-diseases hospital. A recommendation was made to the Charitable Aid Board by the local authorities interested to use a property belonging to the Board as an isolation hospital. This, however, has not met with their approval.

Accommodation for Consumptives.

As showing justification for the plea by our Department to have an annexe for consumptives established in the Auckland Hospital and Charitable Aid Board District for cases which are either waiting or are unsuitable for admission to the Te Waikato Sanatorium, it is worthy of note that 43 such cases have been admitted since the erection of the annexe at the rear of the Costley Home. Of these, 15 died, 24 were discharged (4 of these being admitted to the sanatorium), and 4 remained at the Home at the end of the departmental year.

An annexe has been erected at the Thames Hospital.

At Whangarei 1 case was treated during the year, in a tent erected in the Hospital grounds.

Wellington District.

Hospitals for Infectious Diseases.

The provision of the much-needed adequate accommodation for the scarlet-fever cases of Wellington has been advanced another stage by the preparation of plans. The Hospital Trustees questioning first if the hospital was to be permanent or temporary, and deciding the former, it was inevitably resolved that the buildings be in brick rather than the more temporary wood. The plans as approved show,—

(1.) An administrative block, with rooms for matron and eight nurses, general kitchen, and, a special feature, suitable discharge-rooms.

(2.) Four scarlet-fever wards, containing each eight beds and four one-bed wards and accessories, all in the same block. Consideration of the cost of foundations, and the obstruction to sunlight by the surrounding hills, together with advantages to be gained by their use, caused a decision in favour of these four large wards being of the circular type. These wards are also so placed as to secure classification of the cases into the " acute " and " convalescing."

(3.) An observation cottage of three rooms and accessories.

(4.) A disinfector and destructor block, containing also the infectious-diseases ambulance-shed.

The total cost is set down at £17,000. A larger scheme to make provision for measles and diphtheria cases on the same site had to be abandoned, mainly from financial considerations.

The scarlet-fever wards at Wanganui having been accidentally burnt down, recourse has been had to the old block—known sometimes as the diphtheria cottage—consisting of four rooms and accessories. Plans for additional room have been prepared by the Board's architect.

Annexes for Consumptives.

Palmerston North is now in line with Wellington and New Plymouth Hospitals in having special accommodation for consumptives on the grounds of the general hospital.

During the year there were 27 applications for admission to Te Waikato and Otaki Sanatoria, and 23 patients were examined.

Quarantine Regulations.

Plans for an isolation hospital on Somes Island have been under consideration.

On Monday, the 22nd March, the s.s. "Corinthic" arrived in Port Nicholson with some scarlet-fever and measle cases aboard. The vessel was ordered to the northern side of Somes Island, and the passengers and crew examined by the Port Health Officer. It was found necessary to remove 44 people to Somes Island, as suffering from or contacts with persons suffering from measles, and to remove 4 cases of scarlet fever to the infectious ward of the Wellington Hospital. Two trained nurses were engaged for those quarantined on the island.

With one exception, all the infectious cases made a rapid recovery, the exception being a very weakly child suffering from marasmus. Despite every care and attention, the child died, and was buried on Somes Island.

The shipping company supplied everything necessary, beyond the buildings and bedsteads on the quarantine station. Although such a large number of people were quarantined on the island, everything passed off with the greatest smoothness.

CANTERBURY DISTRICT.

Infectious-diseases Hospitals.

There were 21 cases of scarlet fever treated at Bottle Lake and 12 cases of measles. No attempt, of course, could be made to cope with an epidemic of measles by isolation in an infectious-diseases hospital, but from time to time a case may occur in Christchurch of a person who has come in from the country and has no home to which he or she could go, and in these cases the existence of the separate small buildings at Bottle Lake frequently proves very useful.

Ashburton.—The following cases were treated in the infectious-diseases annexe: Scarlet fever, 3; enteric fever, 5; diphtheria, 3; phthisis, 1.

Timaru.—Seventy-two cases of scarlet fever were treated in the Talbot Hospital during the year. Of these, 10 were convalescent cases sent from Waimate.

Waimate.—Eighty-two cases of scarlet fever were admitted to the infectious-diseases annexe, of which 10 were sent to the Talbot Hospital, Timaru, when they were convalescent but still infectious.

Oamaru.—Twelve cases of scarlet fever were treated at the infectious-diseases annexe.

Sanatoria for Consumptives.

North Canterbury.—The sanatorium on the Cashmere Hills was out of the hands of the contractors in August. The sanatorium committee had no funds at its disposal with which to complete the equipment of the building, owing to the South Canterbury and Ashburton Hospital Boards not having joined in the scheme. The committee therefore asked the North Canterbury Hospital Board to take the building over and complete its equipment by money raised out of rates. The Board, unfortunately, had made no provision in its estimates for any expenditure on the sanatorium, and, as the making of a special levy on the local bodies would have caused some inconvenience and expense, nothing could be done by the Hospital Board until the beginning of the next financial year. The Board formally took over the sanatorium from the committee on the 4th February, 1909.

South Canterbury.—A site was purchased by the South Canterbury Hospital Board at Winscombe, three miles from Fairlie. The site has an elevation of about 1,000 ft., and is conveniently situated near a railway-station. The main disadvantages to the site are the lack of shelter, the extremes of heat and cold (it is stated that the temperature goes up to over 100° in summer and below zero in winter), and its distance from a centre. After conferences had been held between the South Canterbury and Ashburton Hospital Boards, the Boards agreed to combine, under the provisions of section 44 of "The Public Health Act, 1908," for the purpose of erecting and maintaining a sanatorium on this site. It is understood that the first cost of the building and equipment shall not exceed £2,000.

PART 4.—STATISTICS OF DISEASE AMONG THE MAORIS.

The following table was compiled by Dr. Pomare from the reports of the medical officers attending on the Maoris. It cannot be regarded as a complete return, but serves in a general way to indicate the diseases most prevalent in the Native race:—

STATISTICS OF DISEASES FROM 1901 to 1908.

Class and Order.	Number of Cases.				Proportion of Total.			
	Males.	Females.	Sex not given.	Total.	Males.	Females.	Sex not given.	Total.
CLASS I.—Specific febrile or zymotic diseases,—								
Order 1. Miasmatic	1,622	1,508	33	3,163	5·92	5·50	0·12	11·54
,, 2. Diarrhœal	784	680	5	1,469	2·86	2·48	0·02	5·37
,, 3. Malarial	2	1	..	3	0·01	0·004	..	0·014
,, 4. Venereal	186	64	..	250	0·68	0·23	..	0·91
,, 5. Septic	69	37	..	106	0·25	0·14	..	0·39
Total Class I	2,663	2,290	38	4,991	9·72	8·354	0·14	18·214
CLASS II.—Parasitic diseases	407	312	10	729	1·49	1·14	0·04	2·67
CLASS III.—Dietetic diseases	21	19	8	48	0·08	0·07	0·03	0·18
CLASS IV.—Constitutional diseases ..	1,162	1,069	1	2,232	4·23	3·90	0·004	8·134
CLASS V.—Developmental diseases ..	46	30	3	79	0·17	0·10	0·014	0·284
CLASS VI.—Local diseases,—								
Order 1. Nervous system	389	498	3	890	1·43	1·72	0·014	3·164
,, 2. Special senses	637	498	2	1,137	2·32	1·83	0·01	4·16
,, 3. Circulatory system ..	187	171	..	358	0·68	0·62	..	1 30
,, 4. Respiratory system ..	3,459	2,863	36	6,358	12·62	10·45	0·13	23·20
,, 5. Digestive system	2,171	2,166	20	4,357	7·94	7·92	0·07	15·93
,, 6. Lymphatic system and ductless glands	54	45	..	99	0·20	0·16	..	0·36
,, 7. Urinary system	160	124	..	284	0·58	0·45	..	1·03
,, 8. Reproductive system ..	97	1,095	..	1,192	0·35	4·00	..	4·35
,, 9. Locomotive system ..	84	60	..	144	0·31	0·22	..	0·53
,, 10. Integumentary system ..	1,096	812	12	1,920	4·00	2·96	0·05	7·01
Total Class VI	8,334	8,332	73	16,739	30·23	30·53	0·274	61·034
CLASS VII.—Violence	1,016	342	9	1,367	3·71	1·24	0·03	4·98
CLASS VIII.—Ill-defined and not specified	634	583	6	1,223	2·47	2·01	0·02	4·50
Grand totals	14,283	12,977	148	27,408	52·10	47·35	0·55	100·00

The figures in this table calling for comment are those relating to miasmatic, diarrhœal, constitutional, respiratory, and digestive diseases. These include the largest part of the causes of sickness. Dr. Pomare gives complete records for the years 1901 to 1907, and from these the following table can be compiled :—

TABLE SHOWING AVERAGE YEARLY INCIDENCE OF DISEASE PER 1,000 OF MAORI POPULATION FOR SIX YEARS, 1901–7.

Disease.	Years.							Average Yearly Incidence of Cases per 1,000 Population (estimated Population, 55,000).
	1901–2.	1902–3.	1903–4.	1904–5.	1905–6.	1906–7.	Total.	
Miasmatic—								
Measles	20	30	196	11	2	25	284	0·86
Diphtheria ..	1	..	..	..	..	..	1	..
Scarlet fever ..	..	2	24	..	2	..	28	0·085
Typhoid	15	41	17	46	5	53	177	0·536
Whooping-cough ..	..	31	277	22	1	29	360	1·09
Diarrhœal	126	149	194	208	255	182	1,114	3·37
Constitutional—								
Phthisis	76	101	107	107	96	93	580	1·75
Other tubercular diseases	23	50	36	50	44	33	236	0·71
Cancer	5	3	5	8	3	8	32	0·097
Local diseases—								
Respiratory system—								
Bronchitic ..	374	412	380	459	392	328	2,345	7·1
Pneumonic ..	72	84	122	89	73	63	503	1·5
Pleurisy	34	39	34	50	39	33	229	0·69
Digestive system—								
Acute inflammatory diseases ..	54	51	178	159	149	153	744	2·25

Under the heading "*Miasmatic diseases*" whooping-cough accounts for over one-third of the total, while the number of cases of measles also appears high, but we have no statistics as to the incidence of these diseases in the white population with which to make a comparison.

Diphtheria, strangely enough, seems practically unknown, but as each year some 50 cases are shown under such heads as "tonsilitis," "pharyngitis," and "sore throat," it is possible that this includes a good many cases of diphtheria.

Scarlet fever appears to be also a rare disease amongst the Maoris, the case incidence of 0·085 per 1,000 of population contrasting markedly with the figures for the general population of the Dominion, among whom during the last five years the case incidence has been roughly 1·5 per 1,000 of population per annum.

Typhoid fever, on the other hand, would appear to be more prevalent among the Native population, the yearly case incidence being 0·536 per 1,000 for Maoris, and about 0·486 for the whole population on an average during the last five years.

Constitutional Diseases.—Among the diseases so classed phthisis, as one might expect, takes leading place, while "other tubercular diseases" is also high. Together these give a yearly case incidence per 1,000 of 2·46. The notification of tubercular conditions among the general population is so incomplete as to render the figures unreliable, therefore the average of 0·7 per 1,000 during the past two years cannot be taken as a fair contrast to the Maori returns. At a rough estimate, the whole population, including Maoris, would show a proportion of a little over 2 per 1,000 of tubercular cases, somewhat under the incidence among Natives alone. A large number of cases of chronic suppuration of glands appear in Class VIII. Probably the majority should be placed under the heading of "Tubercular complaints."

Cancer, on the other hand, appears to be a rare disease among Maoris, as, indeed, it is among all primitive peoples. Even if we regard the 32 cases recorded during the six years as deaths, we have a death-rate from this disease of only 0·097 per 1,000 living, as contrasted with the rate of 0·69 per 1,000 which the Registrar-General's returns show to have been the proportion among the white population of the Dominion during the past five years. Thirty-seven cases of tumour are recorded in the six years. If we regard these as non-malignant, the proportion is also very low for such growths.

Local Diseases.—In this group we find that diseases of the respiratory system, more especially bronchitic troubles, account for nearly one-quarter of the total cases of sickness. It would be interesting could we learn whether this were the case in bygone days. It is more probable that respiratory weakness is an outcome of the partial adoption of civilised habits by the Natives, who are losing their former hardihood with the relinquishing of the ancestral open-air life and activity. Males suffer considerably more than females from respiratory troubles.

Diseases of the digestive system are common, especially those of an acute inflammatory type. If to those so recorded we add the cases classed under the term "diarrhœa," we get an incidence of 5·6 per 1,000, next, therefore, in frequency to bronchitic troubles. The peculiarities of Maori diet are doubtless the cause of these digestive disturbances.

Integumentary troubles are common, as might be expected. Dr. Pomare's table shows that 7 per cent. of the total are so classed, but as scabies and ringworm are placed under "parasitic" diseases, and form about 80 per cent. of this group, it would seem that skin-disease should really be represented as comprising about 9 per cent. of the whole.

General Sickness Rate.

During the eight years 1901 to 1909 there were 27,408 cases of sickness among Maoris which came to the notice of the medical men. This gives an annual rate of about 6·2 per cent. of sick, or 1 in 16, if we assume the Native population to be 55,000. The actual rate is probably much higher, as many Natives never see the doctor when ailing. The calculated proportion of "illness such as would require medical relief" in England and Wales in 1897 was also about 1 in 16. When we consider that the Maori proportion is probably a good deal higher than that of a population largely composed of persons living in the crowded insanitary conditions found in the large towns at Home, it is evident that there must be a lack of resistance to disease in the constitution of the Natives, living as they do in satisfactory climatic conditions.

The only returns showing ratio of illness relating to New Zealand which are available are those of the Registrar of Friendly Societies, who shows that during 1906 and 1907 the average incidence was about 20 per cent. per annum among the actual members. This is very high, and cannot be taken as representing the ratio for the general population. The definition of an illness among these societies relates only to the actual or assumed inability of a member to follow his usual occupation. Thus a comparatively slight injury or illness not necessitating medical attention from its actual seriousness would place a member on the books of his society. Moreover, the majority of the members are following occupations which expose them to special diseases and injuries incident to their trade, and probably have a specially high rate of illness in consequence. We cannot, therefore, use such returns for purposes of comparison.

PART 5.—SALE OF FOOD AND DRUGS ACT.

Much preliminary work remains to be done before this Act can be carried out in its entirety. Many standards have yet to be fixed, and, as it is unwise to attempt this till the regulations in force in other countries have been obtained and compared, the process is necessarily a slow one.

As the standard adopted for milk-fat has been called in question, it may be of interest to publish in detail the results of a series of observations on this point which the Department has conducted in the different districts. These observations are still being made, but the results so far are embodied in a table which will be found in the appendix.

The work done in the different health districts under this Act is shown in the following extracts from the reports of the District Health Officers :—

Auckland District.

Manufacturers and importers, speaking generally, have shown themselves anxious to co-operate with the Department in carrying out the provisions of this Act, and numerous inquiries have been made as to its scope and application. The following examinations and condemnations have been made :—

Date.	Sample.	Result.
	Drugs.	
August 6, 1908 ..	Paregoric.	
,, ,, ..	Laudanum ..	Prosecution ensued.
	Bread and Flour.	
May 7, 1908 ..	Several samples ..	6 loaves excess moisture, 2 loaves under weight.
,, ,, ..	Flour	Satisfactory.
February, 2, 1909 ..	Six loaves ..	Packed for examination in Wellington
	Beer.	
December 1, 1908 ..	9 samples ..	From one brewery. Showed 105 grs. chloride sodium per gallon.
February 10, 1909 ..	2 ,, ..	Satisfactory.

Milk-supply.

In accordance with instructions from headquarters, over a hundred samples of milk have been taken in accordance with the requirements of the Sale of Food and Drugs Act. Chief Inspector Haynes, of the Auckland City Council, an Inspector under the Act, has had samples taken from every milk-supplier in the city. Samples are now being taken in the smaller centres throughout the district. In 5 cases prosecutions are to follow.

Samples of Milk examined.

Date.	Sample.	Result.
October 21, 1908 ..	6 samples ..	1 mixture of skim and fresh milk, 1 deficient in fat, 4 to standard.
November 4 ,, ..	12 ,, ..	1 scalded, 2 deficient in fat, 2 slightly below regulations, 7 to standard.
,, 6 ,, ..	12 ,, ..	1 mixture of skim and fresh milk, 4 slightly below standard, 7 to standard.
December 2 ,, ..	12 ,, ..	7 below standard (1 notably so), 5 to standard.
,, 19 ,, ..	18 ,, ..	1 mixture skim and fresh milk, 5 below regulations, 12 to standard.
February 2, 1909 ..	3 ,, ..	1 adulterated by abstraction of cream, 1 exceptionally rich milk, 1 to standard.
March 1 ,, ..	1 ,, ..	1 high quality.
,, 8 ,, ..	6 ,, ..	6 to standard.
,, 11 ,, ..	5 ,, ..	5 to standard.
,, 11 ,, ..	2 ,, ..	1 deficient in solids not fat, and fat.
,, 16 ,, ..	5 ,, ..	5 to standard.
,, 16 ,, ..	1 ,, ..	1 deficient in solids not fat.
,, 18 ,, ..	6 ,, ..	6 to standard.
,, 22 ,, ..	6 ,, ..	4 to standard, 1 deficient in solids not fat, 1 deficient in solids not fat, and fat.
,, 25 ,, ..	6 ,, ..	6 to standard.
	Humanised Milk.	
September 28, 1908 ..	1 sample	1 slightly above the average.
	Butter.	
February 1, 1909 ..	1 sample.. ..	1 faulty manufacture.

Samples collected.

Cough-lozenges	2	Chocolate	2
"Juvante"	1	Jam	2
Bread	13	Asthma-cure	2
Beer	11	Sauce	1
Whisky	6	Laudanum	1
Milk	5	Paregoric	1
Butter	4	Pepper	1
Water	4	"Yolkine"	1

Goods Inspected.

Cases of bacon	20	Cases of salmon	45
Cargoes flour	2	Cases of pickles	7

Food-stuffs destroyed.

—	Date.	Quantity.
Sardines	October 10, 1908	2,000 tins.
Meat in tins	December 7, „	4 dozen.
Hams	February 2, 1909	100.
Crayfish		12.
Dried fruit		14 cases.
Assorted tinned meats		3 „
Kegs of corned beef		10 „
Potatoes		19 sacks.

Sale of Ice-cream.

As a result of representation drawing the attention of the Auckland City Council to the danger from the sale of ice-cream from premises which were not directly under any regulation or supervision, it was decided that no license to sell this article be issued unless such be warranted after inspection. It is advisable that some standard be laid down as to the composition of ice-cream, which has been shown occasionally to be a means of transmitting disease.

HAWKE'S BAY DISTRICT.

Food seized and destroyed: 2 cwt. bacon.
Samples taken for analysis: 6 samples of bread.

WELLINGTON DISTRICT.

Foodstuffs condemned.

The following list shows the amount of foodstuffs condemned from this office during the year:—

Hares	24.	Fish	2 tins.
Fish	2 sacks.	Quantity unsound fruit.	
Quantity pressed pork.		Potatoes	1 sack.
Ducklings	120.	Dates	469 cases.
Whitebait	1½ tins.	Peaches	18 „
Flour	45 sacks.	Flounders	3 „
Cheeses	6.	Potatoes	15 sacks.
Boneless cod	15½ blocks.	„	31 „
Sweets	44 boxes.	Rabbits	76.
Chocolate	20 cakes.		

Milk.

Milk-samples were collected and submitted for analysis under "The Sale of Food and Drugs Act, 1908," by the Inspectors, as follows:—

Chief Inspector Schauer	65
Inspector Gardiner	10
„ Sargeant	18
„ Wilson	4
„ O'Brien	13
„ Hickes	10
„ Miller	9
„ Gray	13
„ Remington	4
	146

In view of much criticism as to possibility or impossibility of complying with the milk standards made by regulation under the Act, I have deemed it advisable to set out the actual analytical figures as to each sample examined by the Analyst, Dr. Maclaurin. (These details may be found in Appendix IV.-C.)

A summary of these analyses gives the following results :—

Highest butter-fat recorded	5·30
Lowest „	2·38
Highest total solids recorded	14·54
Lowest „	9·16
Highest solids, not fat, recorded	9·24
Lowest „ „ „	5·88
Highest percentage adulteration by addition of water	30·80
Total number of samples taken and analysed	146
Number complying with regulations	75
Average per cent. proportion of butter-fat in the 146 good, bad, and indifferent samples	3·67
Average per cent. proportion of butter-fat in the 75 good samples complying with the regulations	3·92
Average per cent. proportion of butter-fat in the 71 bad, and indifferent samples not complying with regulations	3·41

Canterbury District.

The administration of the Sale of Foods and Drugs Act and the regulations made thereunder have thrown a considerable amount of extra work on the Inspectors.

Milk-shops.

Twenty milk-shops have been inspected, and leave to sell milk has been granted in all cases, after suitable provision for storage had been made.

Samples taken for Analysis.

Ten samples of temperance drinks were taken for analysis, and the result showed that some samples of hop beer and herbal beers had a larger amount of proof spirit than was allowed by the Act—namely, 2 per cent. The attention of the manufacturers was drawn to the provisions of the Act, and they were warned that prosecution would follow a second offence. Among the other samples taken were bread, vinegar, mustard, and cordials.

Milk.

There were 201 samples of milk taken. Of these, 154 were good, 29 were doubtful, and 18 were were sufficiently below the standard to warrant a prosecution. Of the 18 prosecutions, 1 was dismissed ; in the remaining 17 cases, fines totalling £63, and varying from £1 to £10, were imposed.

Most of the samples were taken in Christchurch, but samples were also taken in Sumner, New Brighton, Lyttelton, Ashburton, Timaru, and Oamaru. The results outside Christchurch were satisfactory, except in Timaru, where some of the milk was found to be skimmed.

Samples were first taken in Christchurch in May, and for the first two or three months there were always found some adulterated samples. In January, 30 samples were taken, and were all found satisfactory, showing that the prosecutions had had good effect. These samples were taken at the end of a wet month, when, according to many dairy farmers, the grass was in just that condition that would make it impossible for them to keep up to the standard. The fact that these samples were all above the standard shows fairly conclusively, apart from a large amount of other evidence, that the standard is a fair one, and not too high. Even under the present standard it is fairly certain that in Christchurch, where adulteration is more scientifically carried out than elsewhere, by removing cream and adding water in right proportions, a certain number escape prosecution.

Otago and Southland District.

Foodstuffs Seized and Destroyed under the Sale of Food and Drugs Act.

Rotten oranges	44 cases.	Decayed bacon	10 rolls.
Bacon	8 pieces.	Decomposing rabbits	1 crate.
Pigs	6 carcases.	Pineapples	52 cases.
Tinned American salmon	49 cases.	Pears	4 „
Mouldy figs	12 boxes.	Bananas	14 „
Decayed apples	3 cases.	Hams	105
Decayed pears	8 „	Bacon	17 rolls.
Decayed bananas	6 „	Herring	24 tins.
Sugar, damp and mouldy	5 bags.	Fowls diseased	38.

Samples collected for Analysis.

Water	15	Bread	13
Milk	2		

PART 6.—ANTHROPOMETRIC RECORDS.

Some interesting observations on the height and weight of the boys attending the Wanganui Collegiate School, supplied by Mr. Empson, late Headmaster, appeared in the annual report for 1908. Representing, as they do, the average of many years, they are of great value. Through the kindness of Mr. Major, Headmaster, Dr. Purdy has obtained a series of measurements of the boys attending King's College, Auckland. In height these boys almost exactly correspond with the Wanganui standards, although slightly under them between the ages of fifteen and sixteen. In weight the Auckland College boys are a good deal lighter, save between the ages of thirteen and fourteen, when they have the advantage of about 4½ lb. Records from such schools, however, apply to boys drawn chiefly from one class in the community. The observations made by Dr. Purdy on the results of a series of measurements conducted by Mr. Symons on the primary-school cadets are therefore of interest, although the figures are too limited to justify conclusions being drawn therefrom. If such records are obtained as opportunity offers we shall in the future accumulate sufficient evidence to enable us to establish an anthropometric standard for the Dominion.

Dr. Purdy reports as follows :—

So far no systematic general medical examination of school-children has been made in the district. Opportunity has been taken, however, to collect data, owing to the courtesy of the Headmaster of King's College and the officers in charge of the cadet camp at Papakura. It is hoped that this work will be further developed in the future. Special cards have been drawn up, largely based on the recommendations of the Society of Medical Officers of Health.

While the accompanying figures exhibit defects necessarily arising from results obtained from a limited number of cases, yet they afford grounds for comparisons of a general character. Several general deductions may be made which have interest, because in King's College School we have a number of boys resident in an educational institution where much attention is known to be paid to health, hygiene, and physical culture; and in the case of day scholars, these are mostly from homes where hygienic conditions may be expected to obtain and in any case the boys at school have the advantage of physical training. I regard it as very satisfactory to find that the averages obtained by examination of the State-school boys examined at the cadet camp, Papakura, March, 1909—not, however, forgetting the fact that they are more or less picked boys—approximate so closely as they do to those obtained from King's College School, particularly when one remembers that these averages are affected by the presence of small boys from homes where the advantages referred to are not so evident. There are, however, variations referred to later which point to beneficial results coming from attention to health matters, organized physical training, and the practice of breathing-exercises.

Ages.	Number examined.		Average Height.		Average Weight.	
	King's.	Cadets.	King's.	Cadets.	King's.	Cadets.
10–11	28	15	4·6	4·5½	5·0⅓	4·11
11–12	10	48	4·8	4·8	5·10⅓	5·2 3/16
12–13	20	96	4·9½	4·8⅔	5·12	5·6⅝
13–14	29	89	5·0¾	4·10	7·2½	5·12
14–15	46	40	5·3	4·11¾	7·7	6·8⅖
15–16	36	15	5·4	5·4	8·0	7·12
16–17	22	3	5·7	5·6⅔	9·1	8·7⅔
Totals	191	306	..	..	..	..

Height.

A glance at the table shows a fairly close approximation in the matter of height as between the public-school cadets and the King's College school-boys, the only considerable variation between boys from the two schools being at the age 14–15, where King's exhibit disproportionately high figures.* Taking the data obtained from these sources a standard is obtained for ages of these boys :—

	Ft. in.		Ft. in.
10–11	4 6	14–15	5 0
11–12	4 8	15–16	5 4
12–13	4 9	16–17	5 7
13–14	4 10½		

NOTE.—In this table only the boys whose ages are between ten and seventeen have been considered, because the numbers examined below ten years are not of sufficient import to form any basis for consideration.

* The King's College figures at this age correspond exactly with the Wanganui College averages.

Weight.

Something like an average at the various ages may be tabled thus :—

	St. lb.		St. lb.
10–11	5 0	14–15	7 0
11–12	5 7	15–16	7 12
12–13	5 9	16–17	8 12
13–14	6 3		

Perhaps the only remark to make here is that King's boys are somewhat heavier than this standard, and the cadet school-boys somewhat lighter, King's boys being throughout about half a stone heavier than the public-school boys. It is, however, to be observed that the boys seem to make a pretty equal start, the average at 10–11 years being in both cases 5 stone, while thereafter the College boys gain on the others. Still, in the general result the public-school boys bear the comparison very favourably.

Expansion.

It is when one comes to the feature "chest expansion" that the beneficial results of systematic physical culture with breathing-exercises becomes apparent. It was very noticeable at the time of the examination at Papakura Camp that the boys from one school where the master conducts daily and systematic breathing-exercises—a fact revealed by the boys' familiarity with the processes of inspiration and expiration—exhibited marked superiority in this respect. But it is observable in the attached table that in extent of and in average expansion physical training has its natural result. The full tables show that in average girth similar results have been obtained.

The following table gives the chest-measurements of King's College School boys, and cadets from public schools :—

Ages.	Number examined.		Highest Expansion.		Lowest Expansion.		Average Expansion.	
	King's.	Cadets.	King's.	Cadets.	King's.	Cadets.	King's.	Cadets.
10–11	28	15	4	3	$1\frac{1}{4}$	$\frac{3}{4}$	$2\frac{1}{8}$	$2\frac{1}{15}$
11–12	10	48	4	$3\frac{1}{2}$	$1\frac{3}{4}$	1	$2\frac{1}{2}$	$2\frac{3}{8}$
12–13	20	96	$4\frac{3}{4}$	$3\frac{1}{2}$	1	$1\frac{3}{4}$	$3\frac{1}{5}$	$2\frac{1}{3}$
13–14	29	89	6	$3\frac{3}{4}$	$1\frac{1}{2}$	1	$3\frac{1}{2}$	$2\frac{2}{5}$
14–15	46	40	5	5	$1\frac{1}{4}$	$1\frac{1}{2}$	$3\frac{1}{3}$	$2\frac{3}{5}$
15–16	36	15	6	$3\frac{1}{2}$	1	$1\frac{1}{2}$	$3\frac{1}{3}$	$2\frac{8}{15}$
16–17	22	3	6	3	$1\frac{1}{2}$	3	$3\frac{1}{9}$	$3\frac{1}{12}$
Totals ..	191	306	..	..	..	..		..

Undoubtedly the public-school boys would come out of the test better and do more justice to themselves if they had the same knowledge of how to expand their chests as is possessed by the boys with whom comparison is made.

Dr. Buck, Native Health Officer, has been good enough to supply the average height and weight of Maori boys examined by him, which enables me to give the following table for comparison :—

——	Ages.					
	Height.					
	10–11	11–12	12–13	13–14	14–15	15–16
European	4·6	4·8	4·9	4·10½	5·0⅝	5·4
Maori	4·4½	4·7¾	4·9½	4·11½	5·2½	5·4
	Weight.					
European	5·0	5·7	5·9	6·3	7·0	7·12
Maori	5·5	5·10	5·13	7·5	8·0	8·12

Thus, it would appear that the European starts (at 10–11) a little taller than the Maori, but nearly half a stone lighter.

In the matter of height the Maoris gain upon the Europeans until the age of 15–16, when the heights are equal. The physical development as to weight is maintained, until at the ages between 13 and 16 years Maori boys are 1 stone heavier than the European.

APPENDIX II. — LOCAL SANITARY CONDITIONS (REPORTS OF DISTRICT HEALTH OFFICERS.

PART A.—AUCKLAND DISTRICT.

SIR,—

I have the honour to submit the eighth annual report on the sanitary condition of the Auckland District.

AUCKLAND CITY.

During the past year there has been a great improvement in Auckland as to cleanliness by more systematic scavenging, the enforcement of the regulations as to storage, collection, and disposal of refuse. Since the repairs to the city destructor were completed it has been able to deal uninterruptedly with the refuse of the city and many of the surrounding suburbs.

There have been conspicuously few complaints as to the removal of nightsoil. The taking of this by barges to Harkins Point, where it is dealt with by employees of the City Council, has been, together with the universal compulsory use of sealed pans, a great improvement.

An attempt was made to bring the butchers' shops under regulations, more especially with the view of preventing contamination of meat by dust and flies. The City Council favourably received suggestions from our Department, which will probably be incorporated in the revised by-laws.

The opening of the public abattoirs at Westfield, which cost £37,000, insures the meat being inspected by a qualified veterinarian, and killed under the best hygienic conditions.

The water-supply of the city has been ample for present requirements. A new reservoir is at present approaching completion at Waitakerei. Dr. Frost, City Bacteriologist, who makes a monthly examination of the water, has been able to certify as to the purity of the supply.

The passing of the Auckland City and Suburban Drainage Bill last session, and the subsequent formation of a Drainage Board, has at last solved the difficult problem of sewerage. Suggestions have been put forward to hasten the completion of the work by starting simultaneously at different parts of the scheme. In this respect it has been agreed to push forward the work of draining Arch Hill Gully, which has been a danger zone for many years.

GREY LYNN.

Schemes have been suggested for dealing with the drainage of Cox's Creek. Owing to an outbreak of typhoid fever in this district early last year, the City Engineer, the Borough Engineer, and myself, conferred with the Council, but were unable to recommend the adoption of a local scheme of drainage, owing to the cost being excessive for a temporary expedient. The Council has been careful to carry out the supervision and inspection of sanitary affairs.

The supplying of disinfectants free to householders, the abolition of all fees for disinfection, and the introduction of a separate sanitary service in enteric cases was a reform which is gradually being taken up by other authorities.

PARNELL.

This sewered town has been immune from enteric fever. Much credit is due to Inspector Burke for his careful supervision of sanitation in this Borough.

NEWMARKET.

This borough has vastly improved. Together with the marked advance in sanitation there has been great improvement, owing to the erection of new buildings, more especially in the main street. The carriage of a loan of £5,000 for drainage will practically allow the whole area to adopt a water-carriage system.

MOUNT EDEN.

This borough will benefit much by the introduction of the drainage scheme.

REMUERA.

From time to time complaints are made about the effluents from septic tanks discharging on to the property of neighbours. As far as possible such are dealt with by the local authority. Until the completion of the drainage scheme, however, such complaints must be expected from time to time.

ONEHUNGA.

The past year has been one of great progress in this borough. The extension of the water-supply at a cost of £20,000, and the successful carrying of a loan of £42,500 for a comprehensive drainage scheme, show that the present progressive policy of the Mayor and Council is appreciated.

DEVONPORT.

Devonport still maintains its record as the healthiest portion of our district. No enteric fever has arisen here since the completion of the drainage scheme in 1902.

Northcote.

Northcote, the latest suburban borough, has introduced a water-supply from Lake Takapuna.

Ellerslie.

Ellerslie during the year has become a town district. Excellent by-laws have been submitted to our Department and adopted.

As this area is outside the city and suburban drainage scheme, an engineer is at present reporting on a separate drainage system, which may entail works for biological treatment.

Eden Terrace.

Eden Terrace has shown marked progress during the year, more especially with regard to the enforcement of the regular removal of refuse and the betterment of the nightsoil service.

Arch Hill.

The local Road Board is to be congratulated on this district maintaining its comparative freedom from infectious disease, only one case of enteric and one of scarlet fever having been notified.

Mount Albert, Avondale, and Point Chevalier.

These districts all suffer from lack of regular inspection and sanitary supervision. A combination of local authorities in apportioning the payment of the salary of a sanitary inspector would be to the mutual advantage of such districts.

Tamaki West.

The increase of population at St. Hellier's, especially during the summer months, has drawn attention from time to time to the need for better sanitation in this district. As the interests of St. Hellier's are quite separate from those of the country district, in order to get a regular water-supply and satisfactory local drainage it will probably be necessary for the residents to constitute a separate town district.

Dargaville, Warkworth, Franklin, and Huntly.

Changes in local administration in the Auckland Health District have taken place at Dargaville, which has been constituted a borough, whilst Warkworth, Frankton, and Huntly have become town districts.

There has been considerable improvement at Dargaville, where Inspector Grieve, of our Department, is subsidised as local Inspector, and pays monthly visits.

At Warkworth I have strongly advised the Town Board to go in for a water-supply.

Frankton has adopted a sanitary service, and is formulating by-laws. At present an endeavour is being made to remove the piggeries and slaughterhouse from the town area.

So far the local Town Board at Huntly has not shown much anxiety to overcome the disabilities under which this mining centre lies from a sanitary point of view. Special reports have been made pointing out the need for the framing of by-laws, the introduction of a sanitary service, and generally more attention being given to prevent overcrowding.

Whangarei.

The rapid extension of this town during the past few years has aggravated the unsatisfactory condition of affairs arising from the absence of any system of drainage.

The recent construction of a large boardinghouse in the main street which is absolutely devoid of any means of getting rid of waste waters other than their discharge into the street-channel has convinced even the most unprogressive ratepayers of the necessity of incurring the expense of a drainage scheme. After much discussion, in which our Department took part, the scheme drawn up by Mr. H. Metcalfe, M.I.C.E., was adopted by the Council, approved by the Hon. the Minister, and application for a special loan for drainage-works sanctioned by the Government.

The old custom of allowing horses to be stabled in the rear of stores has given rise to a condition of affairs which will necessitate the strict enforcement of by-laws to prevent a nuisance.

The duties of a local Inspector for the borough are carried out by Inspector Winstanley of our Department, in accordance with section 94, "Public Health Act, 1908."

Tauranga.

Four special visits have been made to Tauranga during the year, the first three connected with the discussion as to the payment of the costs incurred by the erection of a temporary infectious-diseases hospital during the typhoid epidemic early in 1908.

Assisted by Inspectors Bennett and Franklin, a house-to-house inspection was made of the more closely settled part of the borough, as a result of which many improvements were made. After meeting the Borough Council, a public meeting was called, an address given on sanitation, and a vote carried for the introduction of a water-supply. A poll which was subsequently taken carried a scheme to cost £14,000 by a majority of three to one.

Opotiki.

A general visit of inspection was made to this town in the course of the year. A sanitary service with sealed pans is carried out in a satisfactory manner. The local Council seems fully to recognise its responsibilities with regard to sanitation.

A water-supply will have to be considered for the town in the immediate future.

Te Puke.

A slight outbreak of diphtheria was the chief item in this district necessitating attention.

Rotorua.

Most of the boardinghouses and many private residences are now connected with the sewerage system. New by-laws have been adopted which will meet all sanitary requirements.

Hamilton.

Considerable attention has been devoted to this district owing to the outbreak of enteric fever at the beginning of last year. It is satisfactory to note that there was no case of enteric fever from September, 1908, until the close of the departmental year.

This town for the last seven months has been absolutely free from any infectious disease, in marked contrast to the previous year.

Hamilton, Cambridge, Newcastle Riding, Ngaruawahia, Te Awamutu, Frankton, Te Kuiti, and Taumarunui all take advantage of section 94 of "The Public Health Act, 1908," in subsidising one of our Inspectors as their local official. In my opinion this system has proved most satisfactory, as it secures efficient and regular inspection by an official who, whilst having authority under the Public Health Act as an Inspector, is still in close association with the local authority.

Schools.

Much less work has devolved on our Department in connection with schools during the past year, owing to the incidence of infectious disease having been much less than in the previous year. It is interesting to note that, whereas in 1907–8 there were granted 125 certificates as to absence of 10 per cent. or more of children of school-age on account of infectious disease, during the past year only twelve have been required. From the following list it will be seen that none of the larger centres, including Auckland, have come within this category :—

Quarter ending 31st March, 1908 : Paeroa District School, whooping-cough ; Whangaripo School, measles ; Mata and Ruahaka School, whooping-cough ; Tuakau School, whooping-cough ; Russell School, whooping-cough ; Mercury Bay, scarlet fever.

Quarter ending 30th June, 1908 : Russell School, whooping-cough ; Whananaki School, whooping-cough and measles ; Komata School, whooping-cough ; Kawakawa School, whooping-cough ; Kaihu School, whooping-cough.

Quarter ending 30th September, 1908 : Maraetai School, whooping-cough ; Ahuroa School, chickenpox ; Waiorongomai School, whooping-cough ; Drury School, chickenpox ; Matamata School, chickenpox and whooping-cough ; Taupiri School, whooping-cough and chickenpox

Quarter ending 31st December, 1908 : Wellsford School, whooping-cough.

In certain cases where diphtheria made its appearance—notably, at Whangarei, Horahora, and Te Puke—isolation was carried out, the schools disinfected and cleansed. The Auckland Education Board, in carrying out recommendations in this respect, has saved the necessity in any case of reverting to the closure of schools.

Summary of Work done during the Year.

Prosecutions under the Public Health and allied Acts.

7th August, 1908 : Inspector Grieve *v.* W. M. Breaches (three) of section 70, (2), and of section 46 of "The Public Health Act, 1900"—letting a house without providing closet, and failing to remove nightsoil when ordered. Convicted, and fined £5, £1, £2, and £2 respectively in four cases : total, £10 (costs, £7 12s.).

31st August, 1908 : Inspector Grieve *v.* S. and C. Breaches of "The Sale of Poisons Act, 1871," section 12 (laudanum). Fines—on information of failing to keep a poisons "register," £1 (£2 11s. costs) ; on charge of selling unlabelled poison, £1 (costs, £1 8s.).

By Inspector Bennett, on behalf of the local authorities for whom he acts. J. B., Hamilton—dead horse in paddock : fine, 10s. (costs, £2 2s.). A. G. P., Hamilton—fish-offal in fowl-yard : fine, 10s. (costs, 7s.). H. H., Te Kuiti—billiard-saloon, dirty back premises : fine £2 (costs, £2 3s.).

Quackery Prevention.

No prosecutions have taken place during the departmental year under the Quackery Prevention Act, but information has been collected, and certain persons and specifics have been under observation —*e.g.*, herb specialists, dealers in appliances, and others.

Several advertisements have been withdrawn from the Press since the Act came into force. In some cases, after representations by the Department, advertisements of alleged specifics were kept out by the Press-proprietors.

Special Reports.

Special reports have been presented on the following : Cleansing of schools ; registration of boardinghouses ; licensing and regulation of butchers' shops ; model milk regulations for boroughs ; sale of ice-cream ; sale-yards, Hamilton ; septic tank, Waihi ; closing of cemeteries (St. Mark's, Remuera, and Symonds Street) ; infectious-diseases accommodation, Tauranga ; site of school, Edendale ; Pakatoa Island ; typhoid at Taupo and Tokaanu ; incidence of tuberculosis in Auckland Province ; Whangarei drainage ; Te Aroha drainage ; and Taumarunui drainage.

Examination of Officers for Public Departments.

Six officers have been examined on behalf of public Departments: For the Post and Telegraph Department, 1; for Public Works Department, 2; for Native Department, 2; and for Education Department, 1. For Te Waikato Sanatorium there were 63 applicants for admission.

Laboratory.

The following is a summary of specimens submitted to this office for bacteriological and other examination:—

173	Sputums for examination for	tubercle bacillus.
39	swabs ,,	diphtheria bacillus.
9	urines ,,	general.
7	blood ,,	typhoid.
3	smears and swabs ,,	gonococci.
4	tissues ,,	pus.
2	moulds ,,	identification.
337	rats ,,	pestis bacillus.

22 pathological specimens were received and forwarded to the bacteriologist, Wellington, for report.

On Mr. Symons, who has shown much aptitude in this branch, has fallen most of the work in connection with the above.

Condemnation of Ruinous Habitations.

As a result of 98 inspections of ruinous and insanitary dwellings, certificates for condemnation or repair were issued in 56 instances.

Work done by Sanitary Inspectors.

The following represents a summary of the work done by Inspectors Grieve, Franklin, Bennett, and Winstanley:—

Infectious disease—	
Cases investigated	326
Disinfections	165
General inspections	3,839
Inspections of food-shops, dairies, slaughteryards, &c.	1,848
Hotels and boardinghouses inspected	641
Schools inspected	103
Factories inspected	91
Offensive trades inspected	17
Complaints investigated	631

Lantern demonstrations on sanitary matters were given by Inspector Bennett at—Hamilton (2), Cambridge, Te Kuiti (2), Taumarunui (2), Taruanga, Thames, Frankton, Raglan (2), Te Mata, Huntly, Mananui, and Te Awamutu (2).

Executive.

There has been no falling-off in the amount of clerical work, as is evidenced by the number of letters outward—3,880—as compared with 3,524 for 1907–8, and 1,536 for 1906–7. The despatch of 1,058 telegrams, the issue of 149 orders for admission to the infectious diseases hospital, 484 notices of infectious cases sent to local authorities, 589 tubes of vaccine lymph distributed to medical practitioners and public vaccinators, together with 257 accounts made out *re* notifying cases of infectious disease, afford some indication of the amount of detail work handled by the office staff. Supplies of drugs to Native schools to the number of 159 separate orders, papers relating to 63 applications for admission to Te Waikato Sanatorium, in addition to memoranda, circulars, and cards, have passed through the office.

As in last year's report, I have pleasure in testifying to the loyal co-operation of Messrs. Symons, Taylor, Kelsall, and Miss Leonard, who have all performed their work conscientiously and efficiently.

As a result of the work of Inspectors Bennett, Franklin, Grieve, and Winstanley, there has been general improvement with regard to sanitation in their districts.

I have, &c.,

J. S. Purdy, M.D., C.M.(Aberd.); D.P.H.(Camb.),
District Health Officer.

Chief Health Officer, Wellington.

PART B.—HAWKE'S BAY DISTRICT.

Sir,—

I have the honour to lay before you the eighth annual report on the sanitary condition of the Hawke's Bay District.

Napier.

Napier, in sanitation, is equalled by few towns, either in the Dominion or elsewhere, and excelled by none.

A proposal to borrow £40,000 for the purpose of extending the drainage system in accordance with the plans submitted to the Council by Mr. Midgely Taylor will be submitted to the ratepayers,

and from the expression of opinion that I hear on all sides I have every confidence that the poll will be favourable.

The night-cart has to serve only nine houses in the borough. These houses cannot be connected until the new drainage works are *un fait accompli.*

Clive, Meeanee, and Taradale.

These townships are much *in statu quo.* Taradale continues to increase in population, is healthy, and fairly clean.

Havelock.

Havelock is increasing in size and population. It is still under the jurisdiction of the Hawke's Bay County Council, but it cannot be long before a Town Board will be formed. Most of the houses on the hills have provided themselves with water from the springs about, but those on the flats are dependent on rain-water tanks. There is no drainage at present, but when the Town Board materialises no doubt these matters will receive attention.

Hastings.

Hastings has progressed in sanitary matters. There has been no advance in the drainage system since the commencement of the year, but more advantage has been taken of the existing sewer. During the past year 74 houses and business places have been connected with the sewer. I think that this is a record, and the remainder of the owners of houses situated within 100 ft. of the sewer have all had notice to connect, and the work is in hand, and will be completed shortly.

I am glad to be able to report that the public opinion in Hastings seems to be favourable to the extension of the sewerage, and I hope that before the year is out work will be commenced in this direction. Drainage is much needed in some parts where it is not at present available.

I regret to say that much of the plumbing work which is done in Hastings is bad. The plumbers are not altogether to blame; those who hold the purse-strings demand cheap work, and this is incompatible with excellence. Till recently the rule that the plans and specifications of all new houses about to be erected in the borough should be submitted to and passed by the Inspector of Buildings, has been more honoured in the breach than in the observance. On my representations this has been altered. The Council now insist that the plans and specifications of all buildings that it is proposed to erect shall be submitted to the Inspector, and have instructed their Inspector that the specifications of the plumbing-work should be up to date, and carried out according to those specifications. I would suggest that there should be a Dominion qualification for plumbers, and that any plumber putting in bad work should jeopardize his license.

The Council have several schemes for a public water-supply for Hastings, and I hope that the excellence of the scheme which is ultimately selected will be commensurate with the deliberate care taken in its choice.

Nothing can prevent Hastings from growing into a large and important town, and it behoves the present residents to look ahead, and so scheme that the sanitary arrangements of the present day will be homogeneous to and not clash with those of the coming generation.

Waipawa.

This newly formed borough has the luxury of a public supply of good water, sufficient for its present and future needs.

On the 30th January last a poll of the ratepayers was successfully taken to permit of the borrowing from the Treasury of £8,700 for the purpose of carrying out the drainage scheme designed by Mr. Metcalfe. The Council expect that the money will be handed over shortly, and hope to have the work completed in about twelve months from now.

The Inspector of Nuisances appointed by the Council, is an energetic and conscientious officer. The Council are anxious to give effect to any suggestions and advice for the betterment of the town, and, as a consequence, there have been many changes for the better in Waipawa.

Waipukurau.

This pretty township is increasing and improving. The petrolite gas which I mentioned in my last report is now in full working-order. It is too early to be sure that the profits derived from its sale will be sufficient to pay the interest on a loan for water and drainage. In the meantime Mr. Metcalfe has submitted schemes for both. I hope that the ratepayers will see their way to raise the money that is needed, and start the work during the present year.

Ormondville.

The nuisances created by the Town Board, Railway, and hotel drains have been abated, in accordance with the requirements of the Department.

There has been a pretty sharp epidemic of scarlatina in Ormondville, with 4 deaths.

Norsewood.

There have been a few cases of diphtheria in this township during the past year, all due to defective local sanitation. These have been reported on, and the nuisances abated.

Dannevirke.

The town is healthily situated, is clean, and well ordered. It possesses a supply of excellent water, and a good drainage system, designed and carried out by Mr. Leslie Reynolds. The townspeople are taking full advantage of it, as is evidenced by the fact that 150 properties have been connected with the borough sewerage scheme during the past year. This makes 390 properties that have been connected since the initiation of the scheme.

Since the drainage scheme was handed over no hitch of any kind has occurred in the working.

Woodville.

There has been no alteration made in the primitive drainage system installed in this borough some ten or twelve years back. Five years ago, at my instigation, Mr. Metcalfe was employed to draw plans for a drainage scheme, but the ratepayers have never felt able to burden themselves with the cost. I am informed by the Council that when the financial position is more favourable the ratepayers will be asked to sanction a loan for the purpose.

There is little fault to be found with the cleanliness of the town, and filth diseases are conspicuous by their absence.

Gisborne.

I repeat the opening remarks which I made in my report for 1908: "From its situation this borough should be the healthiest in the Dominion, but from its defective sanitary arrangements, or perhaps want of sanitary arrangements, it suffers more from preventable disease than any other town in my district." Out of 103 cases of enteric and 67 cases of diphtheria notified in this district, Gisborne accounts for 41 and 19 respectively; and of the 42 cases notified from the "remainder of the district," the majority come from the country around Gisborne. I have little hesitation in saying that had Gisborne been clean, most of the country cases would not have occurred, as most of them were contracted in Gisborne. Had it not been for the supply of wholesome water which Gisborne now enjoys, I am of opinion that the epidemic would have been more widely spread.

When the poll was taken for obtaining a loan for carrying out Mr. Mestayer's scheme of drainage for the borough, it was rejected by the majority of the ratepayers. There is another scheme before the Council designed by Mr. Jekell, and the suggestion has been made to the Council to obtain the services of an engineer of repute to examine and report on the merit of the two schemes. It is impossible to predict whether this will be done or not. It is quite possible that the town will rest on its oars till next summer and autumn brings another epidemic and another scare. I repeat what I stated in my last annual report: "It is risking the health of the residents in the town to attempt to carry on in Gisborne much longer with this condition of affairs, and if the installation of drainage is much delayed, reckoning must follow."

After nine years of representation on my part that duplicate-lidded pans should be employed in the collection and removal of night-soil, there are signs that this method is likely to be adopted. I feel convinced that the use of these pans will be a factor in limiting the spread of enteric, and reduce the nuisance created by the perambulations of the night-cart through the streets to a minimum.

Several of the business properties are having septic tanks installed. There is much to recommend this, but it is feared that every owner of a septic tank will be a probable voter against a municipal drainage scheme.

Tolaga Bay.

This township is fast increasing in size and importance. At present it is without either water or drainage, but the soil is light and sandy, and the town is well windswept by the crisp sea breezes. These factors help to keep it healthy.

Tokomaru and Waipiro.

Owing to the outbreak of enteric, the result of nuisances, these townships have received attention from both Inspector Munro and myself. From information I have received, *nga kaianga Maori* need attention.

Clyde, Wairoa.

This town is moving ahead, and is much cleaner than it used to be. The number of deaths from all causes is wonderfully small—9, the same as in 1903, when the population was smaller. This is a great drop from 28 last year, 25 in 1907, and 16 in 1906. Five cases of enteric have been notified from Wairoa, and 1 has died. Five cases of enteric in Wairoa, nearly half the number notified from Napier, which has ten times the population, is too many.

Summary of Work done.

The nuisances that have been reported on and abated are—In Napier, 10; Hastings, 21; Waipukurau, 2; Ormondville, 3; Norsewood, 1; Wairoa, 2; Gisborne, 11; Cook County, 7; Waipua County, 6; Napier Harbour Board property, 1; Taradale, 1; Meeanee, 1; Makeretu, 1; and Greenmeadows, 1.

Houses have been condemned in the following localities: In Hastings, 3; Wairoa, 2; Gisborne, 3; Cook County, 2; Waiapu County, 1; Ormond, 1; and Clive, 2.

Work has been done by Inspector Munro as follows :—

Infectious disease investigated	132
Disinfections—	
Houses	66
Schools	4
Parcels of clothing	4
General inspections	371
Food-shops, &c.	21
Hotels and boardinghouses inspected	26
Offensive trades inspected	3

A house-to-house inspection of Gisborne was made.

During the year several lectures were delivered in Gisborne on health and allied matters. I gave two—one on the sanitation of the house, and the other on the eye and ear. The latter was attended by most of the school-teachers in the district, and I dwelt largely on the methods of detecting eye-strain and obscure forms of deafness in the pupils. I wish to convey my appreciation to Mr. H. Hill, B.A., for the trouble he took in making the slides for my lectures. If lectures of this kind were repeated in the various centres, benefit would result.

I have, &c.,

FRED. DE LISLE, L.R.C.P., D.P.H.,
District Health Officer.

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

PART C.—WELLINGTON DISTRICT.

SIR,— 29th May, 1909.

I have the honour to present my annual report of the Wellington Health District for the year ending the 31st March, 1909.

It gives me much satisfaction to report the splendid assistance I have had from the Inspectors, collectively and individually. The Sale of Food and Drugs Act has imposed upon them new responsibilities. The readiness with which they grasped the intricacies of the Act, and the care and tact displayed in carrying out their duties, show them to be officers in whom much confidence may be placed.

As regards the sanitation of the various districts, little need be said. In Wellington City a steady advance is being made in the extension of the drainage system to the suburbs. This city also has the honour of being the first to establish a crematorium. Elsewhere throughout the district general progress may be reported, although little that necessitates special comment.

GENERAL SUMMARY OF WORK DONE.

The general work done in the year may be summed up as follows.

Legal Actions.

The following is a list of the legal proceedings taken by this office during the year :—

No.	Date.	Particulars.	Fines and Costs.
	1908.		£ s. d.
1	May 27	Offering unsound fruit for sale (Wanganui)	13 13 0
2	Dec. 10	Two prosecutions for milk-adulteration (Pahiatua). Each defendant	3 8 0
3	,, 10	One prosecution (Eketahuna), milk-adulteration	Dismissed.
4	,, 11	Ten prosecutions, milk-adulteration (Wellington). Each defendant	5 15 0
5	,, 11	One prosecution, milk-adulteration (Wellington)	Convicted, not fined; costs, £3 15s.
6	,, 11	One prosecution, milk-adulteration (Eketahuna)	Convicted and discharged.
7	,, 14	In conjunction with Inglewood Borough Council. Failure to abate nuisance	Magistrate's order granted.
8	,, 17	Two prosecutions for milk-adulteration (Waverley). Each defendant	4 10 0
9	,, 17	One prosecution for milk-adulteration (Waverley)	4 10 0
10	,, 17	,, ,, ,,	5 10 0
11	,, 18	,, ,, (Stratford)	6 12 6
12	,, 20	,, ,, (Palmerston North)	4 12 0
13	,, 21	,, ,, (New Plymouth)	5 19 0
	1909.		
14	Jan. 14	One prosecution for milk-adulteration (Marton)	Dismissed.
15	,, 14	,, ,, (Taihape)	4 15 0
16	,, 14	Two prosecutions for milk-adulteration (Feilding). Each defendant	5 15 0
17	Feb. 1	One prosecution for milk-adulteration (Carterton)	3 14 0
18	,, 9	Two prosecutions (same defendant) for milk-adulteration (Featherston). Total	11 8 0
19	,, 25	One prosecution for milk-adulteration (Hawera)	3 11 0
20	,, 20	Meat sold unfit for human consumption (Wellington)	6 14 0

Immigration-restriction.

Seven immigrants were referred to me for examination by the Port Health Officer, Dr. Pollen. Sufficient grounds were established in all cases for sanction to be given to their landing.

Habitations.

During the year 61 condemnation certificates, as against 22 last year, were issued—distributed as follows :—

Locality.	Houses.	Stables.	Out-buildings.	Lean-to.	Whares.	Shops.	Totals.
Wellington ..	34	1	7	4	..	..	46
Upper Hutt ..	1	..	..	..	..	..	1
Marton	1	..	..	..	..	..	1
Shannon ..	..	..	..	..	1	..	1
Johnsonville ..	2	..	..	..	..	..	2
Wanganui ..	1	..	2	..	..	..	3
Wairoa	1	..	..	..	..	..	1
Eketahuna ..	1	..	..	..	..	..	1
Belvedere ..	1	..	..	..	..	..	1
Lethbridge ..	2	..	1	..	..	1	4
Totals ..	44	1	10	4	1	1	61

Sanitation of Hotels.

The good results of these inspections continue to be evident. A little persistence has been necessary in some licensing areas to bring about results as satisfactory as those obtained elsewhere in this district.

The following table shows the number of hotels inspected in each licensing district during the period ending 31st March, 1909 :—

Egmont	8	Palmerston North	17
Taranaki	11	Otaki	11
Patea	20	Pahiatua	8
Hawera	18	Masterton	16
Wanganui	15	South Wairarapa	17
Rangitikei	12	Hutt	2
Oroua	12	Wellington and suburbs	3
Manawatu	16	Totals	186

A general report embodying the Inspectors' reports on each hotel, with recommendations approved by me, and other comments, were sent to each of the above-mentioned Licensing Committees for the annual licensing meeting in June, 1908, with the exception of the two last mentioned, where only special inspections were made.

Work done by Inspectors.

Inspections—	
Re Complaints	729
,, Infectious diseases	1,293
,, Food-shops	3,024
,, Houses	5,820
,, Miscellaneous	4,206
	15,052

Of special investigations and inspections by the District Health Officer, the following can be placed in tabulated form :—

Houses	148	Stables	3
Shops and factories	11	Hotels	13
Infectious-diseases hospitals ..	3	Hospital-sites	2
Consumptive annexes	4	Offensive trades	13
Drainage schemes	4	Foodstuffs	9
Destructor	1	Poultry-yards	1
Outbuildings	3	Schools	5
Public buildings	4	Septic tanks	12
Dairies and dairy factories ..	69	Water-supplies	12
Sewerage schemes	8	Rubbish-depots	3
Fellmongeries	3	Quarantine stations	2
Townships	1	Sewers	2

Special reports have been made on the following subjects :—

Cleansing and disinfection of schools.

Hunterville water and sewerage schemes.

Disinfection of library books.

The problem of the municipal control of the supply of household milk for the City of Wellington.*

Summary of Office-work.

Again there is a marked increase in the office-work as compared with past years:—

Letters written	4,421
Circulars sent	255
Requisitions served on—	
Local authorities	215
Individuals	47
Via Factory Inspector	2
,, Licensing Bench	79
On other Departments	12
Applications for admission to sanatorium	27
Condemnation certificates issued	61
Prosecutions	17

In compiling this report I have endeavoured to adhere to a summary form as much as possible. The data given above, in conjunction with the monthly reports duly placed before you, will be a sufficient indication of the increased work in this district during the past year.

I have, &c.,
Jos. P. Frengley, M.D., F.R.C.S.I., D.P.H.,
District Health Officer.

J. M. Mason, Esq., M.D., Chief Health Officer, Wellington.

PART D.—CANTERBURY DISTRICT.

Sir,— Christchurch, 1st June, 1909.

I have the honour to submit to you the annual report in the general sanitation of the Canterbury Health District for the year ending 31st March, 1909.

Christchurch.

Water-supply.—Good progress has been made with the high-pressure water-supply during the year. The reservoir has been completed, the pumping plant installed, and the reticulation of the Central Ward has been finished. It is expected that the reticulation of the St. Albans and Linwood Wards will be completed during the present year.

Drainage.—A large amount of work which was begun last year has been completed during the year. A new pumping plant worked by suction gas has been installed; an area of 42 acres has been added to the sewage farm, and a second main 27 in. in diameter has been laid from the pumping-station to the farm. About 21 miles of new sewers have been laid, and the total mileage of the sewers in Christchurch is now about 80 miles. There are now 6,636 houses connected with the sewers, of which 3,751 contain water-closets. During the year 749 houses were connected with the sewer, 630 of which contain water-closets, and altogether 894 new water-closets have been installed. The increase in the number of house connections and water-closets that began last year has been fairly well maintained.

Concrete inverts have been put in Jackson's Creek, Opawa, and in Bell's Creek, Linwood.

Sanitary Conveniences.—Three up-to-date underground sanitary conveniences have been erected, at the cost of about £4,600.

Steam Disinfector.—The city is still without any efficient means for carrying out disinfection. If a dangerous infectious disease was to again break out, a large amount of property would have to be destroyed instead of being disinfected, and compensation paid. If, again, the next epidemic of scarlet fever was of a more virulent type the spread of the disease could not really be controlled without some more efficient means of carrying out disinfection.

Christchurch Suburbs.

A considerable amount of building has been carried out in the suburbs outside Christchurch City during the last five years. The local authorities are taking little or no steps to improve the detailed sanitary administration of their districts, which is rendered necessary by closer settlement. No proper officers are appointed to carry out disinfection or routine inspection. This Department cannot continue to give sufficient attention to these districts with its existing staff, and these local bodies should combine to pay the salary of a properly qualified Inspector.

Rangiora.

The Borough Council are considering the installation of a high-pressure water-supply. The proposed source is from collecting-grounds in the Ashley river-bed. By collecting the water in the river-bed instead of obtaining it from the river direct, the water will always pass through a large amount of shingle before being collected, and will not be affected by floods.

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* Dr. Frengley's report on the municipal control of the milk-supply has been printed in pamphlet form for issue as a departmental report. Copies may be obtained at the Head Office, Health Department, Wellington.

Lyttelton.

Drainage.—The drainage-works were commenced on the 16th July, 1908. At the end of March two-thirds of the sewers had been laid, and rather more than half the houses had been connected. The Borough Council are carrying out all the work themselves, and this rate of progress is very satisfactory, as the result of municipal enterprise. An arrangement was come to between this Department and the Lyttelton Borough Council under which the Council agreed to pay for Inspector Kershaw's services in inspecting and planning house-connections, with the result that the work has probably been much more thoroughly carried out than it would have been had no such arrangement been made.

Water-supply.—A new pumping plant of the suction-gas type has been installed at Heathcote, which will be capable of pumping up a much larger amount of water than the old steam plant. In the Town Clerk's annual report it is stated that the fuel-cost in the case of the steam plant is £6 11s. 3d. per million gallons, and the fuel-cost of the producer-gas plant is £1 11s. 3d. per million gallons. The saving in fuel is estimated to more than pay the interest on the total capital expenditure of the new plant and building.

Ashburton.

On the 1st May, 1908, a second poll was taken on the question of a high-pressure water-supply, and was carried by 66 votes. Owing to the difficulty of obtaining the money at a satisfactory rate of interest, no steps have yet been taken to carry out this scheme.

Temuka.

A poll was carried in favour of completing the sewers in the northern part of the borough. No further progress has been made in the matter of providing a high-pressure water-supply.

Timaru.

Drainage.—The sewers and septic tank for the north end of the town have been completed, and 75 houses have been connected with the system. There were nine miles of sewers and about 244 chains of house-connections to the fence-line in this section of the sewerage scheme, and these, together with the septic tank, cost £10,520, which was about £1,000 below the engineer's estimate. The estimated cost of the sewers and septic tank for the south end of the town is £17,000. About two miles of sewers in this section are completed. An arrangement has been made between the Borough Council and the Health Department similar to the one made with Lyttelton, by which Inspector Kershaw supervises and passes the plumbing-work in the new house-connections.

Water-supply.—Extensive alterations are contemplated in the Timaru water-supply, and a report has been obtained from Mr. Dudley Dobson, C.E., on the matter. It is proposed to largely increase the storage-capacity, and to lay a new main. The Timaru water-supply becomes very discoloured in wet weather, and the increased storage-capacity will give greater facilities for cutting off the supply from the race in wet weather or while the race is being cleaned, and also give the water more time to clear. I think it is doubtful, however, whether anything short of filtering the water will give Timaru a really pure water under all conditions.

Waimate.

The disposal of waste water and household slops, especially in the case of hotels and boarding-houses, has been a matter for consultation between the Borough Council and the Health Department. Under the old by-laws hotels had to drain everything into a water-tight cesspit, and this cesspit had to be emptied by pumping into a tank in a cart, which put some individuals to a considerable expense. After full consideration of the matter it was resolved to allow waste water from baths, &c., to be discharged into the old wells, provided that a separate drain existed on the premises leading to a water-tight cesspit into which all foul drainage had to be discharged. These provisions were incorporated in the new by-laws which have been recently drawn up and are now in force.

Oamaru.

Not much progress has been made with the extension of the existing sewers. A short length of sewer has been put in, to which the Post-office and new Council Buildings have been connected. A few new house-connections have been made with the existing sewers during the year.

General Summary of Work done.

Offensive Trades.

At the freezing-works of the Christchurch Meat Company at Timaru and Oamaru, apparatus was installed to prevent the escape of offensive gases from the boiling-down vats and from the drier into the air. I believe that the results have been quite satisfactory at Timaru and fairly satisfactory at Oamaru. It is certain that where good facilities for drainage exist, these works could be carried on without causing the particularly offensive smells that are frequently complained of.

In the case of Clegg, the contractor for the removal of offal from the Christchurch City abattoirs, which was referred to in my last report, an order was obtained from the Magistrate specifying certain alterations and additions, including the erection of a deodoriser. The structural alterations have been carried out and have much improved the facilities for carrying on the trade with less offensiveness, but the deodoriser is not yet entirely satisfactory.

Buildings unfit for occupation.

Twenty buildings were condemned in Christchurch, three in Lyttelton, four in Rangiora, and four in Timaru. In the case of four other buildings, alterations were required.

Medical Examinations.

One person was examined for another Government Department, and nine persons for admission to Cambridge Sanatorium.

Inspector's Work.

The appended report shows the nature of the routine work that has been carried out during the year:—

Infectious cases investigated	264
Disinfections	83
Premises inspected	511
Milk-shops inspected	41
Offensive-trade inspections	15
Drainage inspections	74
Complaints investigated	108
Requisitions served and complied with	31
Milk-samples taken	197
Water-samples taken	10
Other samples taken	39
Food-shops inspected	106
Hotels and boardinghouses inspected	58
Schools inspected	19

Plumbing and Drainage Classes.

Classes in these subjects were held by Inspector Kershaw during the year in Timaru, the drainage class especially being well attended. Examinations were held, and a fair proportion of candidates successfully passed the tests.

In Oamaru a plumbing class was conducted for one quarter, but, owing to the lack of support, had to be discontinued.

I have, &c.,

H. E. Finch,

Dr. Mason, Chief Health Officer, Wellington. District Health Officer.

PART E.—OTAGO AND SOUTHLAND DISTRICT.

Sir,— Department of Public Health, Dunedin, 14th June, 1909.

I have now the honour to send you my report on the work of sanitation in my district during the year ended the 31st March, 1909.

I personally have visited practically all the places of any importance in my district during the twelve months, and my Inspectors have paid visits to all the others, so that no part of my district has this year gone without attention.

Though no striking event has occurred in my district, no epidemic having gained head during the year, the minor duties requiring attention have been many and not unimportant, and I venture to state that this part of the Dominion is progressing in sanitary matters, and that the local authorities are appreciating our efforts, and seconding them in a mode that is satisfactory and promising for the future.

My staff has worked well, showing zeal in their duties, and with their assistance, many sanitary improvements have been effected, which have fully occupied their time.

Legal Actions.

Legal proceedings were undertaken in the following cases:—

Against a laundryman for continuing to occupy a condemned building at Bluff. The Court ordered him to vacate the premises within seven days.

Against M. C., for concealing the existence of scarlet fever at Makarewa. Penalised, £2 2s.

Against W. H. K., of South Invercargill, for concealing the existence of scarlet fever. Penalised, £1 18s.

Of an unregistered midwife at Alexandra. Successful.

Ruinous Habitations.

I have inspected some 64 old houses, of which 30 were ordered to be pulled down as being past repair, and 34 were ordered to be repaired. These were situated as follows:—

	Pulled Down.	Repaired.
Dunedin City	15	27
North-east Valley	1	1
St. Kilda	1	1
Invercargill	1	1
Port Chalmers	1	..
Palmerston South and neighbourhood	1	1
Lawrence	4	1
Waitahuna	..	1
Edendale	5	1
Near Mataura	1	..

Medical Examinations.

I have made examinations of persons, four in number, namely :—
For the Valuation Department, Dunedin.
For the Inspector of Factories, Invercargill.
For the District Engineer, Dunedin.
For the tree-planting camp, of a consumptive.

Pathological Examinations.

Microscopic examinations were made for medical men as follows :—

Sputa—		Pus from pleural cavity—	
Tuberculous	9	Non-tubercular (?)	1
Pneumonic	7	Membrane from throat—	
Bronchitic	5	Diphtheritic	3
Influenza (?)	1	Negative	2

Special Subjects Investigated.

The following special examinations were conducted by District Health Officer :—
Oyster-storage beds at Bluff. Four times.
Night-soil depots at various localities. Three times.
Infectious-disease hospitals at Dunedin, Invercargill, Riverton, and Kaitangata.
Consumption sanatoria, in operation or proposed, at Rock and Pillar, Palmerston South, Invercargill, and Riverton.
Maternity Hospital at Dunedin. Twice.

Work done by Sanitary Inspectors.

The following list gives a general summary of the work done as shown by the Inspector's reports :—

General inspections—premises, nuisances, &c.	5,474
Food-shops inspected	385
Hotels and boardinghouses	209
Factories	105

The above figures include a number of house-to-house inspections, distributed as follows : City of Dunedin and suburbs, 1,800 premises visited, of which 594 showed sanitary defects, or 33 per cent.
House-to-house inspections were made in the following country towns :—

	Number of Houses.	Number of Defects.	Per-centage.
Edendale	72	50	69·4
Gore	700	542	77·4
,, suburbs	143	75	52·3
Lawrence	267	168	62·5
Mataura	285	211	74·0
Orepuki	131	58	44·2
Otautau	150	102	68·0
Owaka	101	14	13·8
Riversdale	77	39	50·6
Waitahuna	48	15	31·2
Waitahuna Gully	28	7	25·0
Winton	100	88	88·0
,, suburbs	48	26	54·0
Wyndham	154	110	71·4
Balfour	53	26	49·0
Nightcaps	105	61	58·0
Waikaia	84	65	77·3
Totals	2,546	1,657	

Investigations into infectious disease were made in regard to 691 premises, and disinfections were made in 418 cases.
Public schools were disinfected in 10 instances.

Clerical Work.

Letters written by District Health Officer	319
,, Inspectors	220
Special reports were made as follows :—	
To Chief Health Officer	14
To County Clerks	8
To Town Clerks	7
Orders to provide for infectious diseases were sent to—	
Otago Hospital Board (tuberculosis	38
,, (scarlet fever)	51
,, (measles)	2
,, (enteric fever)	1
Southland Hospital Board (tuberculosis)	3

VACCINATIONS.

I regret to have a record a great falling-off from the vaccinations this year as compared with the last, which, however, was a record one, in great part due to special efforts on the part of Vaccination Registrars.

This year I issued to medical men, 2,281 tubes; last year the number was 4,502 tubes; showing a deficiency for this year of 2,221 tubes.

FRANK OGSTON,
District Health Officer.

The Chief Health Officer, Wellington.

PART F.—MARLBOROUGH DISTRICT.

SIR,— Department of Public Health, Picton, 6th April, 1909.

I have the honour to present my annual report as to the conditions of public health in the Province of Marlborough for the year ending 31st March, 1909.

I am very pleased to be able to state that there has been a steady and marked improvement in matters sanitary throughout this district. There has been a total absence of friction in carrying out my duties, and I have to thank the various public bodies of the district for the courtesy with which they have always received any suggestions I have had to make, and the willingness they have shown in carrying out the necessary improvements.

WATER-SUPPLY.

Marlborough is plentifully supplied with good drinking-water of excellent quality. Picton for many years has possessed a good high-pressure gravity water-service, supplied to every house in the borough. The growing requirements of the port has necessitated the laying of a new 9 in. main, together with the formation of an accessory dam. The Corporation now supplies an increasing number of consumers and ships with fresh water of excellent quality.

In Blenheim several schemes are being discussed as to the best means of providing a house-to-house water-service, some advocating the erection of a large water-tower fed from artesian sources, others favouring the tapping of the Omaka, Taylor, and other streams in the vicinity. I advised the Mayor and Corporation to obtain the services of a civil engineer to give them expert advice in the matter. At the present time the inhabitants obtain their supplies from private artesian wells, which generally yield a copious supply of good drinking-water.

My attention was directed to the pollution of Blind River, on the Flaxbourne-Seddon Road, used for watering stock. The nuisance was abated by the closing of a flaxmill in the vicinity. An alleged pollution of the Ward Stream at Seddon was investigated, and instructions given for its abatement.

HOTELS.

An increased amount of work has been performed in improving the sanitary conditions existing in various hotels in the province during the year. New septic tanks, which are working satisfactorily, have been installed, and improved modern sanitary fittings have been adopted in many instances. In all cases the recommendations of the Department have been carefully and willingly attended to.

DRAINAGE AND SEWERAGE.

Picton.

Extensive sewerage works are now in course of construction in this town, the work of laying the reticulation of pipes being at the time of writing almost completed. The work is being carried out by the Corporation by day-labour, in accordance with plans prepared by Mr. Leslie Reynolds, under the personal supervision of Mr. Henderson. The system is a gravity one, the sewage being conveyed into a septic tank upon the beach, whence, after disintegration, the effluent is carried out to sea by pipes situated below low-water mark.

Blenheim.

In this town a system of efficient drainage is urgently needed. I have interviewed the Mayor and Sanitary Committee, and have urged them most strongly to obtain the advice of a civil engineer, as to the most suitable methods to be adopted. This is a matter which in the interests of public health cannot be delayed much longer, and it should at once claim the attention of the local municipal authority.

Havelock.

In Havelock a system of drainage, with septic-tank attachment, for the use of the Police-station and Post-office has been installed, and is working satisfactorily.

SCHOOLS.

Many school-buildings have been inspected, and in several instances metal receptacles have been substituted for the insanitary pit privies in such general use in country districts. The retention of large quantities of excreta in pits near schools is most objectionable, and the nuisance is increased at the time of emptying, while it is very likely that diseases such as enteric fever are disseminated through the medium of flies, and also by leakage, by which means the surrounding soil and subsoil water becomes polluted.

Dilapidated and Insanitary Dwellings.

Several houses which were in a condition of decay have been condemned as unfit for human habitation, and destroyed, while others have been put into repair in accordance with instructions from the Department.

Prosecutions under the Act.

On the 9th October, 1908, I brought an action before the Stipendiary Magistrate against a man for knowingly exposing himself in a public place—viz., a railway-carriage—while suffering from an infectious disease (scarlet fever). He pleaded guilty, and was fined 5s., and ordered to pay the costs of disinfecting the carriage, which had, in consequence, been temporarily placed out of use.

In conclusion, I have much pleasure in stating that Inspector Johnston has carried out his multifarious duties in a most satisfactory manner, the disinfection of premises being in every instance carried out under his personal supervision. As occasion arose he has visited and inspected hotels and boarding-houses of the province; while auction-rooms, butchers', bakers', fruiterers', and fish shops, Chinese laundries, and gardens have had his constant supervision.

I have, &c.,
W. E. Redman, M.R.C.S.,Eng., &c.,
Acting District Health Officer.

The Chief Health Officer, Wellington.

PART G.—WESTLAND DISTRICT.

Sir,— Department of Public Health, Greymouth, 8th April, 1909.

I have the honour to submit to you my report on the health district which comprises the following counties on the west coast of the South Island: Buller County, Inangahua County, Grey County, and Westland County. The combined area of the district is about 9,950 square miles, and, as I am the only representative of the Department for this district, the work is of no small magnitude.

Disinfection.

Progress in this direction has been made by the Ross Borough and Hokitika Borough, who have recently purchased a disinfecting equipment. There yet remains other local bodies who are not in a position to prevent the spread of infectious diseases, and consequently I have to do this work for them with our own appliances. These authorities are Grey County, Westland County, Brunner Borough, Greymouth Borough, and Kumara Borough.

Dilapidated and Insanitary Buildings.

The following places have been demolished or repaired (as stated below), in accordance with letters of instruction and advice. There still remains, however, a large number of worthless buildings which are neither useful nor ornamental, and therefore would be better removed.

Greymouth.

Four dilapidated buildings in Mackay Street. Demolished.
One dilapidated cottage, Tarapuhi Street. Demolished.
Two dilapidated dwellings, Gresson Street. Demolished.

Hokitika.

Five dilapidated shops, Lower Revell Street. Demolished.
Two dilapidated houses, Fitzherbert Street. Demolished.

Ross.

Three dilapidated sheds, Alymer Street. Demolished.
Several places have been repaired here.

Westport.

Six buildings in Palmerston Street. Demolished.
One factory, Palmerston Street. Rebuilt.

Reefton.

Three buildings, Broadway. Demolished.
Two shops, Broadway. Repaired.

Hotels.

A tour of inspection has been made of 84 hotels, for the purpose of reporting to the Licensing Committees. Most of the inspections were made in company with the Inspector of Police, or some member of his staff, whilst in a few cases I made the necessary inspections alone. The combined inspection was made with a view to having the sanitary reports submitted along with the police reports.

I attended the annual Licensing Committee meetings at Greymouth and Hokitika respectively on behalf of the Health Department, and gave evidence substantiating my reports when called upon by the Chairman to do so.

Local Sanitary Conditions.

Greymouth.

Drainage here is on the combined system. Most of the sewers are earthernware pipes, and are laid so as to discharge into the Grey River and a lagoon respectively. Some of the main sewers are ventilated at intervals of 3 to 4 chains apart. The old system of drainage of house premises will soon be a thing of the past, for a start has now been made to put proper house-drains in on modern lines; but, as the by-laws only give minor details, I have to spend a good portion of my time in advising and superintending the work.

Rubbish-collection.—This is undertaken by the Borough Council in the thickly populated parts of the town for household refuse only. Until a few months ago house-refuse was tipped into the sea, and often got washed ashore. The same change has taken place with this as with the night-soil, and all is now satisfactory.

Water-supply.—This is raised from the Grey River by means of pumps, which lift the water to a high enough altitude to supply the whole of Greymouth. A screen of shingle is fixed in the river near the pumping-station, but there are no proper filter-beds to the system, nor yet settling-tanks; consequently the interior of the pipes are coated with a thin film of river-mud, which gives the water a dirty appearance. I took samples of this water in February last and forwarded same for analysis, and received a reply that the water was of good quality.

Westport.

Water-supply.—This is taken from a creek about four miles from the township, the reservoir being constructed at such a height as to give a very high pressure in the town. Samples of this water were taken prior to the installation of the water-service, and were found to be very good for a town supply. As there is no possible source of pollution from the catchment-area, filters are not necessary.

Night-soil Collection.—The method of collection here is satisfactory so far, but the town is growing on all sides, and becoming more thickly populated; in fact, at the present time one back street (especially at one side) is almost a continuous string of pan-closets and urinals. I am pleased, however, to be in a position to state that the sanitary night-service is performed in a very satisfactory manner, and certainly leads (in the way of cleanliness and efficiency) for the whole of the West Coast District. The system is practically the same as the sealed-pan system. The pans are treated separately, and afterwards, as required, dipped in boiling tar, and allowed to drain; these being then ready for another night's work.

Drainage.—The present system of drainage consists of earthenware drain-pipes which serve to take storm-water, household wastes, and urinals. No night-soil is supposed to be taken into the drains. The Hospital is an exception, as all the sewage from here is drained to a septic tank, which, in turn, has an outlet into the Council's sewers. The present system of drains cannot be said to be modern, as they are not properly trapped or ventilated, and if these drains are not suitable for carrying discharges from water-closets, then they are scarcely suitable for the discharge of household waste-water. The present Councillors are alive to this question, and have recently instructed the Borough Engineer to prepare plans and specifications with an estimate of cost of a new and up-to-date scheme. Estimates (which are detailed fully) were put before a Council meeting, and it was decided that, if the Government would advance the necessary capital to carry out the scheme, a poll of the ratepayers be taken. Should the poll prove favourable, it will never be regretted by the residents.

Hokitika.

Water-supply.—A water-supply has been installed here recently. It is taken from Lake Kanieri (about eleven miles from the township), and is brought part of the way in earthenware pipes to a reservoir, then in wooden pipes to the town. The reticulation was completed recently, but the wooden pipes did not give satisfaction, and the contractors decided to remove the defective ones and install others in their places. There are also other defects in the service which have to be remedied. Prior to the installation of this service, water was obtained either from the roofs of the habitations or wells, and, considering that privy-pits exist in the locality of these wells, it seems strange that the town has remained so healthy.

Sanitary Conveniences.—These are antique, and consist mostly of privy-pits on very small areas of ground.

It would be almost useless to recommend pan privies, unless a system of collection and removal were installed by the Council, as the contents of many would certainly be dumped on the beach, which is bad enough as it is, owing to the deposit of rubbish of all descriptions.

Rubbish.—The Council has also been requested to provide a rubbish-depot, but nothing has been done in the matter, with the result that what ought to be a pleasant sea-beach is now an elongated rubbish-depot.

Drainage is chiefly absorbed on the gardens of the occupiers.

Water-supply.—None, except roof-water.

Ross.

This township has recently been reached by railway.

Sanitary Conveniences.—Very few of these are privy-pits. The owner or occupier is instructed to provide a pan privy parallel with a main street, and about a chain and a half distant therefrom is a water-race into which all the house-drains discharge, including the privies. These privies are simply seats erected over the house-drain, which is in many cases of wood.

Small rubbish-tips exist in different parts of the borough. The town would be much better from a sanitary point of view if the borough would define a rubbish-depot, and compel all rubbish to be deposited therein.

Drainage.—The water-race acts as a drain for a good many houses. The houses on the opposite side discharge their household wastes into a wooden drain at the back of the premises, where there is a right-of-way known as "Smelly Lane." This drain is partly constructed of wood and partly of earthenware pipes. Moorhouse Street is also receiving household waste waters into its wooden water-channel, which discharges the same into an open ditch about 30 chains down the street. I attended the meeting of the Ross Borough Council, and pointed out the evils of such surroundings, and the Councillors at that time were anxious that something should be done. The remedies are simple: (1.) Each house has enough ground to dispose of its own waste waters, and this would remedy the evil of making the water-tables open sewers. (2.) Privy-pans could be adopted, and a night-soil collection arranged weekly. (3.) A rubbish-collection service should also be arranged.

Water-supply.—The town has a water-supply which is mostly used for household purposes other than drinking, water for the latter purpose being caught in tanks from the roof of each dwelling.

Brunnerton.

The sanitary conditions here are rather antiquated, and it would appear as though a good portion of the rubbish finds its way into the Grey River. The local authority is not strong enough financially to undertake an expensive scheme of drainage, and people can only be advised to do the best for themselves in getting rid of their waste waters, night-soil, &c.

Reefton.

Water-supply.—This is brought from a creek about two miles beyond the town in an open water-race constructed of wood to a reservoir which is situated at the head of the township. The said water-race is dilapidated, and the interior is partially filled with moss and *débris*. The Council are providing means for another supply on a more substantial basis. This water is used for all purposes, but many people prefer to catch and store roof-water in preference for drinking purposes.

Swimming-baths have recently been erected, and should prove a boon to the Reefton community.

Drainage.—A large portion of this township has a drainage scheme which is only partially laid on modern lines; yet, at the same time, it fulfils its purpose. The most elevated part of the system has an intake from the river, which is used for flushing purposes at intervals. The outlet of the sewer discharges into the river direct without any treatment whatever, as the said river is proclaimed a sludge-channel. There are no intercepting traps to the system, and there are no vent-pipes, except the anti-siphon pipe to each W.C. There is very little or no smell about the system, as the sluice-valve at the head of the sewer can be regulated to let any desired quantity of water through at any time, so that for most of the time the anti-siphon pipes are acting as inlets, and there is no chance of a smell accumulating. Reefton is fortunate in being so situated to be able to install a drainage scheme with every advantage and economy.

Denniston.

This is a coal-mining district situated about twelve miles from Westport, and at an elevation of 2,000 ft. above sea-level. Huts and houses are huddled together on terraces one above another. Proper privy-accommodation is not known, the method of disposal being either to deposit over a seat into a drain which runs along the surface of the rock, or to use a kerosene-tin and, when full, dump it into a creek, a hollow, a neighbour's yard, or anywhere within easy reach. Some of the occupiers, however, have decent surroundings, but these are few.

The Buller County Council have commenced to make provision for a collection and disposal of night-soil and rubbish; then we can expect to see a big sanitary improvement, which will be much welcomed by those residents in the lower streets who receive their neighbour's rubbish from heights above.

Millerton.

This place is similarly situated to Denniston as regards its sanitary condition—that is to say, that each place has been terribly neglected ever since they were townships. Millerton is better situated than Denniston for sanitary purposes, it having a decent depth of soil over a good portion of the township. Nothing has yet been commenced here with regard to improving matters, either by the Buller County Council or the Westport Coal Company.

E. Middleton, Inspector.

Dr. Mason, Chief Health Officer, Wellington.

PART H.—REPORT BY DR. POMARE ON SANITARY CONDITIONS OF THE MAORI

Sir,— 1st June, 1909.

In times past the Maori was active in every way. He had to live a strenuous life, to make himself physically fit for all eventualities. His eye had to be open to watch for the coming of the foe; his arm had to be in good practice with the *taiaha* or *mere*. He was his own beast of burden. Everything that went to the pas, which were situated on the hill-tops, had to be carried there on his shoulders. Hunting, fishing, constant work in hewing out canoes, carving, cultivating the soil, military tactics, and war-dances entered greatly into his daily *régime*. And then, to keep his

brains also active, there was the history, the legends, the endless genealogies, and the songs of the tribe to be committed to memory. The Maori of old was lean, sinewy, tough, and mentally active. He lived the natural, open, out-of-door life, and thus was always in the best of physical condition. Those who reached maturity were literally the fittest of their race, for no weakling could survive the hardships and exposure of their primitive life.

Now, when the Maori was obliged by peace to end fighting he ceased to be a worker. The horse came into existence, and he no longer carried burdens up to his airy pa. He became indolent and ambitionless. He sold his land, and learned to spend the proceeds, some of which were fairly bought for Jew's-harps and red blankets, while others were possessed by his brother—"*Recte si possint si non quocunque modo.*" Then he sat around smoking tororí and drinking whisky when he could get it, brooding over his wrongs, his lost mana, and his lands. New conditions arose. The old life was no more. The present life was disjointed. He began to live a pseudo-pakeha life. His clothing was altered; his diet was different. He was unable to resist disease. He began to decrease. This was his deplorable condition when we started to work nearly nine years ago. Since the inauguration of the Department we have had many knotty problems concerning his welfare to solve. Only by infinite sympathy and patient understanding of his idiosyncrasies were we able to overcome difficulties which might have often ended in Courts of law.

We commenced with sanitary reforms amongst the Maoris with a great deal of trepidation, but the result of the work has proved astonishingly satisfactory; in fact, far beyond our dreams or expectations. We can truly state to-day that, owing to sanitary adjustments, the Maori is a hundred per cent. better off than he was nine years ago. The Maori has awakened. With the passing of such men as Te Whiti and Tohu; with the constant agitation in the direction of land-settlement, of individual effort, of sanitation and progress, the Maori has realised that the only royal way to salvation is by work. Everywhere our young men are clamouring to get on to the land, and when once one or two are successful many try to emulate their example.

Eight years of sanitary work amongst my people under your captaincy has made you beloved of the people. We regret that, owing to stormy weather, the ship of State has to unburden itself by the unloading of our Department; but, sir, though my people from all parts are *pouri* for this step, they cannot help being grateful for the great, great good which has been done. The years which we have spent in trying to uplift our fellow-men have not been spent in vain. The good seed which has been wisely and widely sown has grown. We can always look back upon these years with pride; and throughout the Dominion, from the far-away Rerenga Wairua to Stewart Island, from the fastnesses of the Urewera to the Hawke's Bay plains, the words are living, and the lives of men have been saved and changed.

Whole villages have been renovated. Some have been shifted from their low, damp situations to the higher lands. Hundreds of insanitary houses have been destroyed without a penny of compensation being asked for. New houses have been erected. In some districts it would be quite difficult to find a Maori whare of the old stamp. They have all gone in the general awakening that has taken place.

Figures re *Insanitary Houses destroyed, &c.*

Year.	New Houses built.	New Maori Whares.	New W.C.s erected.	Houses destroyed.
1904	763	6	73	291
1905	258	30	93	183
1906	207	3	152	160
1907	123	6	175	83
1908	544	254	346	340
1909	208	2	164	179*
Total	2,103	301	1,003	1,256

* Incomplete.

Drains have been cut; water-supplies have been laid on; fences have been erected around the kaingas. The pas are now more cleanly kept. The children are better cared for. Epidemics are fewer now, and when they do occur they are not as disastrous as formerly.

During the year we had another health pamphlet printed and widely circulated. The distribution of this kind of literature in the Maori tongue has been a long-felt want. We felt that the health lectures would be more beneficial if they were followed up by printed matter.

Medical Inspection of Native Schools.

I am sorry to state that, owing to pressure in other directions, the medical inspection of our Native schools has not been systematically carried out. Our staff at present is too small to carry this useful work on in a regular manner. Wherever we have had opportunities we have examined children at the

schools, besides giving lectures to them on hygienic matters. If the Tasmanian idea was carried out, and we had lady doctors to do this work, it would prove of great benefit not only to the children, but to the race as a whole. Though I feel diffident in suggesting that the school-teacher should take the chest-measurements of all his scholars, because of his multitudinous duties, yet I think the exercises which he gives would be more profitable if this were done. He could then find out the weaklings, and so keep a special eye on them during exercise, and make them develop those points which are specially weak.

On the whole, we have found the children fairly free from neurotic and eye diseases. The general complaints were those of *hakihaki*—a disease where soap and water would be the principal remedy required. Some pakehas have an idea that "Maori itch" is peculiar to the Maori, and consequently we hear a great deal of nonsense from certain quarters, especially where the pakeha and Maori children attend the same school. In several schools I examined I found that the pakeha children were equally suffering from scabies, or "Maori itch" as it is called; and in one school I found the Maori children were free while several of the pakeha children had it.

Nursing.

Ever since we have existed as a Department we have urged the extreme necessity of training our girls in the hospitals, and sending them back to their people. Our scheme of having Maori district nurses in the charge of a pakeha nurse has not yet been tried. The good that would result from such a scheme has been pointed out too often for me to reiterate. The Churches have started to do this in several districts, and practical Christianity is what will appeal to any man in pain. It has succeeded beyond all expectations.

The Staff.

Ever since we have had the Maori Sanitary Inspectors added to our staff a great deal of good work has resulted. I cannot speak too highly concerning the services of these men. They have accomplished in a few short years what I thought would take at least a quarter of a century. There is no doubt the personal element has had a lot to do with their success, for they are all chiefs by birth. During the last two years we have had two meetings of the entire staff. Lectures and practical demonstrations were given on sanitary and public-health matters. These short courses of training have added greatly to the efficiency of the staff, and have proved of inestimable value to the race.

We regret greatly the loss of Dr. Buck's services, and I have to place on record the appreciation which we feel for the very valuable assistance he gave us during his three years' engagement.

The forty-six subsidised medical men have also done very good work. No one but a medical man can appreciate the difficulties which these men have to contend against in treating Maori patients; but no doubt as time goes on the Maoris will learn the lessons of a sick-bedside, and so lessen the disadvantages of a medical practitioner for the Maoris.

I append statistics* of diseases among the Maoris during the last seven years.

I have, &c.,

Dr. J. M. Mason, Chief Health Officer, Wellington. Maui Pomare, M.D., &c.

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* A summary of these statistics is given on page 36 of the general report.

APPENDIX III.—TE WAIKATO SANATORIUM.

Memorandum for the Chief Health Officer, Wellington.

Department of Public Health, Te Waikato Sanatorium, Cambridge.

I HAVE the honur to submit the report of Te Waikato Sanatorium for the year ending 31st March, 1909.

At the end of the preceding year there remained under treatment at the institution 41 patients, of whom 27 were males and 24 females.

The number admitted during the year under review was 105 cases, consisting of 71 males and 34 females. During the period referred to there were discharged 52 male and 34 female patients, while in addition to this, 20 males were transferred to Karere Camp at Whakarewarewa.

The deaths during the year totalled 9, consisting of 4 males and 5 females.

There remained under treatment on the 31st March, 1909, 26 males and 15 females—41 cases in all.

Incoming.

	Males.	Females.	Total.
Remaining under treatment, 31st March, 1908 ..	27	24	51
Admitted during year	71	34	105
Totals	98	58	156

Outgoing.

No sign of active disease	9	10	19
Greatly improved	27	12	39
Improved	22	8	30
Not improved	14	4	18
Died	4	5	9
Remaining under treatment, 31st March, 1909 ..	26	15	41
Totals	102	54	156

Of those leaving the institution, either to return to their friends or to proceed to Karere Camp, 19 cases—9 males and 10 females—were to all appearance in good health when discharged, examination of the chest, although disclosing in some cases evidence of the past trouble, showing no evidence of active disease.

Twenty-seven males and 12 females left the Sanatorium greatly improved in general condition, and in condition of the lungs, while 22 males and 8 females improved to a less extent.

Eighteen patients—14 males and 4 females—showed no signs of improvement by the Sanatorium treatment, and were discharged in worse condition than when they entered the institution.

The same line of treatment was followed as in the previous years, except that a few picked cases were treated with one of the numerous forms of tuberculin. The results obtained in these cases were, however, not sufficiently good to justify the greatly increased expense of the treatment.

I desire to draw your attention to the apparent great need of the establishment of hospitals for consumptives, apart from sanatoria, in this Dominion. A very large number of cases are sent to this Sanatorium apparently as a last hope, and it is quite evident that such cases can only be temporarily patched up, and could be treated quite as well and more economically elsewhere, leaving the Sanatorium quite free to direct its energies to its legitimate work of endeavouring to help those who have at least a chance of receiving permanent benefit. We are constantly experiencing the greatest difficulty in inducing the friends of patients to remove them from the institution after they have been notified that there is no prospect of improvement, and this, I think, is due in a great measure to the lack of proper accommodation for incurables.

Buildings.—It having been decided to train Maori girls in the principles of combating the disease among their own people, a two-roomed cottage was built for their reception alongside the existing nurses' cottage.

Lighting.—The present storage-battery having become worn out—it has been in constant use for the past six years—a new battery was ordered from England, and will shortly be installed.

Water-supply.—The storage-reservoir has been increased in capacity from 8,000 to 21,000 gallons, greatly economising labour in pumping, and saving the oil fuel for the engine, as well as making more effective the fire-extinguishing apparatus, for which latter purpose 2 in. pipes have been laid alongside the present 1½ in. pipes, thus giving a good head of water.

Steam Service.—The great success of the high-pressure boiler which was installed eighteen months ago in supplying steam to the main building and drying-shed prompted us to also lay the steam-pipe to the Ward Colony; and, further, there was manufactured on the premises a steam-cooker for the kitchen, which has proved a thorough success.

Laundry.—For the laundry, a centrifugal curb extractor and a washing-machine, together with a motor to be worked from the high-pressure boiler, were ordered early in the year, and will shortly be placed in position. This will supply a long-felt want, as some of the hardest work is done in the laundry, and is the least conveniently equipped part of the institution.

Patients' Workshop.—Those patients at the Plunket Colony who were fit for the work assisted in the erection of a workshop for themselves, and have during the past year turned out some really good and useful work. Their time at work is necessarily broken—always they are willing to do some work, but it is not always they are fit. Of the carpentering work achieved was the making of twelve or more beehives, neatly put together from old kerosene-cases on the plan approved by the Government Apiarist. Twelve nest-boxes were constructed, from the idea emanating from Mr. Harold Edmonds, the patient who is in charge of the poultry-farm. These boxes form separate shelters, and will be dotted about the run in the same manner as beehives, thus insuring a less risk of nest-boxes becoming infected with vermin, and providing a secluded place for the sitting-hen. These boxes are painted white, and, like the hives, were constructed from old kerosene-cases.

The other works comprised making doors for the strawberry garden and for the workshop, enlarging the Plunket medicine cupboard, making gates, and putting new bottoms on chairs, &c.

Sun-shelter.—As a much-needed shelter from the sun an octagon has been built, where the Plunket patients may rest, there being no natural shelter near. This building adds greatly to the appearance of the Plunket Colony.

Water Reserve.—This was fenced off from the paddock for the horses, and "working bees" were organized for the patients, the reserve bordering the road being planted with flowers and shrubs, greatly beautifying the place—useful work and beneficial to those taking part in it.

Karere Tree-planting Camp.

From the earliest days of the Sanatorium it was evident that ex-patients were greatly handicapped by their inability to procure work of a kind suitable to their strength and under such favourable conditions as to enable them to retain the benefit which they had derived from sanatorium treatment. Some few were sufficiently well to enable them to return to their old employment with every confidence of being able to retain their health, but in the majority of cases either the nature of the work was unsuitable or the effects of the disease has reduced their capacity for work to such a degree as to render it necessary for them to endeavour to procure some lighter and more suitable form of employment. Many cases have come under our observation where patients were discharged comparatively well, but being unable to obtain such employment, the consequent anxiety of mind and inability to provide themselves with proper food and conditions of life resulted in a return of the disease.

We have long recognised that some effort should be made to pro ure suitable work for ex-patients. Through the courtesy and kindness of Mr. Matthews in saying that he would assist us in an experiment by allowing ex-patients to do tree-planting by piece-labour, the experimental tree-planting camp at Whakarewarewa by the Public Health Department was established.

Karere Camp—the "forerunner" as we hope it is to be of larger camps in the future—is situated at Waipa, eight miles from Rotorua. It originally consisted of two tents, 20 ft. by 12 ft., with boarded floors, for the accommodation of eight men, and one dining-tent, and the necessary accommodation for the sister in charge.*

The camp was opened on the 24th May, 1908, Sister Urquhart being placed in charge. I might state here that our best thanks are due to the officers of the Forestry Department directly in charge of the tree-planting, Mr. Goudie and Mr. Buchanan, for the valuable aid they have so freely given.

The work during the winter months consisted of planting young trees over cleared and pitted hillsides; and the men, although quite inexperienced, performed the work well, and, I believe, to the satisfaction of those in charge of the operations. The initial experiment being so encouraging, it was decided to enlarge the camp, which now consists of five large tents, one roofed dining-shelter containing cooking-range, copper and bath, four single tents, and a shed for coal, buggy, &c. Accommodation is thus provided for nineteen men, one sister, one nurse, and a cook. At the end of the tree-planting season it was decided to give the men a portion of land to clear of fern and scrub, and pit the ground ready for the planting in the following season This work proved to be much more severe and not so favourable to some of the men, owing to the greater exertion required and the amount of dust raised in clearing the fern. Some were unable to stand this work, but others showed that they were well enough to do fairly heavy labour under somewhat trying conditions.

On the whole, the tree-planting experiment has been successful, and, I think, goes to prove that the finding of employment for ex-patients is highly desirable, as, apart from the question of humanity, men so employed are enabled to produce work of some value to the State who otherwise would, in the majority of cases, become a burden on the various Charitable Aid Boards of the Dominion. The fear of infection has become so general that it is almost impossible for a man to obtain outside employment if he allows it to become known that he has been an inmate of a sanatorium. Although the need of employment for female patients is not so urgent as that for men, still, I think something should be done in that direction also.

* See photographs at beginning of report.

The following table shows the number of days worked by the men, the number of trees planted, and the value of the work done from May, 1908, to November, 1909 :—

Table showing the Number of Days worked, Trees planted, and Money earned by the Sanatorium Ex-patients at Karere Camp, Whakarewarewa.

Name.	Days worked.	Trees planted.	Money earned. £ s. d.
W. A.	141	106,200	43 14 $6\frac{1}{5}$
J. A.	116	82,575	33 0 $6\frac{2}{5}$
R. B.	103	58,425	23 7 0
H. E.	78	54,150	24 14 $2\frac{2}{5}$
N. G.	78	56,700	23 17 $6\frac{1}{5}$
J. W.	98	66,275	26 10 $2\frac{3}{5}$
H. F.	150	120,600	49 5 $9\frac{3}{5}$
J. M.	15	9,000	4 14 2
J. W.	131	105,500	42 4 $4\frac{3}{5}$
— R.	45	36,025	14 8 $2\frac{2}{5}$
H. W.	49	35,650	14 5 $2\frac{2}{5}$
J. McD.	105	84,400	33 15 $3\frac{1}{5}$
S. C.	92	73,700	29 9 $7\frac{1}{5}$
M. N.	65	54,300	21 14 $4\frac{4}{5}$
— H.	2	900	0 7 $2\frac{2}{5}$
		944,450	£383 8 7

NOTE.—On fourteen wet days no one worked, and on other occasions the days were too wet for a full day's work.

In concluding my annual report, I have again to express my appreciation of the excellent work done by the staff of the Sanatorium, from the Matron, Miss Rochfort, downwards. I should especially mention the valuable services of Sister Urquhart, who has been in charge of Karere Camp, and has had much to do with the success of that establishment. I am also much indebted to Mr. Magrath, who, in addition to the very heavy clerical duties of the institution, has assisted me greatly by the preparation of microscopical slides for examination, no small item, as the following table shows :—

Table showing Specimens examined.

Sputum for tubercle—	
Positive	266
Negative	132
Doubtful	18
Fluid for hydatids—Negative	1
Total	417

EDWARD E. ROBERTS,
Medical Superintendent.

DETAILS OF CASES TREATED.

OCCUPATIONS.

Farmer	9	Plumber	2
Asylum attendant	1	Scholar	2
Fireman	1	Land agent	1
Linotyper	2	Bookbinder	1
Painter	2	Carter	2
Shop-assistant	6	Blacksmith	1
Domestic duties	18	Surveyor	1
Ironmonger	1	Postmaster	1
Dentist	1	Hotel-assistant	1
Clerk	6	Farm hand	2
Grain-buyer	1	Electrician	1
Miner	6	Lineman	1
Upholsterer	1	Nurseryman	1
Dressmaker	6	Fitter	1
Traveller	1	Bootmaker	1
Cook	1	Horse-trainer	1
Carpenter	5	Draper	2
Engineer	1	Teacher	1
Sawmiller	1	Gardener	2
Jeweller	1	Unspecified	4
Barmaid	1		
Wool-sorter	1	Total	105
Labourer	3		

Localities from whence Patients entered.

Auckland	38	Temuka	1
Wellington	15	Gisborne	3
Huntly	1	New Plymouth	2
Mangaweka	1	Hikurangi	1
Waipu	1	Thames	1
Wanganui	1	Denniston	1
Karangahake	2	Whatawhata	1
Manaia	1	Hokitika	2
Kuaotunu	1	Waiuku	1
Rotorua	4	Te Kuiti	1
Marlborough	1	Whangarei	1
Frankton	1	Whareroa	1
Lyttelton	2	Taradale	1
Masterton	1	Westland	1
Levin	1	Pokeno	1
Te Awamutu	1	Ashburton	1
Wairarapa	1	Kanieri	1
Christchurch	1	Southland	2
Pahiatua	2	Pleasant Point	1
Hastings	1		
Napier	2	Total	105
Palmerston North	2		

Nationalities.

New Zealand	73	Australian	1
Irish	4	Dutch	1
Scotch	7	German	1
English	14	Swiss	1
Maori and half-castes	3		
		Total	105

Length of Residence in Sanatorium.

Total number of days	17,165	Average days per patient	161

Family Position.

First-born	8	Eighth-born	6
Second-born	20	Tenth-born	1
Third-born	11	Eleventh-born	2
Fourth-born	21	Thirteenth-born	2
Fifth-born	5	Particulars unobtainable	17
Sixth-born	4		
Seventh-born	8	Total	105

Parentage.

Two patients were admitted whose fathers suffered from consumption and 5 whose mothers were affected. Particulars were not obtainable in 7 cases, and in 2 cases the parental history was doubtful. Of the remaining 79 cases there was no indication of either parent being phthisical.

APPENDIX IV.—LABORATORY REPORTS.

PART A.—PATHOLOGICAL LABORATORY REPORT.

SIR,—

I have the honour to submit the following report on the work of the Bacteriological and Vaccine Laboratories:—

At the end of last year I made the recommendation that a small fee should be charged for the examination of pathological specimens other than those bearing directly on public-health questions. My suggestion was made with a view to excluding, if possible, from the demands made on us all such simple examinations as could well be done by any medical practitioner, since the number of these was increasing to such an extent as to occupy an unfair share of the time of myself and my assistants. This recommendation was approved by the Hon. the Minister of Public Health, and came into force on the 1st June, 1908. It was decided to charge an all-round fee of 10s., except for such examinations as sputa for tubercle bacilli, blood for typhoid reaction, and throat-swabs for diphtheria. These, being matters of some public interest, are still examined free of charge. A remission of the fee is also made in the case of specimens from public hospitals, and where the medical practitioner certifies in a private case that the patient is without the means to pay. The benefits of the laboratory are thus still within the reach of every one.

The results this year have, I think, justified the imposition of the small charge, for the medical profession have continued to submit specimens very nearly to the same extent as last year, the total examinations made being 1,291, as against 1,439 in 1908. In the accompanying table it will be seen that the infectious-diseases groups—such as tubercular sputa, typhoidal bloods, and diphtheritic swabs—remain much as before, the principal reductions being in the examination of solid tissues and the chemical examination of urines. The smaller numbers in the latter class must be regarded with entire satisfaction, as it especially applies to the simpler chemical tests, which certainly should not be passed on to a public laboratory. The reduction in examinations of solid tissues is not so much to be desired; but during the later months of the year the number of these, which had been greatly reduced when first the charge was made, rose again to the original, or even larger, proportions. The drop was no doubt due to the fact that many practitioners did not at first understand the position, for all to whom I have spoken have expressed themselves entirely satisfied that a fee should be paid. Indeed, some who previously hesitated to take advantage of what appeared to them almost as a public charity have since sent in specimens for examination.

It is very satisfactory to find that the charge made has had so little effect, indicating as it does that our work is regarded by the medical profession as of real value to them. The credit of having thus obtained the confidence of these medical men must rest with Mr. Hurley, whose reputation for accurate and painstaking work is now thoroughly established.

TABLE SHOWING RESULTS OF EXAMINATIONS OF PATHOLOGICAL SPECIMENS.

Material.	Object of Examination.	Result.		Total.
		Positive.	Negative.	
Sputum	For tubercle	118	259	377
	„ other conditions	2	5	7
	Spoiled in transit	...	...	7
Total		...	...	391
Total for 1908		...	...	401
Purulent and other discharges—				
Pus	For gonococcus	18	26	44
	„ pyogenic organisms	11	2	13
	„ tubercle bacilli	1	8	9
	„ other conditions	9	1	10
Pleuritic fluid	„ tubercle	...	3	3
	„ other conditions	2	...	2
Other discharges	„ diphtheria	...	2	2
	Spoiled in transit	...	...	4
Total		...	...	87
Total for 1908		...	...	72

TABLE SHOWING RESULTS OF EXAMINATIONS OF PATHOLOGICAL SPECIMENS—*continued.*

Material.	Object of Examination.	Result.		Total.
		Positive.	Negative.	
Blood-samples	For Widal reaction	16	41	57
	„ estimation of leucocytes ...	3	...	3
	„ other organisms	2	...	2
Total	...	...	...	62
Total for 1908 ...	...	...	...	71
Swabs from the throat, &c.	For diphtheria	52	106	158
	„ other conditions	1	2	3
Total	...	...	...	161
Total for 1908 ...	...	...	...	169
Urine	Chemical examination ...	64	31	95
	Bacteriological examination ...	2	36	38
	Microscopical examination ...	27	9	36
	Spoiled in transit	...	...	2
Total	...	...	...	171
Total for 1908 ...	...	...	...	296
Solids—Tissues requiring section	For malignancy	82	86	168
	„ special bacteria ...	3	5	8
	„ other conditions ...	4	...	4
	Sections prepared for hospital...	...	...	3
	Spoiled in transit	...	...	6
Total	...	...	...	189
Total for 1908 ...	...	...	...	251
Fæces	Chemical	1	...	1
	Microscopical	2	1	3
Vomit	Chemical	5	...	5
	Microscopical	2	...	2
	Bacteriological	3	...	3
Total	...	...	...	14
Total for 1908 ...	...	...	...	18
Parasites	For hydatids—			
	Sputa	2	3	5
	Urines	...	3	3
	Meat	1	...	1
	Others	1	1	2
	For other parasites	1	...	1
Total	...	...	...	12
Total for 1908 ...	...	...	...	16
Foodstuffs	Milk examinations—			
	Bacteriological	5	4	9
	Microscopical	1	1	2
	Preservatives	1	2	3
	Flour (bacteriological) ...	...	...	15
	Tinned meat	2	1	3
	Eggs	2	...	2
	Fowl	...	1	1
	Meat	2	...	2
	Butter	1	...	1
	Almond paste	...	2	2
	Stout	...	1	1
	Limejuice	...	2	2
	Pickles	...	1	1
Total	...	...	...	44
Total for 1908 ...	...	...	...	30

TABLE SHOWING RESULTS OF EXAMINATIONS OF PATHOLOGICAL SPECIMENS—*continued*.

Material.	Object of Examination.	Result.		Total.
		Positive.	Negative.	
	Other Examinations.			
Disinfectants tested ...	Antiseptic soaps	...	...	4
	" fluids	...	...	3
Surgical ligatures	For pyogenic organisms ...	...	3	3
Stains on clothes	...	1	1	2
Other examinations	...	...	...	7
Total	...	...	...	19
Total for 1908 ...	...	...	...	13
Water-samples ...	Bacteriological	...	...	60
	Sludge-deposits	...	...	22
Total	...	...	...	82
Total for 1908 ...	...	...	...	64
Animals	Rats, for plague (not including those done at Auckland)	...	3	3
	Mice, for plague	...	1	1
	Fowls, for bacteria	1	1	2
	Insects, for bacteria	2	...	2
	Dog's kidney, for poison ...	...	1	1
	Guinea-pigs inoculated—			
	For tubercle	3	8	11
	" diphtheria	...	1	1
	" water-analysis ...	...	3	3
	" other conditions ...	...	1	1
Total	...	...	...	25
Total for 1908 ...	...	...	...	42
Bacteriological examinations of vaccine lymph	...	...	...	28
Total for 1908 ...	...	...	...	62
Total specimens examined ...	...	...	...	1,291
Total specimens examined in 1908	...	...	...	1,439

Details of Urinary Examinations.

Method.	What sought.	Positive.	Negative.	Total.
Chemical analyses—				
Quantitative ...	Estimation of urea	...	...	21
	" sugar	...	...	24
	" albumen ...	...	...	1
Total	...	...	...	46
Qualitative ...	For albumen	12	15	27
	" sugar	2	14	16
	" other conditions... ...	4	2	6
Total	...	...	...	49
Bacteriological ...	For tubercle bacilli	2	27	29
	" *Bacillus coli*	...	6	6
	" gonococcus	...	3	3
Total	...	...	...	38
Microscopical ...	For casts, pus, &c.	27	9	36
	Spoiled in transit	...	...	2
Total	...	...	...	38
Total urinary examinations	...	...	...	171

TABLE SHOWING RESULTS OF EXAMINATION OF TISSUES.

Conditions found.	Reproductive System.					Digestive System.		Respiratory System.	
	Uterus.	Breast.	Ovary.	Testicle.	External Organs.	Mouth, Lips, &c.	Stomach, and other Viscera.	Pleura, Lungs, &c.	Larynx.
Carcinoma	13	4	..	..	1	12	4	2	..
Sarcoma	3	1	1	3	1	2	..	..	..
Simple tumour	5	7	1	..	1	5	1	..	..
Results of simple inflammatory processes	22	14	..	..	..	4	4	..	1
Normal	1	..	..	..	..	1	1	..	..
Others	2	..	..	..	..	..	..	..	..
Bacterial—									
Tubercle	..	..	..	..	..	..	..	1	..
Others	..	..	..	..	..	..	1	..	..

Conditions found.	Locomotive System.	Nervous System.	Integumentary System.	Urinary System.		Lymphatic System.	Total.
	Bone, Muscles, &c.	Special Sense Organs.	Skin.	Kidneys, &c.	Bladder and Ureter.	Glands.	
Carcinoma	..	..	10	..	1	8	55
Sarcoma	5	4	5	1	..	1	27
Simple tumour	4	3	4	1	..	..	32
Results of simple inflammatory processes	3	..	1	1	..	3	53
Normal	..	2	..	1	..	..	6
Others	..	1	..	..	..	..	3
Bacterial—							
Tubercle	..	..	..	1	..	..	2
Others	1	..	..	..	..	..	2
							180
Sections prepared for hospital ..	..	..	..	..	..	..	3
Received spoiled	..	..	..	..	..	..	6
Total	..	..	..	..	..	..	189

BACTERIOLOGICAL EXAMINATION OF WATER SAMPLES.

A large increase in this branch of the work was made this year, as I had hoped to make a complete bacteriological survey of all the public supplies in the Dominion; but this work occupies so much time, involving as it does a personal visit to each centre, that the results are still incomplete.

I visited in all sixty supplies or proposed supplies. Many of these I had previously examined, but a re-examination was deemed necessary for various reasons. I hope shortly to have a report on every public supply in the country. Such reports, though of restricted value in themselves, will be of the greatest service for comparative purposes in the future, when, owing to increase of population or from other causes, the safety of the water is called into question. As I have pointed out in a former report, a single examination, unless the pollution is gross, does not yield much information. It is only by comparing present results with those previously obtained that one can arrive at definite conclusions. For this purpose a complete series of reports, such as I hope to have, will be of value.

The following table shows briefly the results in the case of the public supplies examined :—

Source of Water.	Organisms per Cubic Centimeter.		*Bacillus coli.*	*Bacillus sporogenes.*
	At Normal Temperature.	At 37°.		
Wanganui,—				
Tap	4,250	3,500	0	0
Ashburton,—				
Proposed supply No. 1	2,500	182	0	..
,, No. 2	1,300	24	*	..
Timaru,—				
Tap	240	10	0	0
Race	294	24	0	..
Taihape,—				
Temporary supply	1,300	425	*	..
Proposed supply	700	50	0	..
Auckland,—				
Tap	300	22	*	0
Eden Terrace,—				
Tap	300	48	*	0
Lyttelton,—				
Tap	70	1	0	0
Main	60	37	0	..
Eltham,—				
Intake	484	..	0	..
Tap	416	34	0	0
Palmerston North,—				
Intake	260	3	0	..
Tap	260	4	0	0
Cambridge,—				
Spring	280	42	0	..
Tap	286	42	0	0
Helensville (proposed supply)	150	20	0	..
Weraroa Industrial Farm,—				
Collecting-tank	700	70	0	0
,, (after cleaning filter) ..	700	..	0	..
Dunedin,—				
a. Leith Valley	92	10	0	0
b. Caversham	191	15	0	..
Westmere Lake (Wanganui)	1,000	210	*	..
Wanganui (second visit),—				
Tap	420	12	0	0
Waihi (after journey)	800	60	0	..
Marton,—				
Tap	140	14	0	0
Reservoir	120	20	*	..
Feilding,—				
After filtration	180	15	0	0
Unfiltered	359	30	0	..
Stratford,—				
Tap	231	17	*	0
Intake	585	150	*	..
Manakau Trust,—				
Tap	24	8	0	0
Mount Albert,—				
Pump-well	80	2	*	0
Tap	100	15	..	..
Martinborough,—				
Intake	250	90	*	..
Masterton,—				
Tap	60	5	*	0
Intake	153	30	0	..
Whangarei,—				
Intake	190	..	0	..
Tap	210	70	0	0
Levin (proposed supply)	235	15	0	0

The mark (*) indicates that the organism was present.

Vaccine Laboratory.

It is satisfactory to be able to report that our difficulties with regard to the weakness of the vaccine lymph mentioned in last year's report have been to a great extent overcome, and, as the accompanying table shows, the percentage of case-success has risen to 91 per cent. This figure we may hope to see improved in future, as the influence of the alteration in methods which brought about the improvement did not extend to the whole of the past year. The principal cause of failure we found to be a very simple matter—namely, the sudden changes in the temperature to which the lymph was exposed. Lymph taken straight from our ice-chest and submitted to a temperature of 90° Fahr. or so in the postal bags during summer produced very unsatisfactory results. If the change is made gradually, less deterioration takes place.

For comparative purposes, some imported lymph of a well-known maker was obtained and distributed throughout the Dominion. The returns from this lymph showed only 58 per cent. of successful cases, thus affording proof that it was more satisfactory to prepare our own lymph for local use.

Return showing Results of Vaccine Lymph for Year 1908–9.

	Series.	Number of Tubes issued.	Number of Scarifications to which Lymph was applied.	Number of Vesicles obtained.	Remarks.			
					Per-centage.	Cases done.	Cases successful.	Per-centage.
43	Chloroformed ..	483	160	76	47·5	58	37	63·8
	Glycerinized ..	264	221	177	80·09	71	68	95·7
44	Chloroformed ..	221	172	156	90·7	58	57	98·2
	Glycerinized ..	381	315	295	93·6	106	104	98·1
45	Chloroformed ..	468	299	268	89·6	111	106	95·4
	Glycerinized ..	315	309	296	95·8	112	111	99·1
46	Chloroformed ..	150	167	133	79·6	48	41	85·4
	Glycerinized ..	610	193	176	91·1	69	65	94·2
47	Chloroformed ..	332	232	221	95·2	76	76	100·0
	Glycerinized ..	30	18	18	100·0	6	6	100·0
48	Chloroformed ..	321	144	135	93·7	51	50	98·0
	Glycerinized ..	204	65	50	76·9	23	20	87·0
49	Chloroformed ..	30	18	18	100·0	6	6	100·0
	Glycerinized ..	442	139	92	66·1	42	36	85·7
50	Glycerinized ..	183	286	183	63·9	92	77	83·6
51	,, ..	786	502	398	79·2	163	143	87·7
52	,, ..	355	64	32	50·0	21	13	61·9
53	,, ..	430	115	115	100·0	46	46	100·0
54	,, ..	210	84	83	98·8	31	31	100·0
55	,, ..	834	577	476	82·4	177	163	92·09
56	,, ..	516	21	16	76·2	7	6	85·7
	Total ..	7,565	4,101	3,414	83·2	1,374	1,262	91·8

The following matters, apart from laboratory work, occupied my attention during the year :—

A report on the question of the suitability of tree-planting camps for consumptives was prepared after visiting the work being done by the Forestry Department in the Rotorua district.

Further investigations were made into the question of regulations for the control of carbon-monoxide-producing plants. It was finally decided that, in view of the varying conditions met with, it was advisable that the control should be in the hands of the Inspectors of Machinery, and a series of model regulations was drawn up for their guidance.

A special investigation was made into the growth and prevention of moulds in freezing-chambers.

Air analysis : The ventilation of the Otira Tunnel works was the subject of a series of observations. An examination was made of the air in the hold of a vessel on which a fire had taken place.

During the absence of Dr. Mason, in October, the Head Office was in my charge.

During the latter end of February some time was devoted in assisting the police in the recovering of corpses subsequent to the wreck of the " Penguin " at Terawhiti.

I have, &c.,

R. H. Makgill.

Bacteriologist.

Dr. J. M. Mason, Chief Health Officer, Wellington.

PART B.—REPORTS OF PUBLIC ANALYSTS.

AUCKLAND.

Return of Analyses made in Auckland by Mr. J. A. Pond, F.C.S., Government Analyst.

Nature of Sample.	Object of Analysis.	Number of Samples.
	For Public Health Department.	
Bread	For proportion of water	6
Milk	For preservatives	1
	General composition	102
	Humanised milk	1
Water	For potability	3
Drugs	For composition	3
Beer	For constituents	9
Butter	For moisture, &c.	5
Pepper	For composition	1
	For Police Department.	
Confections	For constituents	1
Wine	,,	1

WELLINGTON.

SIR,— Dominion Laboratory, Mines Department, Wellington, 28th May, 1909.

I have the honour to forward herewith returns of analyses made in this laboratory for the Department of Public Health during the year ending 31st March, 1909.

These returns show a total of 474 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.

Summary of Analyses made in the Dominion Laboratory, Wellington.

Material.	Object of Analysis.	Number of Samples.
	For Health Department.	
Waters	General analysis	70
	Poisonous metals	3
Bread	Proportion of water	156
	Fungus growth	1
Milk	General analysis	139
	Preservatives	4
Cream	,,	1
Vinegar	Composition	6
Sewage	General analysis	9
Drugs	Constituents	3
Brandy	Quality	5
Beer	Poisons	1
Fruit-pulp	Preservatives	1
Oatmeal	Adulteration	1
Desiccated egg	Preservatives	2
Jelly	,,	1
Almond paste	Zinc	1
Honey	Poisons	1
Pears	,,	1
Soap	Antiseptics	1
Paint	Poisonous metals	2
Flour-dust	Poisons	1
Ribbon	,,	1
	For Police Department.	
Liquors	Quality	14
Wine	Alcohol	5
Whisky	Quality	6
Liquid	Alcohol	1

CHRISTCHURCH.

Summary of Analyses made in the Analytical Laboratory, Christchurch, by Mr. A. A. Bickerton.

Material.	Object of Analysis.	Number of Samples.
	For Health Department.	
Milk	General composition	219
Water	,,	25
Bread	Adulteration	6
Mustard	,,	3
Vinegar	,,	5
Pepper	,,	2
Hops	Poisons	1
Sacking	,,	1
Sewage	General composition	1
Cocoa	Constituents	1
Temperance drinks	Alcohol	22
	For Customs Department.	
Acetic acid and vinegar substitutes	Constituents	29
	For Police Department.	
Stomach contents	Poisons	3
Vomit	,,	2
Bottle of fluid	,,	1
Meat	,,	1
Ginger brandy	Alcohol	1
Wine	,,	1

DUNEDIN.

SIR,— University Laboratory, Dunedin, 25th April, 1909.

I have the honour to forward herewith my report, as Government Analyst here, for the year ending 31st March, 1909.

There is nothing of special importance to report in the work of the laboratory during the year. The samples of milk still retain the same fairly good quality to which they were raised about two years ago. The whiskies are now up to the required strength, and free from extraneous poisonous additions.

My connection with your Department now ceases, and I have great pleasure in expressing my sense of the kindly and courteous relations that have uniformly subsisted between myself and the various officers with whom I have acted, and with yourself as head of the Department.

I have, &c.,

JAMES G. BLACK,

Government Analyst and Analyst to Department of Public Health.

The Chief Health Officer, Wellington.

Summary of Analyses made in the Analytical Laboratory, Dunedin.

Nature of Sample.	Object of Examination.	Number of Samples.
	For Police Department.	
Whisky	Alcohol	23
Wine	,,	5
Ginger wine	,,	4
Brandy	,,	2
Beer	,,	1
Milk	General composition	16
Cream of tartar	Poison	1
Buns	,,	2
Baking-soda	,,	1
	For Health Department.	
Water	General composition	7
Bread	Moisture	6
,,	Quality	3
Butter	Adulteration	2

PART C.—RESULTS OF MILK-ANALYSIS THROUGHOUT THE DOMINION.

Observations on the Composition of Milk in the Dominion.

Total number of observations throughout the Dominion	483
Average throughout the year—butter-fat	3·659
Highest amount found	5·300
Lowest amount found	1·950

Total number below standard (3·25), 81. Percentage, 16·77.

	Auckland.	Wellington.	Christchurch.	Dunedin.
Total observations	102	146	219	16
Average butter-fat	3·43	3·67	3·75	3·642

Average Butter-fat for each Month throughout the Dominion.

Month.	Number of Observations.	Average Butter-fat.
April	1	4·10
May	9	4·015
June	48	3·79
July	23	3·518
August	152	3·71
September	7	3·65
October	84	3·61
November	34	3·20
December	43	3·72
January	31	3·68
February	8	3·79
March	43	3·61

In the above table the average butter-fat per month is well above the standard, 3·25 per cent., except in November; but the number of observations in this, as in many other months, is too limited to permit of any reliable deductions being made.

Of the 34 samples examined in November, 24 were taken in Auckland, in the city, and 10 in Christchurch.

Of the 24 Auckland samples, 14 were below the standard in fat; and of the 10 Christchurch samples, 2 were defective.

The average composition in the two centres is shown as follows:—

	Auckland.	Christchurch.
Average butter-fat for month of November	3·13	3·38
Average solids not fat for month of November	8·76	8·89

It is worthy of note that even in Auckland the percentage of solids not fat remained well above the standard, 8·5 per cent.

In August alone are the numbers large enough to accept as yielding reliable results. In this month out of 152 samples 11 per cent. were found below the butter-fat standard, while the monthly average, 3·71, is above the general average.

Taking the total observations made during the spring months, we get the following result:—

Date: September, October, November, December.
Number of observations: 168.
Average butter-fat: 3·56 per cent.

In the following table the result of each individual examination is given.

Table showing in Detail the Results of Chemical Analysis of Milk Samples taken throughout the Dominion.

Date.	District.	Per Cent. of Total Solids.	Per Cent. of Fat.	Per Cent. Solids not Fat.	Date.	District.	Per Cent. of Total Solids.	Per Cent. of Fat.	Per Cent. Solids not Fat.
1908. April	Christchurch	12·66	4·10	8·56	1908.		12·87	4·10	8·77
							13·02	3·70	9·32
		13·57	5·00	8·50			12·35	3·39	8·96
		12·88	4·15	8·73			12·28	4·00	8·28
		12·94	4·20	8·74			12·54	3·70	8·84
		12·82	4·10	8·72	June	Christchurch	12·30	3·70	8·60
		13·11	4·15	8·96			12·44	3·80	8·64
May	,,	12·67	3·85	8·82			13·03	4·40	8·63
		12·27	4·00	8·27			12·68	3·70	8·98
		11·58	3·57	8·01			12·87	4·20	8·67
		11·51	3·12	8·39			12·68	4·00	8·68

Table showing in Detail the Results of Chemical Analysis of Milk Samples taken throughout the Dominion—continued.

Date.	District.	Per Cent. of Total Solids.	Per Cent. of Fat.	Per Cent. Solids not Fat.
1908.				
June	Christchurch	10·76	2·50	8·26
		11·00	2·80	8·20
		12·04	3·15	8·89
		11·74	3·31	8·43
		11·48	3·40	8·08
		13·51	4·80	8·71
		13·16	4·30	8·86
		12·68	3·90	8·78
		12·19	3·70	8·49
		12·79	4·20	8·59
		13·87	5·10	8·77
		13·41	4·70	8·71
		12·19	3·70	8·49
		12·01	3·55	8·46
		12·08	3·40	8·68
		12·12	3·26	8·86
		12·12	3·60	8·52
		12·53	3·90	8·63
		12·13	3·40	8·73
		12·78	3·90	8·88
		12·64	3·80	8·84
		11·82	3·75	8·07
		11·23	2·60	8·63
		12·78	4·40	8·38
		12·69	3.80	8.89
		12·13	3·50	8·63
		12·35	3·50	8·85
		12·23	3·90	8·33
		12·35	4·00	8·35
		12·46	3·80	8·66
		12·29	3·70	8·59
		12·61	4·00	8·61
		12·86	4·20	8·66
		13·08	4·40	8·68
		12·58	3·80	8·78
		12·24	3·70	8·54
		12·87	4·10	8·77
July	Wellington	9·42	2·38	7·04
		9·94	3·60	6·34
		11·13	3·45	7·68
		11·25	3·00	8·25
		12·48	4·20	8·28
		10·71	2·70	8·01
		10·73	3·30	7·43
July	Dunedin ..	13·70	4·20	9·50
		13·80	3·65	10·15
		13·30	3·50	9·80
		13·50	3·355	10·145
		13·50	2·75	10·75
		12·41	3·22	9·19
		13·35	3·55	9·80
		12·40	2·99	9·41
		13·45	3·70	9·75
		12·91	3·77	9·14
		11·985	3·45	8·535
		11·68	3·55	8·13
		13·46	3·80	9·66
		14·23	4·00	10·23
		14·97	4·50	10·47
		14·135	4·30	9·835
1908.				
Aug.	Wellington	11·55	3·40	8·15
		12·00	3·30	8·70
		12·00	3·25	8·75
		10·75	3·50	7·25
		12·50	3·70	8·80
		11·25	3·25	8·00
		11·66	3·45	8·23
		12·12	4·30	7·82
		9·16	2·90	6·26
		10·21	2·40	7·81
		10·26	3·30	6·96
		12·73	4·10	8·63
		11·27	4·40	6·87
		12·61	3·90	8·71
		13·70	4·90	8·80
		10·30	3·30	7·00
		12·40	4·10	8·30
		10·73	3·60	7·13
		9·88	2·60	7·28
		11·29	3·70	7·59
		11·14	3·50	7·64
		11·84	3·80	8·04
		13·42	4·30	9·12
		13·12	4·20	8·82
		12·59	3·55	9·04
		12·60	3·70	8·90
		13·61	4·50	9·11
		11·27	3·50	7·77
		12·00	3·75	8·25
		10·93	3·60	7·33
		12·09	3·40	8·69
		12·52	4·40	8·12
		12·00	3·25	8·75
		12·03	3·00	9·03
		12·80	4·20	8·60
		11·40	2·80	8·60
		13·11	3·90	9·21
		13·10	4·40	8·70
		10·90	3·40	7·50
		12·22	3·90	8·32
		12·48	3·95	8·53
		11·16	3·30	7·86
		12·34	3·70	8·64
		9·38	3·50	5·88
		9·44	3·00	6·44
		12·40	4·20	8·20
		11·04	3·30	7·74
		10·93	2·70	8·23
		11·31	2·60	8·71
		12·00	3·60	8·40
		11·90	4·50	7·40
		12·95	4·45	8·50
		12·00	3·50	8·50
		12·00	3·50	8·50
		11·53	3·30	8·23
		11·56	3·50	8·06
		11·62	3·50	8·12
		11·44	3·10	8·34
		12·73	4·00	8·73
		12·05	3·25	8·80
		11·35	2·45	8·90
		11·65	2·60	9·05
		12·75	4·25	8·50

Table showing in Detail the Results of Chemical Analysis of Milk Samples taken throughout the Dominion—continued.

Date.	District.	Per Cent. of Total Solids.	Per Cent. of Fat.	Per Cent. Solids not Fat.
1908.				
Aug.	Wellington	12·50	4·25	8·25
		11·55	3·00	8·55
		13·15	4·20	8·95
		10·26	4·10	6·16
		12·44	4·25	8·19
		11·67	4·10	7·57
		12·00	3·50	8·50
		11·55	3·00	8·55
		10·73	3·75	6·98
		12·07	3·70	8·37
		12·50	3·70	8·80
		12·00	3·30	8·70
		12·24	4·00	8·24
		12·87	3·90	8·97
		11·90	3·20	8·70
		12·57	4·10	8·47
		11·93	3·40	8·53
		13·20	4·50	8·70
		13·34	4.20	9·14
		12·97	4.10	8.87
		12·02	3·35	8·67
		12·87	3·60	9·57
		12·04	3·20	8·84
		12·30	3·90	8·48
		12·08	2·80	9·28
		11·50	3·28	8·22
		11·84	3·60	8·24
		12·43	3·90	8·53
		13·99	5·10	8·89
		13·05	4·00	9·05
		13·60	5·00	8·60
		13·34	4·20	9·14
		12·28	3·50	8·78
		12·47	3·70	8·77
		11·30	3·12	8·18
,,	Christchurch	12·02	3·60	8·42
		11·91	3·30	8·61
		11·92	3·60	8·32
		12·73	4·40	8·33
		12·56	3·60	8·96
		12·35	3·80	8·55
		13·21	4·40	8·81
		12·38	3·60	8·78
		12·30	3·50	8·80
		12·41	3·80	8·61
		12·16	3·30	8·86
		12·68	3·90	8·78
		12·89	4·20	8·69
		12·24	3·70	8·54
		12·87	3·80	9·07
		13·70	4·50	9·20
		13·09	4·30	8·79
		12·47	3·60	8·87
		12·19	3·40	8·79
		12·30	3·70	8·60
		13·15	4·20	8·95
		12·42	3·60	8·82
		12·38	3·50	8·88
		12·70	3·50	9·20
		13·19	4·20	8·99
		13·04	3·90	9·14
		12·44	3.60	8.84

Date.	District.	Per Cent. of Total Solids.	Per Cent. of Fat.	Per Cent. Solids not Fat.
1908.				
		12·82	3·85	8·97
		12·23	3·50	8·73
		12·43	3·50	8·93
		12·51	3·50	8·50
		12·38	3·75	8.63
		12·85	4·10	8·75
		11·89	3·40	8·49
		12·79	4·30	8·49
		11·64	3·14	8·50
		11·74	3·40	8·34
		11·32	3·36	7·96
		12·80	4·10	8·70
Aug.	Christchurch	13·31	4·60	8·71
		12·44	3·70	8·74
		12·81	4·40	8·41
		12·60	3·60	9·00
		12·98	4·10	8·88
		12·63	3·90	8·73
		12·74	4·20	8·54
		13·90	4·20	9·70
		12·97	4·40	8·57
		13·24	4·40	8·84
		12·90	4·00	8·90
		12·89	3·70	9·19
		12·46	3·80	8·66
		12·37	3·80	8·57
		10·16	3·10	7·06
		11·65	4·70	6·95
Sept.	Wellington	10·61	3·80	6·81
		10·72	4·25	6·47
		11·37	3·80	7·57
		11·03	3·40	7·63
,,	Christchurch	10·50	2·50	8·00
		11·98	3·12	8·86
		12·36	3·63	8·73
		12·18	3·22	8·96
		11·96	2·45	9·51
		13·02	4·10	8·92
		12·14	3·25	8·89
		12·16	3·02	9·14
		12·36	3·40	8·96
Oct.	Auckland	12·23	3·50	8·73
		13·70	4·55	9·15
		13·42	4·60	8·82
		13·19	4·10	9·09
		11·76	2·77	8·99
		12·50	3·46	9·04
		12·23	3·50	8·73
		13·42	4·60	8·82
		11·97	3·60	8·37
		12·14	2·91	9·23
		14·54	5·30	9·24
		13·49	4·30	9·19
		13·05	4·00	9·05
,,	Wellington	12·13	3·50	8·63
		12·48	3·90	8·58
		12·67	3·80	8·87
		12·15	3·40	8·75
		13·14	4·30	8·84

Table showing in Detail the Results of Chemical Analysis of Milk Samples taken throughout the Dominion—continued.

Date.	District.	Per Cent. of Total Solids.	Per Cent. of Fat.	Per Cent. Solids not Fat.
1908.				
Oct.	Wellington	12·14	3·00	9·14
		12·59	3·70	8·89
		12·88	3·70	9·16
		12·59	3·50	9·09
		12·07	3·45	8·62
		13·70	4·50	9·20
		11·65	2·65	9·00
		11·79	2·90	8·89
		12·51	3·50	9·01
		12·11	3·50	8·61
		12·34	3·65	8·69
		12·82	3·80	9·02
		11·71	3·00	8·70
		12·26	3·70	8·56
		12·30	3·35	8·95
		12·51	3·65	8·86
		11·65	3·35	8·30
		13·00	3·92	9·08
,,	Christchurch	12·60	3·60	9·00
		13·05	4·00	9·05
		12·56	3·90	8·66
		12·78	4·00	8·78
		12·36	3·60	8·76
		11·84	3·30	8·54
		12·50	4·00	8·50
		13·47	4·30	9·17
		13·12	4·60	8·52
		11·72	3·40	8·32
		10·60	2·70	7·90
		11·48	3·20	8·28
		11·75	2·58	9·17
		11·71	2·55	9·16
		12·11	2·90	9·21
		14·27	5·30	8·97
		12·46	3·40	9·06
		12·56	3·40	9·16
		12·92	4·10	8·82
		12·49	3·40	9·09
		12·22	3·70	8·52
		12·93	3·90	9·03
		12·01	3·30	8·71
		13·13	4·10	9·03
		13·42	4·20	9·22
		12·67	3·70	8·97
		12·43	3·50	8·93
		12·95	4·00	8·95
		12·23	3·40	8·83
		12·11	3·60	8·51
		12·68	3·70	8·98
		12·72	4·10	8·62
		11·70	2·79	8·91
		12·54	3·45	9·09
		12·01	3·30	8·71
		12·71	3·40	9·31
		12·03	3·30	8·73
		12·36	3·50	8·86
		12·57	3·70	8·87
		13·08	3·80	9·28
Nov.	Auckland ..	11·98	3·40	8·58
		11·89	3·20	8·69
		11·93	3·40	8·53
1908.				
Nov.	Auckland ..	12·52	2·80	9·72
		12·22	3·64	8·58
		12·34	3·15	9·19
		12·70	4·00	8·70
		12·64	3·80	8·84
		12·28	3·16	9·12
		11·75	3·10	8·65
		11·87	3·16	8·71
		12·34	3·71	8·63
		11·61	3·20	8·41
		11·62	2·90	8·72
		11·86	3·10	8·76
		11·37	2·07	9·29
		10·47	2·05	8·42
		11·98	3·40	8·58
		10·76	2·70	8·06
		11·50	2·73	8·77
		11·38	2·71	8·67
		12·10	3·40	8·70
		12·52	3·15	9·37
		11·86	3·30	8·56
,,	Christchurch	11·96	2·90	9·06
		12·66	3·50	9·16
		12·12	3·60	8·52
		12·60	3·60	9·00
		12·58	3·50	9·08
		12·45	3·50	8·95
		12·51	3·40	9·11
		12·12	3·60	8·52
		12·02	3·00	9·02
		11·83	3·27	8·56
Dec.	Auckland ..	12·60	3·20	9·40
		12·22	3·40	8 82
		12·62	3·90	8·72
		11·26	2·80	8·46
		12·60	3·90	8·70
		12·69	4·10	8·59
		12·33	3·80	8·53
		12·46	3·80	8·66
		11·88	3·15	8·73
		11·98	3·20	8·78
		11·49	3·10	8·39
		11·98	3·30	8·68
		11·23	3·25	7·98
		12·22	3·60	8·62
		11·73	3·30	8·43
		12·39	3·95	8·44
		11·86	3·25	8·61
		11·86	3·30	8·56
,,	Wellington	13·23	4·45	8·78
		13·70	4·90	8·80
		12·72	3·80	8·92
		12·79	4·05	8·74
		12·93	4·20	8·73
		13·31	4·40	8·91
		11·50	3·05	8·45
		11·63	3·05	8·58
		11·87	3·15	8·72
		11·81	3·25	8·56
		11·69	2·95	8·74

Table showing in Detail the Results of Chemical Analysis of Milk Samples taken throughout the Dominion—continued.

Date.	District.	Per Cent. of Total Solids.	Per Cent. of Fat.	Per Cent. Solids not Fat.
1908.				
Dec.	Wellington	12·25	3·40	8·85
		12·10	3·55	8·55
		12·71	3·75	8·96
		12·60	3·80	8·80
		13·10	3·95	9·15
		13·20	4·60	8·60
		13·31	4·50	8·81
		13·18	4·45	8·73
		13·14	3·90	9·24
		13·41	4·20	9·21
		13·49	4·45	9·04
		12·82	3·70	9·12
		13·83	4·10	9·23
		13·29	4·15	9·14
1909.				
Jan.	Auckland ..	12·38	3·71	8·67
,,	Wellington	12·36	3·70	8·66
,,	Christchurch	12·50	4·20	8·30
		12·42	3·70	8·72
		12·20	3·60	8·60
		13·38	4·50	8·88
		12·18	3·50	8·68
		12·27	3·60	8·67
		12·39	3·70	8·69
		12·11	3·30	8·81
		12·37	3·60	8·77
		12·78	3·90	8·88
		12·03	3·50	8·53
		12·63	4·00	8·63
		13·85	4·00	8·85
		11·84	3·30	8·54
		12·75	4·00	8·75
		12·52	3·60	8·92
		12·77	3·60	9·17
		12·45	3·60	8·85
		12·69	3·80	8·89
		11·90	3·20	8·70
		12·03	3·40	8·63
		13·31	4·40	8·91
		12·63	4·00	8·63
		11·87	3·40	8·47
		12·23	3·50	8·73
		11·86	3·30	8·56
		12·06	3·40	8·66
		12·11	3·30	8·81
		12·70	4·00	8·70
Feb.	Auckland ..	11·98	3·30	8·68
		13·92	5·30	8·62
		11·00	1·95	9·05
1909.				
Feb.	Wellington	11·52	3·60	7·92
		13·07	4·20	8·87
		12·15	3·65	8·50
		12·94	4·00	8·94
		13·07	4·35	8·72
		11·58	2·38	9·20
		12·46	3·50	8·96
		11·98	3·60	8·38
		11·96	3·70	8·26
		12·59	4·20	8·39
		11·85	3·15	8·70
		12·12	3·60	8·52
		12·04	3·32	8·72
		13·17	4·40	8·77
		12·34	3·70	8·64
		12·58	3·90	8·68
		9·98	2·39	7·59
		11·64	2·63	9·01
		12·68	3·84	8·84
		12·08	3·60	8·48
		11·90	3·18	8·72
		12·06	3·40	8·66
		12·34	3·60	8·74
Mar.	Auckland ..	12·44	4·10	8·34
		11·12	3·43	7·69
		12·38	3·74	8·64
		11·97	3·50	8·47
		12·46	4·00	8·46
		12·80	4·40	8·40
		12·05	3·60	8·45
		12·43	4·00	8·43
		12·98	4·36	8·62
		11·98	3·25	8·73
		12·10	3·50	8·60
		11·56	3·72	7·84
		11·73	3·25	8·48
		10·86	3·10	7·76
		11·85	3·35	8·50
		12·58	3·80	8·78
		11·98	3·23	8·75
		11·86	3·40	8·46
		12·10	3·50	8·60
		12·45	3·90	8·55
,,	Wellington	12·65	3·85	8·80
,,	Christchurch	9·68	3·90	5·78
		12·78	4·40	8·38
		13·33	4·50	8·83
		12·42	3·70	8·72

Approximate cost of paper.—Preparation, not given; printing (1,750 copies), £59.

By Authority: John Mackay, Government Printer, Wellington.—1909.

Price, 2s.