1904.

NEW ZEALAND.

PUBLIC HEALTH STATEMENT

(15th September, 1904.)

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

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

MY LORD,— Department of Public Health, Wellington, 24th August, 1904.

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

I have the honour to be,

Your Lordship's most obedient servant,

J. G. WARD,

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

IN presenting this report may I be permitted to offer my congratulations upon the speedy and effectual manner in which the outbreak of small-pox was combated. Our greatly increased trade with the outside world necessarily lays the colony open to the possible introduction of many of the so-called dangerous diseases; but, if we may measure our safety by the way in which the recent epidemic was handled, we need, I feel assured, have no fear or uneasiness. The demands on the part of the public for protection against small-pox by means of vaccination, the whole-hearted way in which the people of their own free will sought the help of the departmental officers in this matter, emboldens me to assert that in New Zealand, at any rate, there is little need for anything in the shape of compulsory legislation with respect to this.

With regard to that other and greater enemy of our people—consumption—your advisers cannot be accused of want of interest. The Sanatorium at Cambridge is now in full working-order, and already in the short time it has been established great good has resulted. Despite the fact that many unsuitable cases had to be admitted, the average of cures is equal to that of the best continental institutions. The officers of the Department have done much by way of lecturing and writing to bring home to the people the power of this enemy, and at the same time the methods by which the disease can be checked. When the scheme which I outlined at Dunedin has been brought into force—the establishment of annexes in connection with our country hospitals—the colony may in this matter fairly challenge the other members of our great Empire.

By the distribution of the modern and expensive sera free of charge to all unable to pay, an important step has been taken towards securing for the poor the same advantages as the rich in times of sickness and trouble.

The constant application to the Department by the public at large for advice on all that pertains to sanitation and health is one of the most pleasing features; this, while it emphasises the confidence reposed in the officers is also a measure of the tact, discretion, and skill which they have exercised in the carrying out of their onerous and responsible duties.

I have pleasure, therefore, in putting on record my appreciation of the work done by the Chief Health Officer in establishing the high standard of efficiency which characterises the whole Department; and I desire to record that at all times the various officers have conducted their difficult duties with firmness, tact, and good judgment. The demands made upon them are many, varied, and of a nature which requires the highest standard of scientific knowledge.

I attach to the Chief Health Officer's statement the reports of the District Health Officers, together with those of the Pathologist and Public Analysts.

I have, &c.,

J. G. WARD,

Minister of Public Health.

The Hon. the Minister of Public Health to His Excellency the Governor.

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

Sir,— Department of Public Health, Wellington, 24th August, 1904.

The principal event of the past year was the appearance of small-pox in Christchurch. To the s.s. "Gracchus" may safely be attributed the cases which occured here in May, 1903, those which took place in Melbourne in 1903, and the larger explosion which caused Tasmania so much trouble, as well as the recent outbreak in Christchurch. Once again we have had a warning, and once again we have escaped with comparatively little damage. It may not always be so, and, though many submitted themselves to the only sure protection against the disease—vaccination—there is a danger now that the enemy has been expelled of our falling back into the old attitude of "waiting till it comes before being done." What took place in London in 1901, what happened in Tasmania in 1903, was exactly what occurred in Christchurch in 1903 and 1904.

Speaking of the recent outbreak in London, the Chairman of the County Council said, "There has arisen a public and a body of practitioners who know not practically what small-pox is." In this lies one of the chief dangers from a public-health point of view. Between a mild case of small-pox and a virulent case of chicken-pox there is considerable resemblance at certain stages, and it argues no carelessness or gross want of knowledge that the medical attendant should mistake the one for the other, more especially in a country such as this, which is fortunately but rarely visited by the former disease. Nevertheless, it is this very freedom in the past that is so fruitful of danger in the present. As I pointed out in my last report, inspection, examination, and fumigation, while of great value, are not absolute safeguards, and it cannot be too often insisted upon that complete protection comes only from efficient vaccination and revaccination. With a people fully protected by vaccination we could safely ignore small-pox in all its most serious aspects. The restrictions upon intercommunication with the outside world at which shippers and passengers alike chafe, and which in many ways cost time and money, might all be done away with if we ourselves were clothed with a sound armour.

One pleasing feature of the recent outbreak was the ready help rendered by the Press and the uncomplaining manner in which those subjected to surveillance and inconvenience bore themselves. The first case was notified to me on the 11th January, but a careful harking-back disclosed the fact that several cases had occurred previous to this, some as far back as November, 1903. As soon as the true nature of the disease was recognised, a careful house-to-house inspection in the neighbourhood of the first cases was instituted, and as a result of the domiciliary visits several other persons suffering from the disease were found. In one house a child was found covered with pustules, and two other children with well-marked maculæ and pitting. In every instance where the disease was found, the house, hotel, club, or business-place was at once placed under the control of the police until the patient and those who had been in contact were removed to the isolation hospital.

With a prevision worthy of emulation the Christchurch City Council had fortunately grappled with the question of providing for infectious diseases by acquiring the 125 acres known as Bottle Lake. Under the guidance of a gentleman who has done much for municipal governance in the widest and best sense of the word—the Hon. Mr. Wigram—a very suitable building has been erected on this reserve. The hospital, which consists of a main administrative block and detached shelters, was divided into three camps. Those actually suffering from small-pox were housed in the main building, the "contacts" were located in a separate encampment, while the "suspects" were accommodated in a different part of the grounds. The Christchurch Hospital Board lent every help, and Dr. Marks was placed in charge of the several camps. The "contacts" were all vaccinated, and as soon as it was evident that the vaccine had taken, their clothes were fumigated or destroyed, and they were allowed to return to their homes, which during their stay in the hospital had been thoroughly fumigated. The "suspects" were also vaccinated, and as soon as it was clear that the vaccination had "taken," they were transferred either to the "contacts" camp, or, if they showed clear signs that they were suffering from small-pox, to the general hospital. The whole thing worked admirably.

With your permission I wired for those officers of the Department whom it was thought could be spared from their respective districts, and thus all our operations of disinfection and domiciliary inspection were carried out by some one or other attached to the Department. The result of this was that we were able to accurately assess the extent of any damage done to the houses and belongings of patients and contacts. I feel certain that through this much money was saved to the Department, and more general satisfaction was given to those whose property was interfered with. With the exception of one or two claims which were reserved for more than the usual consideration, all demands were settled up within a week or so. The Inspector in charge of each disinfecting-area was instructed to take an accurate inventory of the contents of each house operated on. The list of articles, with their approximate values, were submitted to the several owners, and the result was that in every instance we were enabled to obtain a receipt in full for all claims which could be made under section 25 of the Public Health Act. In addition to claims which justly fell under section 25, compensation was

also paid for loss of work. Many of the "contacts" were poor, and could ill afford the loss of wages incurred by their enforced stay in the isolation camp. By your direction all such persons were paid for their loss of time upon the production of satisfactory evidence as to salary, &c. This, though not provided for in the Public Health Act, is only fair and just, as through no fault of theirs they were set apart for the time being as much in the interests of the colony at large, as in their own. Mr. Wigram on behalf of his Council placed eight men at our disposal for the purpose of disinfection and the removal of patients, "contacts," and "suspects." While our officers and these men were engaged in the work they were housed apart. A detailed account of the cases was set out in Dr. Marks's special report. There were in all fourteen cases of small-pox. The number of Public Vaccinators was greatly augmented, and every opportunity was given the people to become vaccinated. In addition to notifying the public that they could be vaccinated at the offices of the several Public Vaccinators, organized relays of medical men were in attendance at the Health Office from 9 in the morning till 9 at night. In this way the vast number of 15,417 were vaccinated within a fortnight in Christchurch alone. Arrangements were made with large employers of labour so that their workers could be done in batches and at hours which would interfere as little as possible with their business.

All this, however, great as it was, represents but a little of the work done by the departmental officers during this time of danger and excitement. Not only from Christchurch but from all parts of the colony did we receive disquieting reports of suspicious cases. Looking to the fact that cases had occurred prior to the segregation of the patient of the 11th January, we could not afford to disregard any rumour or report. An officer had to be despatched at once to consult with the medical man reporting and to supervise the isolation, disinfection, or liberation of the suspect, as the necessities of the case required. In every large centre, as well as in the country, people streamed in upon the officials asking to be vaccinated, and the extraordinarily great demands for lymph had to be met.

The police under Inspector Gillies lent us great and valuable help in the guarding of houses and hotels where suspected cases had been. At one time we had as many as nine places being guarded night and day. I am pleased to say that there was no instance in which the isolated ones sought to evade the restrictions which we felt it our duty to impose in order to conserve the general safety and stamp out the disease. This says much for the law-abiding nature of our citizens, and something for the tact and discrimination with which the officers of the Department carried out their unsavoury, and in some instances disagreeable, duties. There were thirteen cases treated at the hospital, with, I am glad to say, no deaths. The disease fortunately was of a mild type, though, as will be seen from some of the photographs, the patients presented well-marked evidence of the nature of the disease.

An attempt was made in the treatment of the cases to adopt the procedure suggested by Dr. Finsen. The windows of the wards were covered with red blinds, and the patients wore red veils in order to cut off the chemical or violet rays of the sun. Finsen asserts that by this method of treatment the secondary or suppurative fever can be prevented. As, however, most of our cases did not come under observation until the pocks had become pustular, accurate scientific deductions could not be made. Much of the itching and irritation which usually accompanies the rash was undoubtedly allayed, and some of the freedom from pitting and destruction of the skin may safely be ascribed to this treatment.

The woman from whom the 11th January case contracted the disease aborted and the child was, so her medical attendant informed me, much marked with pocks. Our case I am glad to say, although pregnant, went to the full time, and was delivered of a fine healthy child.

Careful and exhaustive investigation gave no evidence which could connect the outbreak in Christchurch with the cases which occurred on board the "Gracchus" in May. The interval between May and November is too great to admit of the disease remaining quiescent, even if the very efficient steps taken to cope with the disease in May be disregarded. The only inference therefore which can be drawn with respect to the origin of the recent outbreak is that our colony became infected by means of mail-matter or merchandise from Tasmania. This of course cannot be positively demonstrated, and can only be arrived at and justified by a process of exclusion. The outbreak demonstrates once again the impossibility of defending our colony from outside attacks by any system of inspection or quarantine, even when combined with that amount of fumigation which the laws of commercial intercommunication admit of. With careful inspection such as is carried out in New Zealand it would be next to impossible for a person actually suffering from small-pox to escape the cordon, but absolute safety can come only in one way, and that is through efficient vaccination and revaccination.

The ranks of the "conscientious objectors" have been greatly depleted, and it is worthy of record that one lifelong antagonist of vaccination powerful to hamper our efforts was able without offence to his long-cherished convictions to lend us yeoman service. I wish it were possible that this gentleman's name could be mentioned because of his self-sacrifice and abnegation at a time when our opponents were clamouring for him to raise their flag. As might be expected in a country such as this, where a

great number had grown up to an adult age without having been vaccinated, there were a few who suffered more than usual through the operation. Complaints were invited, only one or two were received, and only in one instance did anything untoward occur. In this particular case the patient had apparently received some outside poison into the wound. That the lymph was not at fault was shown by the fact that though a great many others were vaccinated with the same nothing unusual was noticed. The opponents of vaccination make much of such cases, but it is well to remember that nothing in this world, no matter how generally useful and beneficial it may be, is absolutely without danger. The calm temperate observations of Sir T. D. Acland on this subject are worthy of the most careful consideration. Speaking to an audience of working-men at the Mansion House he said,—

I should like to say that we know, even if all goes well, that a vaccinated child suffers something, and is an increased care and anxiety to an often overworked mother. No one can sympathise more than I do with the trouble and distress which may thus come to mother and child through the second week of even a normal vaccination. Sometimes, when all does not go well—when there is inflammation of the arm, or ulceration of the pocks—the burden thus imposed on the mother is heavier, and the suffering to the child is greater, and in some few instances the injury may be severe. It cannot be denied that in the case of a working-man such trouble in the house may be a serious one, and it must be looked upon as a sacrifice which he is asked to make for the good of the State as well as for the good of his child.

Calculating from the cases which were brought under the notice of the Royal Commission on Vaccination during the years 1889–96, and from the cases inquired into during 1888–91 by the Local Government Board, it would appear that there was death or serious injury in one case in about fourteen thousand primary vaccinations.* You may say that even this amount of harm ought not to be, and the fact that it does occur is a powerful argument against vaccination. Before accepting this conclusion you must take into consideration that more than half (57·6 per cent.) of these cases resulted from preventible causes—that is, from one or other of the various forms of inflammation. Further, when you consider the ease with which the vaccine pocks may be injured, rubbed, or fouled, and when you consider the terrible conditions under which, unfortunately, thousands of our fellow working-men have to live, it is hardly to be wondered at that an open wound like vaccination does sometimes go wrong.

All things occasionally go wrong in this imperfect world, and wherever you turn you will find a certain amount of penalty has to be paid for everything we have, however valuable and beneficent it may be. Gas-explosions, railway accidents, shipwrecks, fires, all contribute something to the sorrow and suffering of the world, yet no one in his senses would give up gas, or railways, or ships, or houses because some injury is caused and some lives are lost by their use. Surely it is a question of degree. It is no use in the presence of an enemy discarding a weapon because you fear it may not be absolutely free from danger to yourself, unless or until you have something better to substitute for it. In the case of small-pox there is no substitute, and if you discard vaccination you are left defenceless and without any protection but flight in the presence of a relentless foe. It cannot even be pretended that the practice of vaccination hinders the adoption of every other useful means of combating small-pox.

When first I began to consider these questions seriously, I cast about for something with which the risk caused by vaccination (infinitesimally small though it really is) might fairly be compared, and I came to the conclusion that the use of anæsthetics (choloroform and ether) was, on the whole, the greatest blessing which my profession had ever been able to confer on suffering mankind. Now, as you are all aware, a certain number of deaths occur every year through the use of anæsthetics ; this is quite unavoidable. The percentage number of deaths from chloroform is nearly seven times as great as that from the complications or accidents of vaccination. The deaths from ether are considerably fewer than from chloroform, but, even so, the total directly traceable to anæsthetics is considerably greater than that resulting from vaccination.

It is interesting to compare the numbers of vaccinal injuries with the fatality from small-pox (even in a mild epidemic) where the practice of vaccination has been allowed to lapse. In Leicester, during the outbreak of 1891–92, 100 unvaccinated children were attacked, of whom twelve died. Thus in this community (with an unvaccinated child population), with all the boasted safeguards of isolation and sanitation, as many children died from small-pox as, according to the calculation given above, might be estimated to die or to suffer from serious injury amongst a like number of children (100) in 1,680 years, or in about 169,908 vaccinations. During this same epidemic only two vaccinated children under ten years of age were attacked by small-pox, neither of whom died.

In a severe epidemic, such as that at Gloucester (1895–96), no fewer than 279 unvaccinated children under ten years of age died out of 680 attacked (41 per cent.). Such fatality would not occur in less than three *million* primary vaccinations, and a very little calculation will show that the risk of a fatal issue amongst those attacked was just 6,000 times as great as from vaccination. Comment is unnecessary, but the facts are deserving of serious study. They seem to me to show quite clearly that, although there is a certain amount of risk in vaccination, the risk is so small that it is one which should be readily faced if it can be shown that vaccination is for the good of the individual and for the benefit of the State. A great deal has been written and said about the serious nature of the risks, but they are in fact very small, and are such as the members of my own profession readily incur for themselves, their wives, and their children, for though they know them better than any one else can know them, they judge them to be, as they are, insignificant as compared with risks of small-pox.

It is the duty of every one of us, as far as in us lies, to prevent ourselves from becoming the centres of infection. As you are the judges in this case, and have to decide for yourselves whether vaccination is capable of affording protection against small-pox, it is only right that you should consider the credibility of the witnesses who bring forward their evidence for or against the practice. Every one will, I think, allow that if they want a good pair of boots they should go to a bootmaker, and if they want a good loaf

of bread they should go to the baker; and similarly it might be expected that those who wish to learn about small-pox and its prevention would be wise to go to those likely to possess the most accurate knowledge of the disease—namely, those who have spent their lives in the practical study of small-pox.

You will find that the unanimity of opinion expressed by those who have so spent their lives as to the effect of vaccination is very striking, and that those who are opposed to vaccination are, almost without exception, those who have no very practical acquaintance with small-pox.

Means which might be adopted for deciding the Question as to whether, and, if so, to what extent, Vaccination protects against Small-pox.

The question as to whether or not vaccination protects against small-pox, and if so in what degree, may be approached in various ways:—

1. By vaccinating first, and inoculating with small-pox afterwards—a test which cannot, of course, be made in the present day; but I shall refer to this again.

2. By observing the effect of vaccination on particular groups of persons exposed to the contagion of small-pox under more or less similar conditions.

3. By observing the comparative frequency with which small-pox attacks the vaccinated and unvaccinated in large communities, the degree of the severity of the attack in each of these classes, and the resulting death-rate.

4. By observing the effect of vaccination upon the age at which small-pox is most prevalent amongst those who have been vaccinated in infancy and among those who have not.

May I here, in parenthesis, say what I mean by "vaccinated"? I mean efficiently vaccinated. It is well known that vaccination in infancy gives its most effective protection only for a certain number of years. It is necessary to bear this in mind, since there are many fallacies based on statements made to the effect that in adult life more vaccinated than unvaccinated persons suffer from small-pox. This statement is one of those falsehoods masquerading in the guise of truth, which, as I shall show later on, has but little justification, since a child vaccinated in infancy, although, in fact, vaccinated, does not continue to benefit to any large extent from the vaccination after from seven to ten years; and, as regards liability to attack from small-pox, insensibly approximates to the condition of those who have not been vaccinated.

1. The method of testing the efficacy of vaccination by the subsequent inoculation of small-pox is, of course, now out of the question, since inoculation is forbidden by law; but it was frequently adopted by Jenner, who, in 1801, wrote "that upwards of six thousand persons had been inoculated with the virus of cow-pox, and that the far greater part of them has since been inoculated with that of small-pox, and exposed to its infection in every rational way that could be devised, but without effect." This was, at any rate, an experimental inquiry on a sufficiently large scale, and, even if the problem was not capable of being finally solved in this manner, was sufficient to convince his contemporaries of the efficacy of vaccination.

2. The second method of attempting to estimate the utility or the reverse of vaccination is to study its effect upon limited communities living under approximately the same conditions. There cannot be any better illustration than the experience of the staffs of the various small-pox hospitals. They are as follows:—

In Highgate Small-pox Hospital, from 1836 to 1896—a period of no less than sixty years—one case of small-pox, and one only, occurred among the hospital staff, and he was the gardener, least exposed to infection, but not revaccinated.* During the years 1883–96 there were 137 nurses and attendants employed; thirty of these had previously had small-pox, but none of the others had suffered from the disease.†

At the Sheffield hospitals the staffs numbered 143; of eighty who were revaccinated as adults, not one contracted small-pox, whilst of sixty-two who had not been revaccinated six suffered from small-pox, as did one other who was not successfully revaccinated until he was sickening from the disease.

At Warrington, Homerton, and Fulham the experience has been similar. I will not weary you with the details of these; it would not serve any useful purpose, since they merely confirm the conclusion that even the nurses, who are exposed to a concentrated form of infection, such as probably we never have to encounter, can be and are protected against small-pox by the simple expedient of revaccination.

To come down to quite recent experience. During the third week in February of this year a statement appeared in the daily Press to the effect that out of a staff of forty-three nurses employed in the Mile End Infirmary, thirty-five were revaccinated and have not suffered from small-pox, whilst of the other eight who were not revaccinated seven had already contracted the disease. Such a statement was not likely to be accepted without criticism and challenge, and, thinking it would be a good test case to put before you from the practical and common-sense point of view, I inquired into the facts, and I am sure that I may tender in your name as well as my own, our best thanks to Dr. Harley Brooks, the medical officer of the infirmary, for the great amount of trouble which he has taken to reply fully to my inquiries. The facts are at follows: Early in January, 1902, there were forty nurses and two matrons on the staff of the Mile End Infirmary, and one nurse on sick-leave, a total of forty-three; not one of them had had small-pox previously; of these thirty-one had been revaccinated at various dates up to two years before the outbreak. Four were revaccinated on the 28th and 29th January (two of them unsuccessfully). None of these thirty-five contracted small-pox. Of the remaining eight, one was away on sick-leave, leaving seven, who all suffered from small-pox. Of these, three were not revacci-

* It is stated (par. 403, Final Rep. R.C.V.) "that it is not possible to fix with absolute certainty the number of deaths connected with vaccination," but during the years 1881–89 in England 1 death in 14,159 primary vaccinations was associated with vaccination on the certificate. In Scotland the proportion was much less: during the years 1883–90 it was only 1 to 38,872.

† Final Report of the Royal Commission on Vaccination, p. 85.

nated, and the remaining four all sickened with small-pox in two days (two cases), three days, and six days respectively after vaccination. Thus these four cases were incubating small-pox at the time they were revaccinated, and though it may not be strictly correct to say that none of the vaccinated cases suffered from small-pox, it is certain that none of the cases who were revaccinated before infection contracted the disease, and all the cases who suffered from small-pox were either unvaccinated or revaccinated only during the incubation period of the disease. I may say here that vaccination within a short time after exposure to the infection of small-pox may be of some use in mitigating the attack, but that if delayed until the incubation period is advanced it may be expected to exercise little or no influence on the result.

A similar and very striking object-lesson may be learned from the records of the small-pox hospitals of the Metropolitan Asylums Board. During the year 1901, amongst the patients admitted to these hospitals were twenty-one persons who had been employed in disinfecting-work; not one of these had been revaccinated since infancy. I have made careful inquiries, and I am informed that not a single person engaged in work similar to that of the twenty-one persons mentioned above who had been properly revaccinated is known to have been admitted during this period (1891). And, further, that no official of the Board, all of whom are revaccinated when they commence their work, had suffered from small-pox during the year 1901. Nine other cases were admitted to the Board's hospitals suffering from small-pox contracted in the discharge of their duties as sanitary inspectors, dustmen, and undertakers; of these, five had not been revaccinated, one was said to have been revaccinated forty and one nineteen years ago, and one without success four years ago. Further, during sixteen years, 1884–1900, more than two thousand persons have been employed in the small-pox hospitals of the Metropolitan Asylums Board; of this large number—some few of whom, no doubt, were protected by a previous attack—only seventeen contracted small-pox, though constantly exposed to infection. Of these, four are known to have escaped revaccination, and the remaining thirteen are known to have been revaccinated after having been exposed to infection. From the dates at which the eruption appeared in these cases it is practically certain that every one of them had contracted small-pox before their revaccination could possibly have taken effect. Lastly, not one of the staffs of the hospital-ships has ever died of small-pox and not one has even suffered from the disease for the last eight years (1893–1901).

During twenty years 1881–1901, the Board's ambulance service has employed over 1,250 persons; of these four have contracted small-pox, one was unvaccinated and died, one had been unsuccessfully vaccinated and died, two only had been duly revaccinated—they both recovered.

These are remarkable facts, and do not seem to me to justify any other conclusion than that these persons, constantly exposed to infection in a virulent form, were protected from the disease not by sanitation, not by isolation, not by any of the various remedies which have been suggested, but by efficient vaccination and revaccination such as is open to every one to obtain.

In my departmental report to you I have carefully set out the valuable work done by the various officers of the Department in helping to stamp out what easily might have occasioned a very serious financial and physical loss to the colony.

In my last report I suggested that when a case of small-pox occurred the Governor in Council should have power to draw a circle round the infected area and require all within that zone to submit to vaccination. In the light of our recent experience I am quite content to trust the good sense of the people. Had we been armed with the most arbitrary powers, more could not have been accomplished than was done in Christchurch and most other parts of the colony. Short of powers which would enable us to fortify our people in times of peace nothing more is required. It would simplify our work very much if vaccination and revaccination could be conducted systematically at all times, but it would seem that in this, as in many other important matters, the danger of delay is not fully appreciated by a community which has long emancipated itself from the counsels of wisdom which were wont to adorn the headlines of our copy-books.

One very important result of the energetic measures adopted in the stamping-out of the disease was the fact that the health authorities in New South Wales removed all restrictions upon our shipping at the earliest possible opportunity, and the Chief Health Officer, Dr. Ashburton Thompson, thought fit to compliment the authorities here on the manner in which the outbreak had been dealt with.

When we compare the cost of dealing with this outbreak with what Tasmania had to pay, with its nine months' interference with traffic, loss of trade, and expenditure upon purely sanitary measures, and when we remember that it cost the Metropolitan Asylums District up till March of last year the gigantic sum of £280,000 in combating the outbreak in London, it will be seen that ours has been an exceedingly cheap campaign. That it has been so is due to the zeal and carefulness with which the officers have carried out their various duties, and in some measure to the organization and discipline which obtains throughout the whole Department.

Consumption.

During the past year considerable progress has been made in the direction of coping with this disease. The Sanatorium at Cambridge is fast reaching completion, and in the course of a month or so we shall be able to accommodate about sixty patients. Already over eighty (eighty-three patients) have passed through our hands—some quite cured, while a large percentage have markedly improved.

No sooner was it known that the Government had acquired a house and land at Maungakawa for

the purpose of an open-air sanatorium, than we were besieged with applications from the many poor souls who seemed to see in it their only salvation. The result was that despite our better judgment many were admitted to whom no benefit could come. Our hands were forced also, and we were committed to undertake the care of patients before the shelters were ready. With the greatest cheerfulness, and under many disadvantages, the Matron and staff did what could be done. The patients were housed in tents pending the erection of the wooden shelters.

"Te Waikato" is situated on the Maungakawa range of hills about six and three quarter miles from the Town of Cambridge. The grounds have an extent of over 1,000 acres, the greater part of which is hill and valley covered by beautiful native bush. The range has an altitude of about 1,150 ft. The house which the late owner lived in has been converted into the administrative block, comprising kitchen, staff bedrooms, dining-rooms, Matron's and nurses' bedrooms, consulting-room, laboratory, and office for the Medical Officer. The hospital proper—that is the place where the patients sleep and rest—is quite separate and distinct from the main building.

"The amateur writer on open-air treatment is like the amateur traveller—he is characterized by a passion for unnecessary hardship," says one writer on sanatoria, and in this there is much truth.

Time is a necessary factor in the putting-up even of a shelter, and although each is occupied as it is completed, still those waiting for admission not unnaturally get impatient and suggest that tents should be used. At the beginning, as has been stated, tents were perforce employed, and a word or two with respect to them may not be out of place. Sheltered among pines on the flat they can be used all the year round, but at an altitude such as that of Te Waikato they are only useable during the summer months. Although raised well above the ground and floored with good tongued and grooved boards, it was found difficult to keep the bedding dry in wet weather or the tent still when the wind blew. The flapping of the canvas disturbs the patient, though it is marvellous how soon and to what a person can get accustomed. These remarks are offered as an answer to the oft-repeated suggestion that room could be made for more patients pending the completion of the shelters if tents were utilised.

The shelters are divided into three classes—(1) capable of holding one bed, (2) capable of holding two beds, (3) and those large enough to accommodate four. As can be seen from the illustrations the shelters are not only artistic, but they fulfil in every way the standard set up by English and Continental writers on sanatoria.

At the time when you officially declared the institution open there were gathered there visitors from many parts of the world. One gentleman well acquainted with most of the magnificent sanatoria in America stated that he had seen none to excel Te Waikato in regard to site, beauty of surroundings, natural advantages, and up-to-date equipment. This I feel to be true. In contrast with such gigantic boardinghouses as that recently erected at Hohenhonif, our Sanatorium, of course, cannot compete, nor is it desirable to enter the lists with such places as that. Costing something like £100,000, it savours more of the nature of a huge and luxurious hotel. I am firmly convinced that no sanatorium should be larger than, say, sixty or seventy beds. It is inadvisable to congregate together a greater number of patients. The essence of this modern line of treatment is to combine daily careful and personal supervision of each patient by the medical officer and nurses; with a greater number than sixty or seventy this can only be effected with difficulty and at great expense.

Many invalids unfortunately can never hope to obtain the benefits of such an institution; while on the other hand, there are some who do not care to enter a sanatorium. Much may be done for these people in their own homes, but the best must always fall short of what might be. This is what one of the latest American authorities says with reference to this particular point:—

Sanatoria for tuberculosis have many advantages for the treatment of cases over any sort of home management.

Tuberculosis is a type of the long-continuing diseases. Depending on the tissue attacked and on the resisting power of the patient, the disease lasts from a few days to many years, and in hopeful cases the great desideratum is for means to combat it in a persistent campaign, for several years if need be, without a break in the perfect continuity of its strenuous tension. There must be no relaxation of watchfulness to prevent surprises; no lessening of the resisting forces by unsanitary conditions of life that would lower the vitality of the factors of defence. There must be no sleeping on watch in this camp, nor dissipating of powers by unwholesome pleasures, nor engaging in industries not necessary to the perfection of the bodily forces as a power of defence. And there must be no loopholes in the lines of resistance, for the enemy is one that never sleeps nor rests wherever it can find physical conditions adapted to its work; it requires no intelligence, but works with the precision and fate of an automaton.

For such a campaign against this disease the prospects of ultimate success are greatest when it is conducted in a climate best adapted for it, under residential conditions most fit, and under the care and observation of experts in this sort of a campaign who are not likely to relax their watchfulness or lose their wisdom about it from one year's end to another.

These conditions are in the average case best attained in sanatoria for tuberculosis. This truth is so plain as to be really self-evident. It is a truth that needs no argument that these best conditions

can be found neither in the average household nor in the routine of the life of the average patient. A few patients of unusual self-control and wisdom, whose families and attending nurses and friends have sense and decision, and who have the means of surrounding themselves with all the comforts, can do as well or even better than at the best sanatoria; but these are rare exceptions. The allurements of business and pleasure and of social dissipations; the temptations of appetite and the fashions of eating, of dress and of social usages; the love of travel and the desire to roam from place to place—putatively for health, but mostly for mental diversion—these are dangers that handicap most patients with chronic tuberculosis who live at home or outside of an institution. They follow their inclinations chiefly, and try to carry out the advice of their doctors somewhat. Too often the sole advice that is followed is confined to the taking of some drugs, and perhaps residence in a particular place. If the doctor gives minute directions in all particulars necessary to accomplish the best effects, the patient usually finds that they are so radical, and so completely change all the habits and regimen of his life, as well as perhaps his occupations, that he is apt to think them unnecessary and fussy, and to be ready to neglect most of them. In a sanatorium he finds it easy to follow all of them, for there it is the fashion to do this; there is no temptation to the contrary, and the new life and novel regimen furnish both occupation and amusement.

Despite the fact that a great many unfavourable cases have been admitted, the results, as Dr. Pentreath points out, are quite as good as those obtained in some of the best institutions in the older countries. In order that accurate comparisons may be drawn from figures great care must be exercised in defining the exact value of the various units. The varied values which may be attached to such a word as "cured" when used in reference to consumption militates against the usefulness of comparing different institutions. Then, again, the selection capable of being exercised in respect to the cases admitted will play a most important part in the results obtainable. Just as there are surgeons who claim never to have had a death follow a certain operation, so there are sanatoria which claim a very high percentage of cures—simply because the one always refuses to operate unless upon a suitable patient, and the other asks the doomed consumptive to seek shelter somewhere else. It is all the more pleasing, therefore, that we have been able to obtain the satisfactory results that we have.

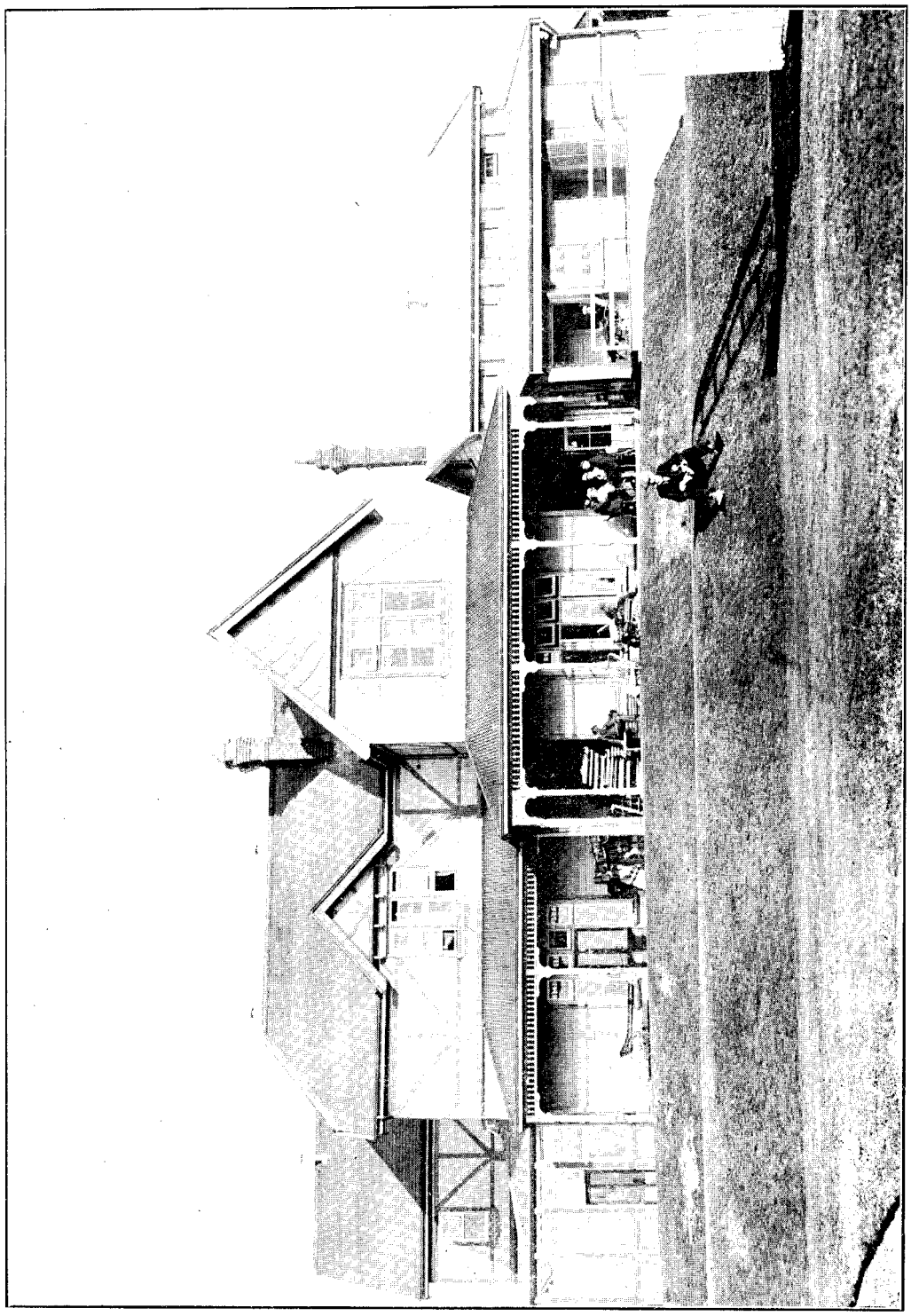
In April of this year Dr. Pentreath was appointed Resident Medical Superintendent; the many and arduous duties up till then carried out by the Matron have now been lessened, and she will be freer to devote herself to the personal supervision of the patients. The tribute paid by you to Dr. Roberts at the opening of the sanatorium was well deserved.

The legislation of last year, giving as it did greater powers to Hospital Boards to erect annexes for the treatment of persons suffering from consumption, is pregnant with great good. Already some of the Boards have set to work—notably Wellington, New Plymouth, Blenheim, Invercargill, and Waimate.

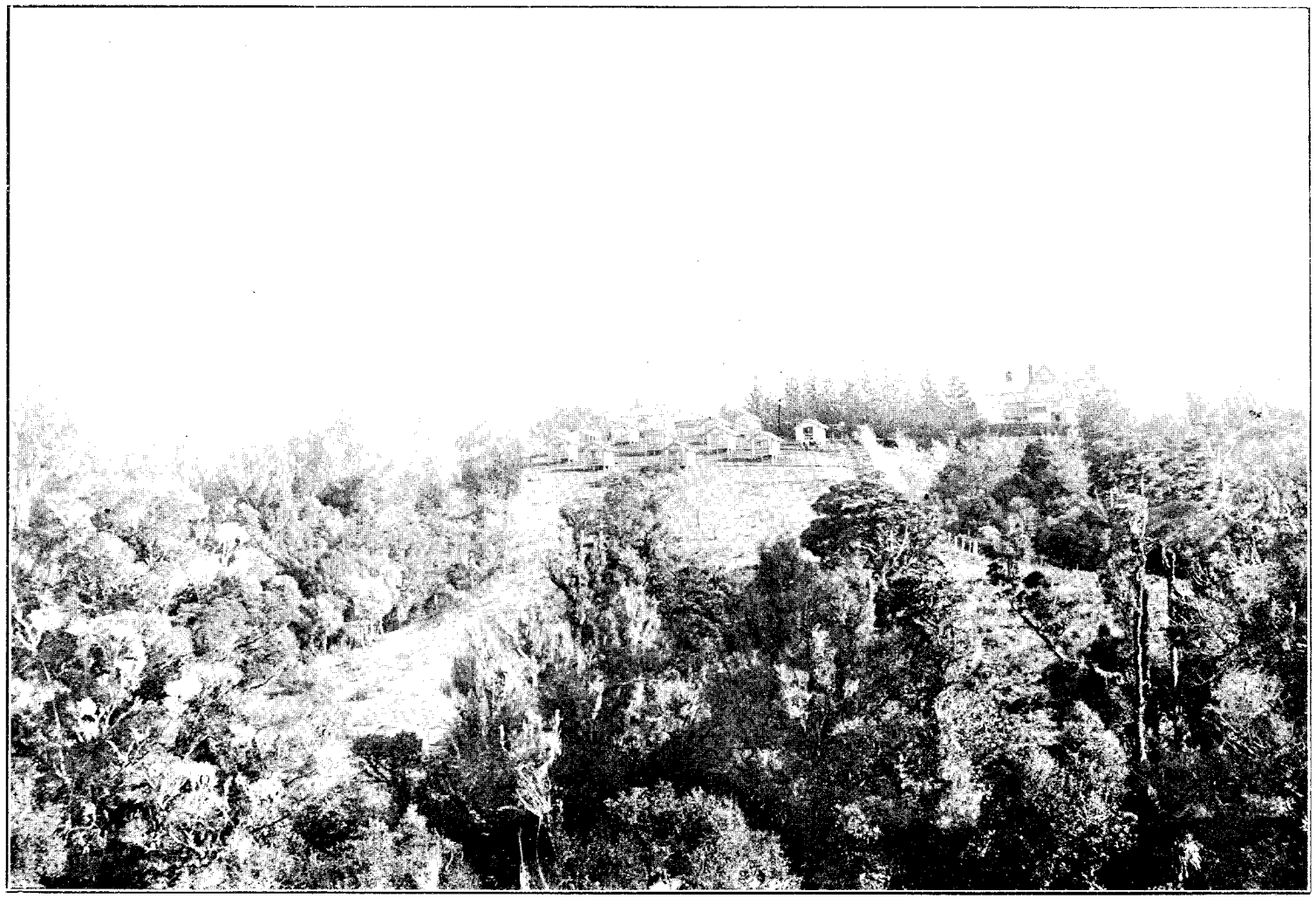
The Wellington Board has decided to erect two four-bed shelters at Otaki, while in Christchurch Nurse Maude has been able, through private help and assistance from the Charitable Aid Board and the friendly societies to establish an encampment for working-men and the indigent sufferer. As a result of a series of addresses Dr. Valintine has been able to collect about £700 from the residents and friendly societies in the Taranaki District for a small establishment to be placed at New Plymouth. The private sanatoria at Dunedin and Christchurch are also doing good work.

What is wanted, however, is a more general movement on the part of the Hospital Boards. There is great reluctance expressed towards the reception of advanced cases of the disease, and many Boards are unwilling to undertake the provision of accommodation for what might be termed hopeless cases. In assuming this attitude I think they are wrong. Picture the lot of a person ordered from a general hospital because of the nature and hopelessness of his ailment—poor, without friends capable of lending him help, he drifts into a low-class boardinghouse and has to be maintained by the help of the Charitable Aid Board. There is no saving to the community, his lot is made harder, and, most important of all, he becomes a potential agent of danger to all who come near him unless he exercises an amount of self-denial and carefulness much greater than can be hoped for. As things are at present the indigent incurable is to my mind the greatest menace to the State, and, if our war against consumption is to be successful, provision within an institution must be made for him. There are no very great difficulties in the way, and adequate house-room would entail no further charge to the State. At present he has to be maintained, and his cost inside would assuredly be less than it is outside. It needs but that the the various Boards should erect small annexes, distinct from the general hospital, but near enough to be capable of being controlled by the same administrative staff. In this way all danger to the occupants of the main hospital would be avoided, and the cost of maintenance and administration would not be great.

Bearing in mind that the vast majority of the cases of consumption contracted during adolescence and the later periods of life are due to infection by means of the sputa of infected persons, until we are able to control and educate these unfortunates, little hope of stemming the tide can be looked for. A sojourn in a sanatorium or a spell of treatment in an institution means more than the cure or comfort of the patient. The training he receives will bear fruit in many ways. He will be taught the great-



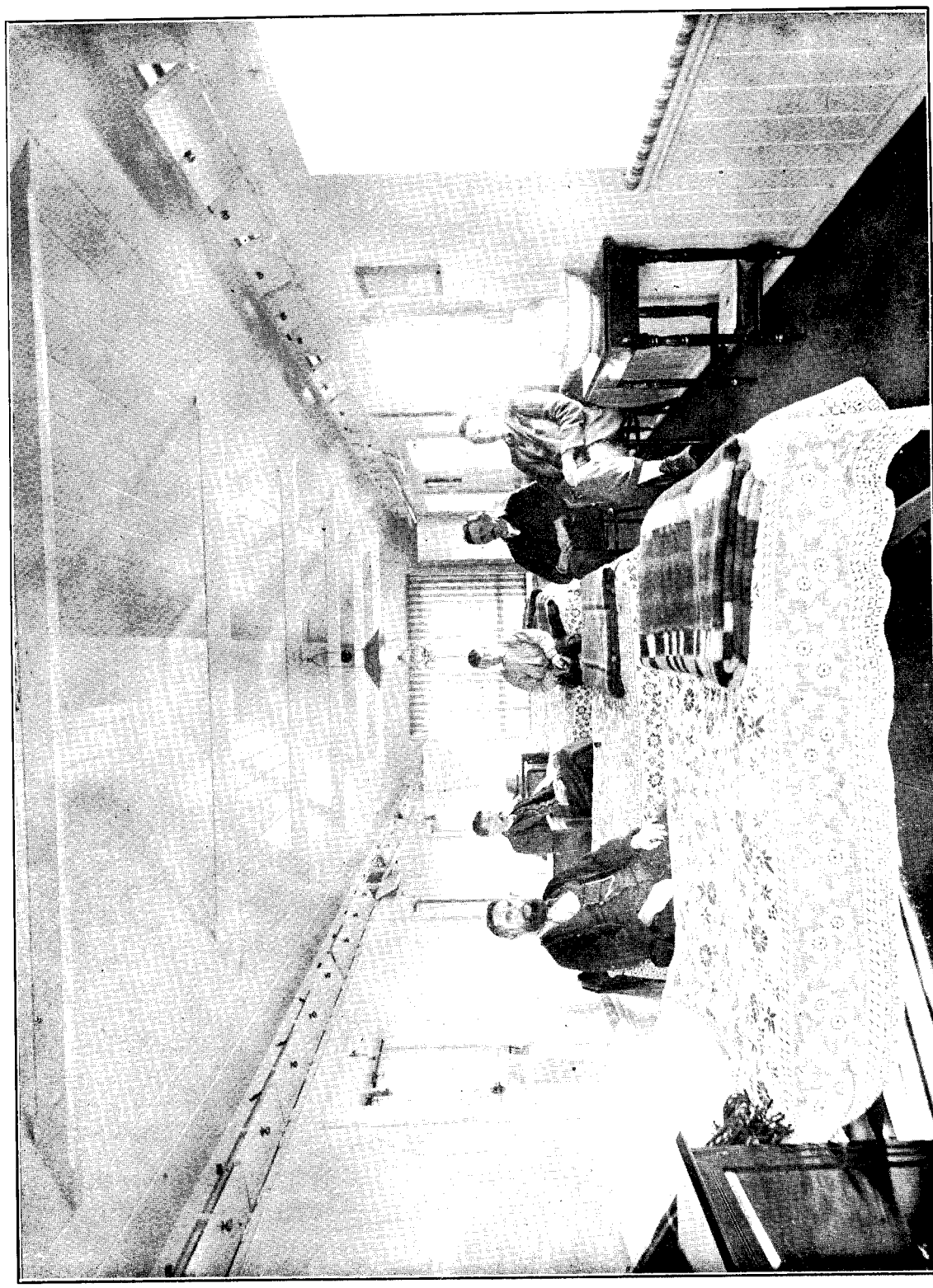
SANATORIUM: ADMINISTRATIVE BLOCK AND WARD FOR BAD CASES.



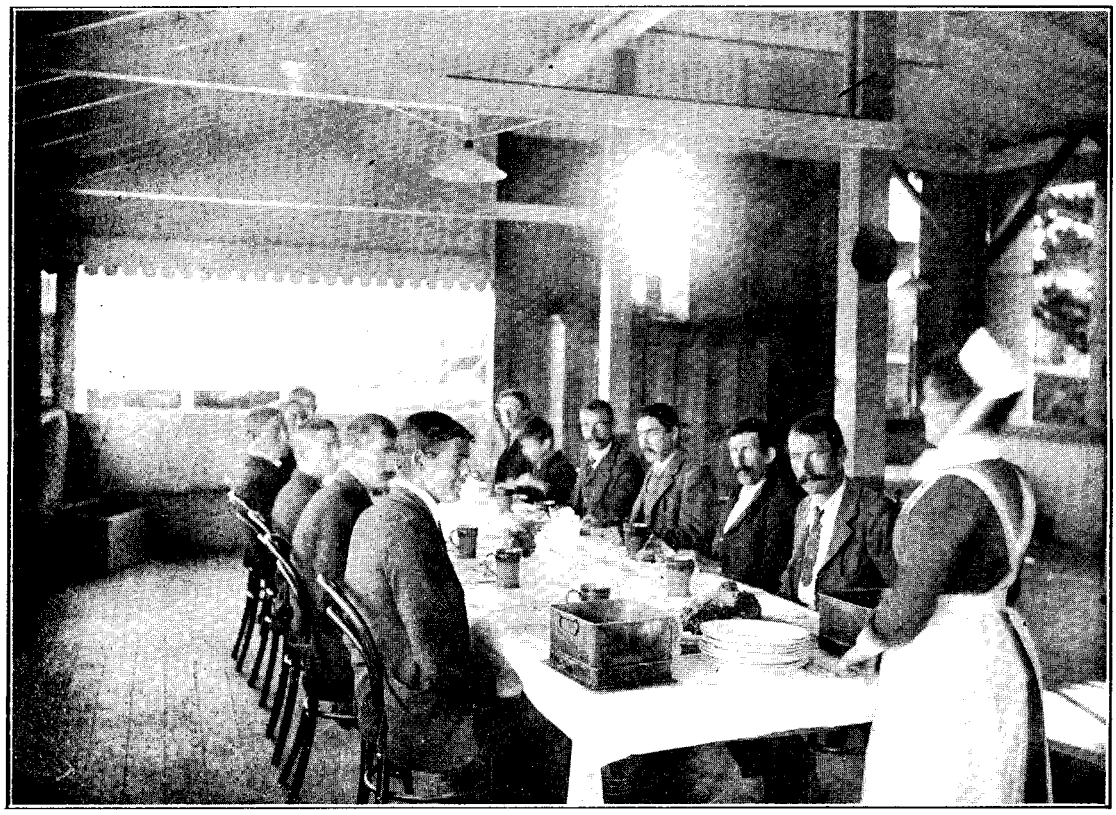
SANATORIUM: GENERAL VIEW OF THE ADMINISTRATIVE BLOCK AND ONE OF THE COLONIES.

SANATORIUM: TWO-BED SHELTER.

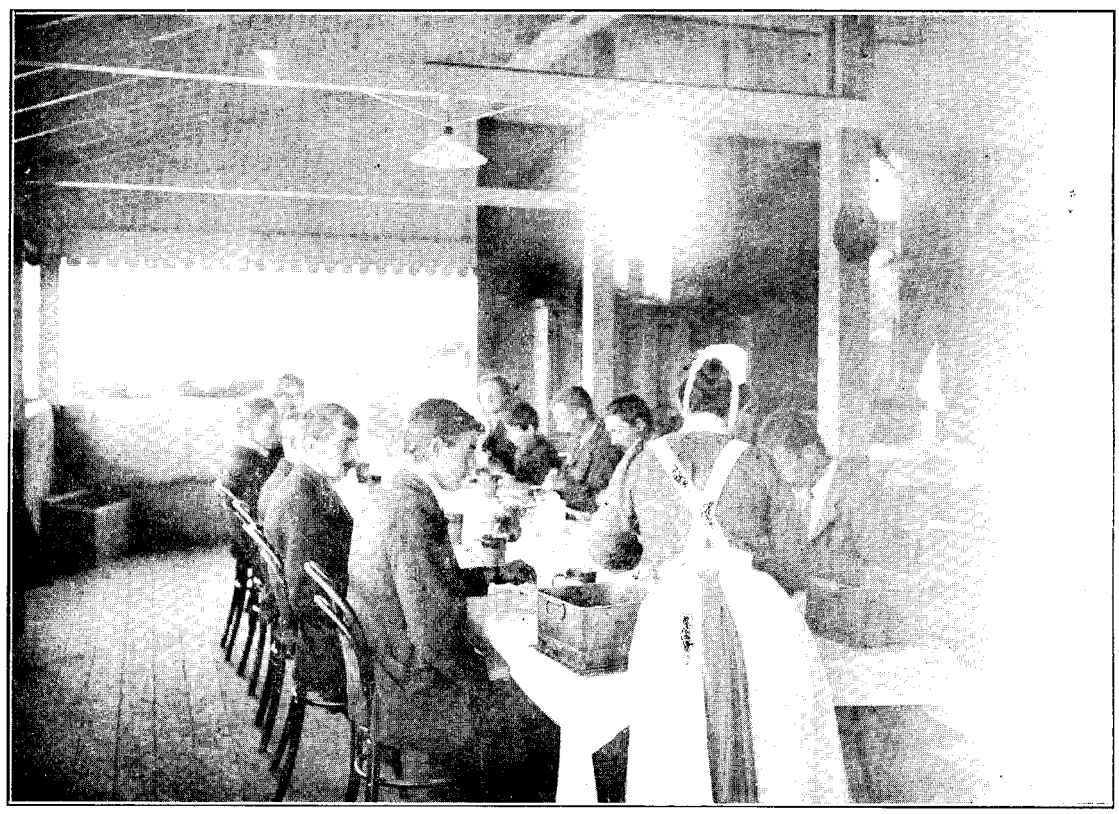
SINGLE-BED SHELTERS.



SANATORIUM: VIEW OF INSIDE OF FOUR-BED SHELTER.



SANATORIUM: OPEN-AIR DINING-ROOM.



SANATORIUM: OPEN-AIR DINING-ROOM.

ness of the danger which lies in the apparently harmless practice of spitting anywhere but in a suitable vessel; he will learn that a reversion to a more natural mode of life means increased health; that cleanliness and temperance are the greatest safeguards against diseases in any form. These lessons learnt he will go forth to the world again an apostle of fresh air, winning converts by that best of all agencies—example.

In my last report attention was drawn to what the so-called minor infectious disease had cost the colony. Hear what a well-known American authority has to say with respect to what tuberculosis costs the people of the United States yearly: After a careful estimation Dr. Herman Biggs of New York places the expense of tuberculosis to the people of the United States at $330,000,000 (£66,000,000). He first calculates the loss to New York City by putting a value of $1,500 (£300) upon each life at the average age at which deaths from tuberculosis occur. This gives a total value of the lives lost annually of £300,000. But this is not all. For at least nine months prior to death these patients cannot work; and the loss of service at $1 a day, together with food, nursing, medicines, attendance, &c., at $1.50 a day results in a further loss of $8,000,000 (£1,600,000) making a yearly loss to the municipality of $23,000,000 (£4,600,000). For the whole country the 150,000 deaths from tuberculosis represent in the same way a loss of $330,000,000 (£66,000,000). He further points out that the total expenditure in the City of New York in the care of tuberculous patients is not at present over $500,000 (£100,000) a year—that is, it does not exceed 2 per cent. of the actual loss by death, &c. "If this annual expenditure were doubled or trebled, it would mean the saving of several thousand lives annually, to say nothing of the enormous saving in suffering." Further evidence of this is afforded by the fact that in the last twenty years the total number of deaths from tuberculosis in New York has decreased instead of increased, although there has been an increase of 70 per cent. in the general population.

If we are to assume that the same value attaches to the individual units of our colony, and I see no reason to doubt it, and if we further accept Dr. Biggs's estimate of the cost of keep, nursing, medical attendance, &c., which a death from consumption has entailed, there is no difficulty in showing that the eight hundred deaths which took place last year cost New Zealand the appalling sum of £304,800. It could not of course be contended that even if we had abundance of sanatoria this sum could have been saved, but it is well to bear in mind that disease and death can be assessed in the language of the Stock Exchange. Nothing of the heartache, the sufferings of the patient and those dear to him, the slow-dying hope and the anguish which falls upon one who foresees he must soon leave a life he has but entered on, is to be found in the mighty debit balance set out. The time has gone by when we were wont to look upon the gradual disappearance one by one of families from consumption as a sacrifice to an outraged Deity. We are gradually learning the lesson so tersely put by Huxley that we never suffer but for some infraction of a natural law, that nature has no pity in her heart—if we affront her we may rest assured she will retaliate not in anger but in inexorable justice. The task of coping with tuberculosis in the older countries is fraught with difficulties which do not obtain in anything like the same degree in this chosen land. The individual has but to play his part, work in conjunction with the authorities, and join in putting down indiscriminate expectoration, and a very great advance will have been made in the work of lessening the awful toll which tubercle yearly demands at our hands.

But for the appearance of small-pox in Christchurch the lecturing tour which I had contemplated would have been an accomplished fact; as it is, only a very small portion of the colony has been visited.

It is interesting to look back upon the regulations with respect to this disease which have been passed and placed on record. As far back as 1746 Ferdinand VI. issued to the medical men in charge of the various districts an instruction which ran as follows:—

Experience having shown how dangerous is the use of linen, furniture, and articles which have been used by persons afflicted with, or who have died of hectic, phthisical, or other contagious diseases, we enjoin on all physicians to give notice of those persons who are sick with or who have died of phthisis, so that the Alcade may cause the linen, clothing, furniture, and other objects used personally by the patient, or which have been in his department, to be burned; so that the Alcade may also order the apartment in which the patient died to be replastered and whitewashed, and the flooring or flagging of the room or alcove in which the patient's bed was placed to be changed. Besides, a registration must be kept of places from which clothing found in the shops of second-hand-clothes dealers comes, with information as to the names and residences of the vendors, as well as the persons who have used the linen and garments, and dealers in old clothes ordinarily doing business in infected clothes. The Alcade shall issue a paper attesting that the said goods are free from contagion; this paper shall be the sole authorisation by which dealers in second-hand goods will be allowed to keep or sell such goods. Any physician who will not give notice of consumptive patients, or those who have died of consumption, to the Alcade of his quarter, shall incur, for the first offence, a fine of 200 ducats and suspension from the practice of his profession for one year; and for repetition of the offence a fine of 400 ducats and the punishment of exile for four years. All other persons (infirmarians, domestics, attendants on the sick) who will not report the case shall incur a penalty of thirty days in prison for the first offence, and four

years in the galleys for the second offence. Civil, religious, and military authorities shall cause to be burned in civil and military hospitals all linen which shall have been used by phthisical civilians or soldiers.

This reads like a free rendering of sections 26, &c., of our Public Health Act, only the penalties for non-obedience are slightly greater than those prescribed by us. Four years' exile for the medical law-breaker and four years chained to the galleys for less distinguished offenders emphasizes the importance which the authorities two hundred and forty years ago attached to the notifications of consumption and the careful disinfection or destruction of all things which had been exposed to contagion. "*Nil novi super terram*" would indeed seem to be true. Let us hope that the truths contained in these old-times regulations will not require to be rediscovered another two hundred years hence.

Plague.

This disease I regret to say still lingers in Western Australia, Queensland, and New South Wales: this is as might be expected. Despite the wholesale reclamation and cleansing of the docks and houses in Sydney it was hardly to be expected that a disease which depends so much for its transmission upon an agent so wily as the rat could be effectually stamped out in so short a space a time. Isolated cases are occasionally appearing, but, in view of the measures that are being taken, there is little chance of anything approaching the epidemics of 1900, 1901, and 1902 again taking place.

Against the introduction of this disease we have contented ourselves with careful inspection of all passengers from the infected areas and the rat-guards regulations which were set out in my last report. That we have not been able to entirely exclude the disease is evidenced from the fact that since March, 1903, there has been one case in Auckland. In this, as in every instance where the disease, occurred careful precautions were taken against its spreading; all clothes, bedding, &c., were destroyed, the rooms used by the patients were stripped of everything and repapered or painted, and in no instance has the disease spread. Bearing in mind that plague—saving the pneumonic form of the disease—is spread solely through the agency of rodents, there is little danger of the disease obtaining a foothold in the colony if the regulations suggested in the circular telegram of the 26th April issued by you are carried out. Our only danger lies in the reposeful attitude local authorities and individuals are liable to assume after any energetic effort. What is necessary is a daily wash, a regular clean-up—not the Turkish bath prompted by an illness or the spring-cleaning consequent upon an outbreak. A reassuring feature is that although rats have been regularly examined in all the chief centres only once have they been found plague-infected, and that only in one city. Plague, small-pox, and all such "dangerous infectious diseases" come to us at once in a guise so dramatic and awful that our attention is riveted, and measures more or less halting are insisted upon; but, if we except consumption, it is to "the lesser breeds without the law" that we must ascribe the greatest waste of life, energy, and economic value. Infantile diarrhœa, mostly due to mal-feeding and contaminated milk, enteric fever, and a host of so-called lesser ailments, all preventable, are the main sources of degeneration and loss of wage-earning power. Slowly but surely the lesson is being learnt, but many valuable lives will be sacrificed ere it is borne home in its full significance.

We have but to look at Dr. Ogston's report on the outbreak of enteric fever at Mount Pisa to realise the awful waste which ignorance and carelessness have involved. Out of a community of forty twenty-one workers were required to lay down their tools and cease from labour for a lengthened period, and of that number two ceased to be of further value to the State. A case-incidence of about 50 per cent. and a death-rate for this homestead of 5 per cent. It may be said that this is an isolated instance—and truly it is; that percentages based upon such small numbers are inaccurate. Let us grant all this, yet the fact remains that two units each worth some £300 have been lost to the State from an absolutely preventible cause: as much as plague—prince as he is amongst infectious diseases—has cost us since the year 1900.

Charity it is said should begin at home—had I the readjustment of aphorisms I should translate "charity" into "sanitation." Dr. Valintine showed clearly in his report for the Wellington district last year the salutary effect which efficient drainage had had in Wellington upon the incidence of enteric fever. Some municipalities have yet to learn the lesson of "the hand-writing on the wall," but not less has the individual. Napier and Auckland hold the unenviable distinction of suffering most heavily from this disease. Reclamation is being gradually proceeded with in the city of the east, and it would seem that Auckland has at last seen fit to carefully consider an adequate system of drainage suggested by Mr. Mestayer. Let us hope that the same sane judgment and enterprise may be displayed by the northern capital in this as have been shown with respect to electric trams and the asphalting of Queen Street.

Density of Population

It was pointed out last year in the report on the Wellington Health District that in our capital city there was a greater density of population in some parts than obtained in many of the large centres in the Old Country. The system, for which the Government has done so much, of facilitating the transport of the worker in the city to a cottage and an acre or quarter-acre in the suburbs is excellent, but it ought to be extended. Dr. Vivian Poore has long advocated that by-laws should be brought into force prohibiting the erection of more than two-story buildings in all the residental portions of the town. This may be a counsel of excellence, but something more is surely possible in this direction. A house of small rooms cramped in and abutting directly upon the noisy street, no playground for the children and no garden for the workman to interest himself in, are factors which undoubtedly do much to sap the energy and physical well-being of a community. The proper housing of the smaller-wage earner and the poorer classes should not be left to the land speculator. It is undoubtedly a matter which deserves the earnest consideration of all interested in the physical and moral welfare of the race.

It should be made impossible in a new country like this to reproduce even in miniature the conditions which unfortunately obtain in old-established cities. Wise and carefully-worded by-laws have been enacted by most of our larger towns, but in many instances they have only come into existence after considerable mischief has taken place. Back-to-back houses, dwellings with inadequate yard-space, and narrow lanes ending in *cul-de-sacs*, all unfortunately exist in most of our cities. To prevent the further introduction of such unhealthful conditions ought to be the aim of those in authority. It is to the fathers of the newly born towns and boroughs we would most earnestly offer this counsel, for as soon as the conditions described have been laid down it becomes difficult, and in many instances impossible, to have them altered. Among the first works which should be undertaken by a young town is the passing of by-laws wherein the height of buildings, air-space, construction of streets, laying-down of water-tables, and all that pertains to the sanitary well-being of a town should be set forth. Much has been done on general lines by the Legislature, but each community must work out its own salvation in this, as in many other matters. At first sight it may seem that the question of high rents is without the domain of a Health Department, but on careful consideration it will be found not only that it is not so, but that it plays a most important part from a public-health point of view. High rents mean bad and inadequate housing for the working-man and his family. Small houses and no gardens mean ill-health, discontent, and lack of interest in the home. Pride of domicile is one of the most powerful factors in the family life, and absence of it is accompanied by much that is antagonistic to the best interests of the physical weal of the State. The workman must be within easy access of his sphere of labour, and herein lies one of the greatest difficulties with which we are confronted in essaying the solution of the problem, "healthy housing for the poor and the moderate wage-earning classes." The taking-over of unhealthy congested areas has cost London and Glasgow many millions, not to speak of the energy and time required to fight those rapidly growing giants vested interests and ancient rights. The conflict between sanitation and these "old men of the sea" has already begun in New Zealand, and it promises to cost much money. With the economic adjustments of the position it is not within my province to deal. Whether the present price of land can be taken as a sure measure of the general prosperity, whether the house-owner gets more than his fair share of the wages earned by the worker, and whether any readjustment is within the scope of practical politics is a question more for the student of political economy than for the sanitarian. Still this remains—the worker must be healthily housed, and for a sum commensurate with his earnings. How this can best be done has engaged the attention of many. Tenement-houses several stories high, such as obtain in the larger cities at Home, have been advocated. By this means fair-sized comfortable suites of rooms at a moderate rental could be provided. In densely populated areas, such as in certain parts of London or Glasgow, this may be the only practical solution of the difficulty, but unquestionably it is not the one to be recommended for a country such as ours. The solution lies in an extension of the policy which has already been instituted—namely, the acquiring of suburban lands, the granting of small areas at low rentals, the erection of cottages thereon, and a ready and cheap mode of transit to and from the centres of industry. Much has been done in this direction, but a great deal more is required. There is no insuperable difficulty in the way of 90 per cent. of the men working in the cities being housed in the country. Between the mental effect of living in a small house with a horizon bounded by the backs of similar uninteresting edifices, and living in a cottage with a flower-garden in front and a vegetable-garden behind, there is a very great deal. The publichouse and the theatre lose a great deal of their attraction, while the effect upon the children is of the very greatest moment. Electric trams and cheap railway fares are in this sense powerful agents for good.

With a brush which he alone could wield Dickens painted the crowded streets of the poor parts of London, with their squalor, dirt, drunkenness, and crime, and he traced a close connection between the latter and the former. To say that the one is consequent in a great measure upon the other, is but to restate the long-accepted scientific fact that the life of every animal is nothing more than an expression of the fight with its environment. Pointing to the model buildings which through the energy of certain individuals had replaced the squalid overcrowded slums, he declared them greater monuments "than storied urn or animated bust." That we are far from free of reproach is evident from Dr. Makgill's report of last year and the columns of the Auckland *Herald* in January last. The depth and frontage of "building sections" should be set out by all towns no matter how small, and houses should not be permitted to be erected unless in the opinion of competent sanitarians the area of land is sufficient. The larger towns and cities have all passed such by-laws, but some of them unfortunately waited until crowded areas have been created. The task is easy for our budding Wellingtons and Aucklands of the future if they but seise themselves of the importance of requiring adequate areas for all dwelling-houses and wait not till a mayor is entitled to preside over their councils.

Smoke Nuisance.

This is a matter wh ch, in Wellington, at any rate, has been the subject of much discussion, and which has been carefully gone into during the past year and a half by the Department. Data have been obtained from most of the large centres in the Old Country and from America.

In this as in many other things there are two sides to the shield. That the emission of smoke from the factory and other chimneys is not only undesirable, but in a measure antagonistic to health will be admitted by most, but it is when we come to suggest a remedy that the difficulty begins. Any measure for the mitigation of this nuisance must, it will be admitted, be general in its application. No specific industry or manufacturer must be singled out for the pillory. It is a well-accepted fact among engineers and sanitarians that much of the smoke now belched forth in our cities could be obviated by greater care in the stoking, but firemen like unto the rest of humanity are liable to follow what they consider the line of least resistence. If it could be demonstrated that there was any apparatus applicable to all furnaces which when used would effectually prevent the sending-out of smoke, then law and common justice would justify our insistence upon its use, but it would seem from a very extensive investigation that no such "cure-all" is obtainable. There are, however, two ways in which this question might be settled: (1) Require all factories to be located within a specified area—set apart a locality in each large centre for manufacturing purposes, and give the builders of such works some security from interference; or (2) follow the rule adopted by such cities as Manchester, Leeds, Sheffield, and London, and say that only for so many minutes per hour may black and brown smoke be emitted from the chimneys of factories.

In a previous report to you I advocated the relegation of all trades scheduled as noxious under the Public Health Act to one defined area, so that manufacturers settling within that area should, as far as the Government could, be assured that if the works were conducted properly they would not be subjected to actions for annoyance or unavoidable nuisance which might result from the carrying-on of their specific industries.

Scarlet Fever.

The wave of scarlet fever which swept from one end of the colony to the other last year has, I am glad to say, subsided. It would seem that all suitable victims have been attacked. It is more than likely that until a new generation has arisen we shall be free from any such wholesale outbreak. We must, however, if we hope to check any fresh inroad, be prepared to isolate the primary cases in each large centre. Once an epidemic has set in it is hopeless to expect much from isolation. It is the first cases we must concentrate our attention upon. To arrange hospital accommodation for all who suffer during an epidemic is an hopeless task, and I venture to say an economic mistake. Provision, however, should assuredly be made in each large centre for a certain number of cases, so that patients connected with houses having to do with the supply of food-stuffs such as milk may be at once removed and isolated. More important from an economic even than a personal point of view is this necessary. Take a case from actual practice and see what want of hospital accommodation entails. A milk-vendor with six cows in full profit has a family of wife, son, two girls who work in a ready-made clothing-factory, and a young child. He lives in a small house of three rooms, one of which is used as a shop. The child suffers from scarlet fever, and there is no room in the infectious diseases hospital: what results? Through our inability to remove the child, the sale of milk is stopped: the employers of the girls rightly object to their continuing their work, and if the father be poor, the whole family has practically to be maintained by the Charitable Aid Board. The non-provision of an isolation hospital for this one child has thrown the keep of six persons upon the rates: this, as can easily be seen, is false economy. I am glad to say that adequate provision is gradually being made for this and other infectious diseases.

Dr. Finch's remarks as to the age-incidence of the disease are worthy of attention. It would seem that scarlet fever is losing its character as a disease of childhood out here ; but it has to be borne in mind that the data at our disposal here are comparatively small and that this disease visits us in apparently regular cycles.

The difficulty which Dr. Finch draws attention to with respect to notification of death is very real, and has been commented upon before. The Registrar-General has helped us in many ways ; but if it were possible that every Registrar was required to notify the District Health Officer of all deaths occurring in his district within at least seven days it would not only be of great value from a statistical point of view, but would be of the very greatest service from a public-health aspect.

Leprosy.

There are at present five persons suffering from this disease in New Zealand, and, with the exception of one Chinaman, all are Maoris. As far as possible, they are all well cared for and isolated, but as Dr. Pomare points out, it is unfortunate that some place has not been set aside whereto all suffering from this disease could be relegated.

Private Hospitals.

Regulations dealing with the licensing and inspection of all hospitals and maternity homes not supported by the State have now been gazetted. As soon as the amending Act was passed last session, the District Health Officers were instructed to make themselves acquainted with all such institutions in their respective districts. Already there has been an improvement : the mere fact that power had been given to deal with such places has had a salutary effect.

Adulteration of Foods, etc.

The new Act recently framed for the consideration of Parliament will, if placed upon the statute-book go far to prevent the sale of adulterated food-stuffs, as well as the substitution of inferior-grade materials by the makers and vendors of our foods, drugs, and drinks. A large amount of valuable data has been collected through the courtesy and help of manufacturers and others ; some of this has been embodied in the Bill referred to.

Milk-supply.

The supervision of this important article of food is far from satisfactory at the present time. The conditions under which the milking takes place are in a great many instances such as almost precludes that the milk can be pure and uncontaminated. As the regulation of dairies and milking-sheds is under the control of the Agricultural Department, the officers of this Department only interfere when cases of infectious disease occur at such places, or when we are convinced that a disease is being spread through the agency of milk. Previous to the passing of the Dairy Inspection Act of 1900, the larger cities had an officer whose duty it was to regularly visit and report upon all places where milk was exposed for sale. When the Act came into force, many of them dispensed with their Inspectors, and since then this important branch of public health has been carried on but fitfully. We, as far as has lain in our power, have carried on the work previously done by the local authorities, but it is most desirable that special officers should be set apart for this work alone.

Forming as milk does the staple article of food for the young, its purity or otherwise is of the very greatest moment and importance to the State. Although much could be done by efficient inspection and lecturing to the dairymen, the many opportunities which milk has of being contaminated or damaged during transit and before consumption has suggested to private firms and municipalities in many parts of the world the advisability of dealing with it immediately before its distribution to the consumer. Some local authorities in the Old Country have gone so far as to set up shops where the milk is retailed out, pasteurised and humanised in bottles of a size and shape somewhat like the ordinary feeding-bottle. All that has to be done is to unloose the cap and present it to the child. By this method, even the careless or dirty nurse is prevented from depreciating the value of the little one's meal. I do not suggest that the time is ripe for such a bureau here, but I am convinced that, until the sale of milk in towns is placed under the control of the municipalities, the present unsatisfactory and unwholesome condition of things will obtain. Were all milk sold by or through a department of the Council, it would be possible to insist on efficient pasteurisation of every pint consumed. Pasteurisation, while it alters the taste and appearance of the milk but little, has been shown to effectually destroy those many organisms which tend to set up diarrhœa in children. If, say, every town with four thousand or over of a population had a one-portal system through which all milk had to pass, such as is the law with respect to our meat, a marked decrease in our infantile mortality and preventible disease would result. In order to carry out the scheme, there need be no interference with private rights or privileges.

A plan similar to that followed by the butter-factories could be adopted. The suppliers could be credited with the value of their respective consignments, and accounts could be settled up weekly. Possibly a scheme of this nature must rest in the womb of time for a little longer unless fresh legislation be enacted, but come it must if milk is to retain its right to be regarded as a "natural fluid."

There has lately been introduced a process by which the water can be removed from the milk without apparently causing any great alteration in the chemical condition of the other constituents. Experiments are now being made with this "dried milk," and they promise to support the claims made by the inventor. If this should be, this new process promises to revolutionise the whole milk-industry, more especially the manufacture of tinned and frozen milks.

As was pointed out in my last report, the value of the Department is to be gauged not only by the actual number of sanitary schemes which it has brought about, but even more so by the control which it has exercised over local bodies which wished to embark upon unscientific and unworkable schemes. Apart from the powers given us under the Public Health Act, the great majority of local authorities do us the honour of asking our advice before undertaking schemes of drainage and water-supply. With the help of the Public Works Engineers we have been able to suggest in many instances improvements, and now and then it has been our unpleasant duty to utterly condemn the proposed schemes.

Departmental Alterations.

There have been several alterations made in the working of the Department. Dr. Makgill has been moved to Wellington, and Dr. Frengley, who had charge of the Marlborough, Nelson, and Westland Districts, has been stationed at Auckland. The changes were carefully considered, and will, I am certain, tend to the greater efficiency of the Department.

In order that the control over the manufacturing of the vaccine lymph might be more immediate, you decided that a laboratory should be set up at headquarters. This, and the fact that there were many special lines of research necessary to be followed up in order that we might keep abreast of the times, were the reasons which required the removal of Dr. Makgill from a sphere of work in which he had done so much and with the very greatest acceptance to the people. The vaccine laboratory has been placed entirely under his control, and already he has engaged in a series of observations relative to the ventilation and sanitary arrangements in mines. Dr. Valintine has, as in the past, shared with me the responsibility in many difficult questions. His work in consequence has greatly increased, but the presence of Dr. Makgill in Wellington will enable him to continue that campaign in which he is so eminently successful—the conversion of local bodies.

The pathological work done by Mr. Gilruth with the assistance of Mr. Reakes and Mr. Barker has largely increased. When the laboratary in connection with the Agricultural Department is in full working-order at Wallaceville, Mr. Gilruth will be able to carry on his important investigations with greater facility and comfort. Our laboratory will then be used entirely for examinations and experiments pertaining to the human animal. The interdependence of disease as between man and the lower animals is every day becoming more recognised; and the notion that cancer, for example, in the cow, is a totally different disease from that as seen in man, is fast being relegated to the limbo of things that were.

The Marlborough District has been placed under the control of Dr. Anderson, of Blenheim, the Westland District under Dr. C. Morice, of Greymouth, and it is proposed to appoint an officer to be stationed at Nelson. As, however, these gentlemen are only in receipt of a nominal salary, and engaged in private practice, special investigations and regular visits will be made by an officer from headquarters when occasion requires it. In this way, without additional expenditure, we shall be able to avail ourselves of Dr. Makgill's special knowledge without in any way interfering with the efficiency of the Department in the district recently vacated by Dr. Frengley, while he in turn will have a larger sphere of action for his undoubted knowledge of sanitary work in general. On Dr. Finch fell an unusually large share of work, as will be seen from my special report on the small-pox outbreak. The work in Hawke's Bay and Otago has been good. Dr. De Lisle has given much attention to field-work, and Dr. Ogston has had many opportunities of bringing to bear his great experience in preventative medicine, as witness his report upon the Mount Pisa outbreak of enteric fever. Dr. Pomare has been indefatigable in his work, and his influence for good among the Maoris is evident wherever one goes. The various Inspectors have done excellent work, and the appointment of Mr. McAlister has enabled the clerical work of the Department to be carried on without friction and with despatch.

Sanitation among the Maoris.

I have to chronicle with the greatest regret the death of Tamahau Mahupuku, a rangatira of the best and highest type. No one has done more for the physical salvation and safeguarding of the Maori

race than did the lately departed controller of the most sanitary and best conducted Maori pa, Papawai.

A persistent war has been waged by the Department against "tohungaism"; but while we must regret the survival of the tribal medicine-man, we are not entitled to express surprise or indulge in pharisaical prayers. With a literature leading back to the Venerable Bede, and a scientific knowledge which embraces the liquefaction of air and a practical acquaintance with ethergrams, who are we to point the finger of scorn at the Native who believes in the enchanted potato, or who allows his wife to be walked upon in order to induce the unwilling first-born to undertake the trouble of living. We have but to glance at the advertisement-sheets of any of the popular magazines, and an impartial inquirer must come to the conclusion that 97 per cent. of the advertisers are firmly convinced that there exists no such thing as a sound man or woman. I can imagine with no great outrage to my logical faculty a Macaulay or a Buckle of the year 2000 calmly assuring his readers that all women were grossly fat, hairless, or too hairy, and that all men had lost their manhood and vigour in the year 1904. If with all the experience and education which we "pakehas' have behind us, Cagliostros the many diverse characters as evidenced by their advertisements find a profitable market, need we wonder—have we a right to assume an air of superiority towards the Maori who has not lost his belief in *tapu*. Of a truth we are too liable to see the mote in our neighbour's eye. I do not for one moment suggest that the fight we are engaged in should be foregone, but it would be well before condemning our brother colonists because of their benighted habits if we remembered the enormous revenue which is derived every year from the duty on patent medicines. Deaths occur among our Native brothers through an adherence to ancient prejudices and beliefs, and we must do what we can to check the illicit practice of the *tohunga*; but while we engage ourselves in this good work, let us not shut our eyes to the fact that we are every bit as superstitious and illogical in our actions as our poorer brothers whom we condemn, and whom we are so anxious to rescue from the hands of the charlatan. As the old Indian proverb runs, "I met an hundred men on my way to Delhi, and all of them were brothers."

Dr. Pomare in his report emphasizes the remarks I made last year with respect to the value of inducing the Maori to undertake regular work. I am fairly convinced that until all communistic interest in land has ceased, until the land and property of the Maori can be individualised, the downward progress cannot be checked. It is pleasing to record that drunkenness among our Native brothers has vastly decreased. The Maori Councils Act has done much to raise the Native in his own eyes, and this after all is what is aimed at in all democratic countries. Give a man—no matter what his colour may be—responsibilities, and immediately he begins to raise himself. Here undoubtedly, progress is many times barred by the fact that there are too many small local bodies, and it would be well to dispense with not a few of them; but as a man must learn to walk ere he can be expected to run, that a child must suffer many hard knocks ere he learns to co-ordinate the muscles of his legs, can never be offered as a reason that he should not be allowed to try. As with the white, so with the brown, the imposition of some responsibility has always a good effect.

The maleficent effect of the *tohunga* has been adverted to, but the first step towards curbing his power and preventing the undoubted waste of infantile and adult life among our Natives will be found in the passing of a law which will require the registration of every death just as obtains among the pakeha. Until the death of every Maori is required to be registered just as is the death of a white man no effectual steps can be undertaken to check the power of the "medicine-man."

The issue of the circular drawing attention to the presence and danger of small-pox was productive of very much good. The Maoris from all parts, north and south, clamoured to be vaccinated. It is interesting from a scientific point of view to note Dr. Pomare's statement that the half-castes suffered more from that simple operation than did the whites. It is feasible to suppose that from the fact that the forefathers of the unvaccinated whites had been nearly all vaccinated they were able to transmit a partial immunity.

Ankylostomiasis.

In view of Professor Haldane's report upon some of the Cornish mines, and bearing in mind the very intimate connection we had with South Africa recently; further, as the disease has long been common in Austria and Germany, it was thought wise to issue the following circular to all mine-owners and those in charge of the mine-workers' interests.

Ankylostomiasis, and its Prevention in Mines.

I trust you will pardon me drawing your attention to the possibility of the disease called "ankylostomiasis" affecting the men in your employment.

This disease as you may be aware, has caused a considerable number of deaths both on the Continent and in England. It was the subject of investigation by Professor Haldane lately because of its appearance in some of the mines in Cornwall.

The disease is caused by a small worm, and the general symptoms are pallor (anæmia), breathlessness, palpitation, pain over the stomach, irregularity of the bowels, and sometimes bleeding. The disease is absolutely preventable, and it is with the object of warning you that I am now addressing this memo.

The worm usually inhabits the upper portion of the small bowel; the ova or eggs come away in the patients' motions. In some mines there are no privy conveniences, and in consequence, the men simply defæcate upon the ground. The warm moist air of the pit keeps the eggs alive. Boots, pipes, water-bottles, &c., become contaminated with the filth, and during meal-time many of the eggs become attached to the hands and food, and in this way reach the stomachs of the men. So far as we know this is the only method by which the worm obtains an entrance to the system. That being so, it is quite easy to see what steps should be taken in order to prevent the disease being spread: (1.) No pit-water should be drunk; it should all be taken down in bottles or kegs. (2.) Proper privy accommodation should be provided below, so that no excuse may be given the men to defæcate upon the ground. (3.) The men should take great care not to get their hands dirty with excrement. When once the soil has been contaminated, the very greatest care should be taken by the workers.

I hope you may be able to bring this matter before your men, and that some arrangements may be made in the way of providing sanitary conveniences for them.

It is not likely that this disease will obtain any great foothold in this colony, but we must remember that it exists in Fiji and some of the other islands of the South Pacific with which we have communication. Within seven months 1,720 miners were affected in Germany, and almost one and a half million marks (£75,000) has already been spent by that Empire in combating the disease.

Timely warning such as we have issued will, it is hoped, do much.

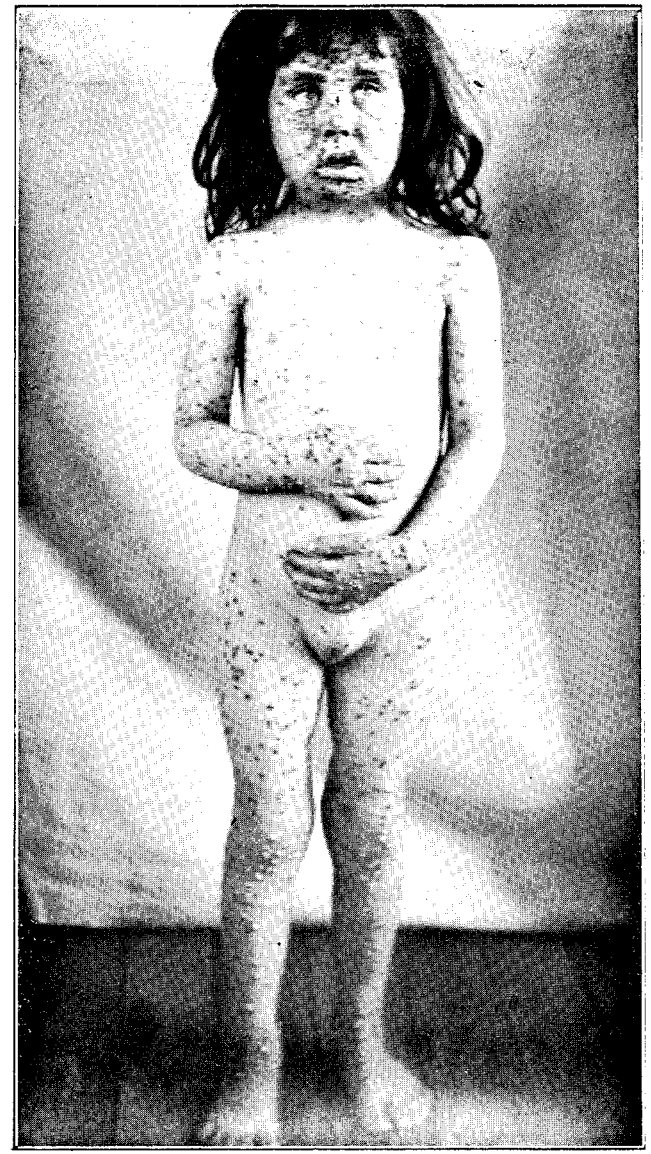
I have, &c.,

J. Malcolm Mason, M.D., D.P.H. Camb.,

Chief Health Officer.

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

SMALLPOX IN UNVACCINATED CHILD.



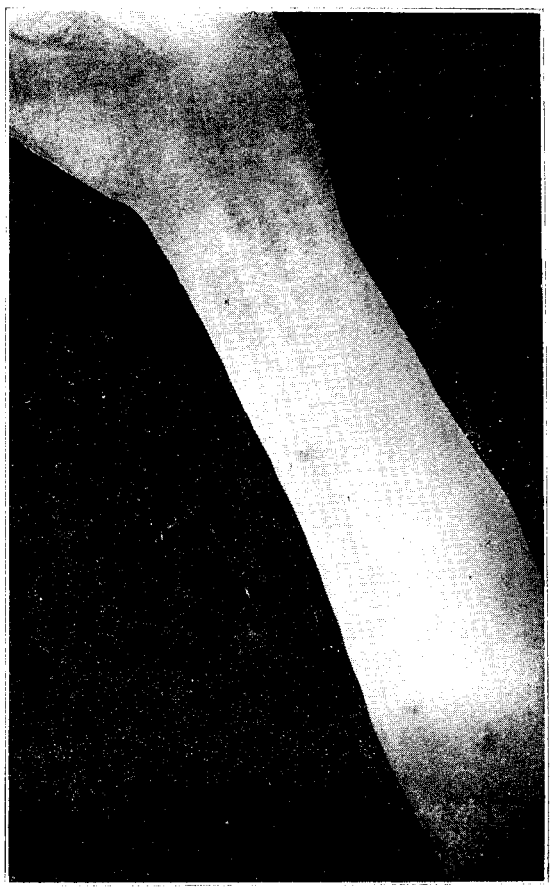
SMALLPOX IN UNVACCINATED CHILD.

SMALLPOX: MILD CASE.

SMALLPOX IN UNVACCINATED CHILD.

SMALLPOX: DISCRETE.

SMALLPOX. VERY DISCRETE.



SMALLPOX. VERY DISCRETE.

APPENDICES.

APPENDICES.

APPENDIX A.

REPORTS OF DISTRICT HEALTH OFFICERS, ETC.

AUCKLAND DISTRICT.

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

Department of Public Health, Auckland, 1904.

I HAVE the honour to present the annual report for the Auckland District for the year from the 1st April, 1903, to the 31st March, 1904.

In reviewing the outcome of the expenditure of energy during the last three years, one may at first be inclined to echo the soliloquy of the Famous Person who shaved the sow. Yet indications are not wanting of at least a gradually increasing sense of responsibility among the public and the local authorities as to their duty in matters hygienic.

The feeling of resentment against the recent health legislation—at first so noticeable in the Auckland District—is, I think, dying out, especially among the larger and more vigorous of the public bodies, who latterly showed much more inclination to work in accord with the Department for the general advancement of matters sanitary. Public apathy should not perhaps occasion too much surprise, since the defects and dangers, the contemplation of which forms the daily routine of the Health Officer, are at best presented but piecemeal to the man in the street, who naturally underestimates the necessities of the position.

VITAL STATISTICS.

The Registrar-General's return for 1903 gives a mean for the four principal centres of 27·6 births per 1,000 population—Auckland being the highest with 30·9; again an increase over last year (29·64), and over 1901 (27·83). It will be of interest to note whether this satisfactory increase is maintained in future years.

DEATH-RATE.

The returns for 1903 show a mean death-rate for the whole of the colony of 10·40 per 1,000 population, and for the four principal centres (including their suburbs) of 11·75, being nearly 1 per 1,000 lower than last year (12·74). Comparing Auckland and suburbs with the average of the four centres of population for the last five years, we get the following results :—

	Auckland and Suburbs.	Auckland City Alone.	Average of Four Centres.
1899	12·00	13·00	11·50
1900	11·81	13·60	10·71
1901	11·80	13·10	11·50
1902	15·27	17·21	12·74
1903	12·23	12·97	11·73
Mean for past five years	12·62	13·97	11·63

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

	Auckland and Suburbs.	Average of Four Centres.
1899	8·40	8·68
1900	8·26	8·27
1901	8·65	8·96
1902	11·10	9·56
1903	8·57	9·14
Mean of five years	8·99	8·92

The death-rate in Auckland, this year then, though it remains well above the average, has returned to the former position in relation to the other centres of showing favourably as regards deaths over one year, but maintaining a high infant mortality. This is well brought out when we compare the means of the last five years, that including the total deaths being 1 per 1,000 above, and that excluding infants under one year being equal to the average.

Infant Mortality.

The deaths in Auckland and suburbs in 1903 of infants under one year to every 100 births, are 12·07; being slightly below the average in Auckland, and less by 3 per cent. than in 1902.

For the past five years the comparative table of deaths under one year to every 100 births is as follows: —

	Auckland and Suburbs.	Auckland City Alone.	Mean in other Three Centres.
1899	14·17	14·47	11·78
1900	12·78	14·49	8·70
1901	9·88	11·57	9·65
1902	14·07	15·40	11·62
1903	12·15	12·07	9·01
Mean of five years	12·61	13·60	10·15

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

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

Taking the year April, 1903, to March, 1904, 35 per cent. of the total deaths under five years in the four centres occurred in Auckland. As pointed out in former reports, the infant mortality in this district is far in excess of that in other parts of the colony, though this year it shows a slight improvement on 1902. The effect of the hot months was also less marked.

Causes of Deaths.

Zymotic Death-rate.

In 1903 the deaths from this cause are as usual higher in Auckland than elsewhere, but improvement on the last year is shown, being 33 per cent. as compared with 46 per cent. of the total deaths in 1902. Taking the year March, 1903, to April, 1904, there is still further improvement, the proportions falling to 25 per cent. This diminution is coincident with a fall in infant mortality, and a greatly lessened number of deaths from diarrhœa. It is, of course, too soon to hope that this is the beginning of a permanent improvement.

The figures for the last five years are—

	Deaths in Auckland and Suburbs.	Total of Four Centres.	Proportion of Deaths in Auckland, Per Cent.
1899	110	360	30
1900	93	214	42
1901	70	209	33
1902	165	356	46
1903	86	256	33
Mean for five years	105	279	37

In 1903 the causes of zymotic mortality were :—

Diarrhœa.—Forty-two deaths occurred in Auckland out of a total of 78 in the four centres (54 per cent.) Of these, 33 were among children under five years of age. This, although unsatisfactory compared to other parts of New Zealand, is a great reduction on the numbers dying from the same cause in 1902. If we include with diarrhœa all acute inflammatory states of the digestive tract, such as are notified as gastritis and enteritis, we find 85 deaths took place in Auckland among children under five years of age, to 73 occurring in the other three centres together. The explanation of this high diarrhœal mortality among infants is certainly to be found in the general insanitary surroundings produced by faulty drainage, lack of refuse-removal, and defective nightsoil-service. It is interesting to compare these figures, as regards diarrhœa, with those in Wellington for the same period. There, 8 deaths occurred during 1902 from diarrhœa, none of which were in children below five years; yet, in Wellington, there is overcrowding to an extent unknown in Auckland—the population given per acre being 41 as compared to 21 in the latter place, and diarrhœal mortality is generally found to increase in proportion to the density of population. The difference in climate between Wellington and Auckland forms the popular excuse for the unfavourable mortality returns, and doubtless a warmer, drier climate favours a higher diarrhœal rate; thus there is an increase during the hotter months. Yet the difference in temperature and humidity between these places is but slight, certainly not sufficient to account for this remarkable increase of mortality in Auckland. The best-recognised cause of infantile diarrhœa—pollution of the soil with sewage, &c.—is to be found in Auckland to a far greater extent than in Wellington, and to this I attribute the higher rates. The influence of rainfall and temperature is not very marked, save that January to April are the worst months.

Measles.—Measles has not been a notifiable disease during 1903–4. Six deaths occurred in Auckland out of a total of 28 in the four centres. Auckland's death-rate from measles being three times that from scarlet fever.

Whooping-cough caused 17 deaths in Auckland—the total being 29 deaths in the four centres—Auckland having half as many again as Wellington and Christchurch together, while Dunedin had none at all.

Diphtheria was not responsible for any deaths in Auckland, and the total for the four centres was 5 only. The cases were 71 in Auckland District.

Typhoid.—There were 8 deaths in Auckland—these being just 50 per cent. of the total for the four centres. This, as in the case of diarrhœa, shows Auckland in an unfavourable light as regards its sanitary condition.

Scarlet Fever.—Auckland shows but two deaths—out of a total of 222 notifications of this disease—against a total of 50; Dunedin being highest with 30 deaths.

Influenza.—Auckland, 4 deaths out of a total of 15.

Plague.—One case of bubonic plague occurred in this district, but the case recovered.

Tubercular Diseases of all kinds caused 61 deaths out of a total of 245 in the four centres, or 25 per cent. This places Auckland in a favourable light as regards tuberculosis, for it has for long been a dumping-ground for consumptives from other parts of the colony and abroad, and probably there is a higher proportion of cases in this district than elsewhere.

Cancer.—Thirty-seven out of 179: a favourable comparison.

Nervous System—Auckland, 71 out of 295—and *Circulatory System*—Auckland, 61 out of 258.—In each case Auckland has slightly fewer cases than might be expected.

INFECTIOUS-DISEASE NOTIFICATIONS.

In all, 777 notifications were received during the year. Making allowance for measles and influenza notifications not appearing in this year's list, there are 74 fewer than those of the previous twelve months.

In comparison with the previous year, 1903-4 stands thus: —

	1903-4.	1902-3.	Increase or Decrease, Present Year.
Enteric	231	217	14 inc.
Scarlet fever	367	318	49 inc.
Diphtheria	71	151	80 dec.
Tuberculosis	92	108	16 dec.
Blood-poisoning	15	54	39 dec.
Plague	1	3	2 dec.

The following tables indicate the distribution of cases:—

SUMMARY of INFECTIOUS DISEASES notified from the 1st April 1903, to the 31st March, 1904.

City, Suburb, or County.	Enteric.	Scarlet Fever.	Diphtheria.	Tuber-culosis.	Blood-poisoning.	Plague.	Total.
Auckland City	77	110	18	38	3	1	247
Birkenhead Borough	1	..	..	..	..	..	1
Devonport Borough	..	20	7	5	..	..	32
Grey Lynn Borough	13	26	1	..	1	..	41
Newmarket Borough	1	4	1	..	..	..	5
Onehunga Borough	17	1	6	1	1	..	26
Parnell Borough	8	7	..	4	1	..	20
Arch Hill Road District	6	5	1	1	1	..	14
Avondale Road District	3	4	1	..	1	..	9
Eden Terrace Road District	3	9	2	..	..	..	13
Epsom Road District	2	3	..	5	..	..	10
Mount Albert Road District	4	4	1	..	1	..	10
Mount Eden Road District	8	21	4	4	..	..	38
Mount Roskill Road District	3	..	..	..	..	..	3
One-tree Hill Road District	..	2	..	..	..	..	2
Point Chevalier Road District	2	..	..	..	..	..	2
Remuera Road District	..	6	1	1	..	..	8
Bay of Islands County	8	8	..	..	1	..	17
Coromandel County	2	15	1	1	..	..	18
Eden County	2	1	..	..	..	..	3
Hobson County	2	2	1	..	..	..	5
Hokianga County	..	19	..	..	..	..	19
Kawhia County	..	..	..	..	..	..	..
Manakau County	9	7	13	9	1	..	39
Mongonui County	..	1	..	1	..	..	2
Marsden County	..	1	..	..	1	..	2
Ohinemuri County	15	13	1	3	1	..	33
Piako County	..	..	..	..	..	..	..
Raglan County	..	6	..	..	..	..	6
Opotiki County	..	..	..	..	..	..	..
Otamatea County	1	4	..	2	1	..	8
Rodney County	..	7	2	..	..	..	9
Rotorua County	5	4	..	1	..	..	10
Thames County	4	9	1	3	1	..	18
Tauranga County	4	9	..	..	..	..	13
Taupo County	..	..	..	..	..	..	..
Waikato County	4	3	1	1	..	..	9
Waipa County	1	2	..	..	..	..	3
Waitemata County	5	11	2	2	..	..	20
Whangarei County	2	3	1	..	..	..	6
Whangaroa County	..	..	..	..	..	..	..
Cambridge Borough	..	7	..	..	..	..	7
Hamilton Borough	11	7	2	3	..	..	23
Thames Borough	3	5	3	6	..	..	17
Waihi Borough	4	1	..	2	..	..	7
Totals	231	367	71	92	15	1	777
City of Auckland	77	110	18	38	3	1	247
Suburban Districts	72	112	24	21	6	..	235
Country Districts	82	145	29	33	6	..	295
Totals	231	367	71	92	15	1	777

Monthly Analysis of same Notifications 1903–4.

		Enteric (Total).	Scarlet Fever (Total).	Diphtheria (Total).
April	1903.	39	14	3
May		28	29	8
June		14	50	9
July		4	60	7
August		6	44	5
September		9	55	14
October		13	20	6
November		12	23	4
December		26	5	3
January	1904.	22	14	2
February		31	20	4
March		27	33	6
		231	367	71

ENTERIC FEVER.

There were 231 notifications of enteric fever against 217 last year; but as I explained in my last report, 217 is probably below the average—therefore the slight increase this year is not remarkable.

The accompanying chart shows the monthly typhoid return, compared with the temperature and rainfall curves for the year. The chart also shows the average temperature and rainfall over the pats thirty-four years.

The records are not at present sufficiently numerous to allow of the establishment of a mean monthly typhoid curve, but a comparison with the charts for 1901–3, shown in my report last year, is of some interest. In that report I pointed out that by taking the meteorological conditions broadly and not merely month by month, a fairly accurate correspondence to the typhoid return could be traced. Similarly this year the same holds good, though the influence of rainfall seems greater than that of temperature—thus, February and March, 1903, were very dry months though cold, and following on the drought we have a high typhoid return for April and May. In June, however, there is a sudden drop in the number of typhoid cases, being only 14, whereas the average of the two previous years was 22 for the month. This decrease can be accounted for by the fact that May was an exceptionally wet month with the usual fall in temperature. The winter months were cold and dry, and the typhoid rate remained lower than in previous years; but the dry winter apparently had the effect of hastening the usual spring rise in typhoid which began this year in October. The early spring months were both hotter and drier than usual; therefore, we have in the midsummer months, December and January, a higher number of cases than usual, but November and December being wet again, the usual autumnal rise in typhoid was not maintained.

DISTRIBUTION OF CASES ACCORDING TO LOCALITY.

The City and Suburbs.

The notifications were 148—the deaths 8—a very low case-rate.

The death-rate to the population of this area was 0·144 per 1,000 living, which is considerably lower than last year, and below that for England and Wales which is 0·175 (average.)

The city alone is responsible for 77 notified cases—being 2·06 per 1,000 of the population of the suburbs. Devonport shows a marked improvement, no cases having arisen there against 10 the year before. In Parnell also the cases have lessened from 17 to 8 this year. Mount Eden as before shows a higher return, while in Grey Lynn there has been marked increase from 4 last year to 13. This is probably to be accounted for by the rapid increase in population not being compensated by a corresponding increase in drainage facilities, while the very unsatisfactory nightsoil service has no doubt also contributed to the result. Onehunga also shows a great increase from 7 in 1902–3 to 17 this year. Several of the cases were traceable to one house where the sanitary conditions were unsatisfactory. In February there was another outbreak coincident with a severe epidemic of dysentery, which proved fatal to many—in one family alone three children dying of the complaint. There is no doubt that the utter lack of drainage of Onehunga is responsible for these outbreaks.

Country Districts.

The country districts are responsible for 82 cases—an increase of 3 over 1902–3.

Hamilton Borough shows an increase—11 cases recorded during the last twelve months. As last year, the cases apparently centred round the insanitary block of buildings in the main street.

Thames Borough again shows an improvement, there being but 3 cases this year against 7 in the previous period, which again was a great improvement over the year before.

Thames County also shows a reduction from 8 to 4 cases.

Ohinemuri County shows an increase of 2 cases, and the Borough of Waihi also of 2 cases.

Rotorua shows an increase of 3—from 2 to 5 cases.

The heavy records of Whangaroa (9) and Hokianga (6) in 1902–3, attributed in my last report to insanitary surroundings of the Maori population, have entirely disappeared, there being no cases recorded this year, but Bay of Islands County shows an increase due to an outbreak among the Maoris there. None of the records of the other country districts present any circumstances calling for comment in this connection.

SOURCES OF THE DISEASE.

As before, each case has been systematically inquired into, but little of special interest as regards origin has been discovered. The outbreaks have not revealed any great connection the one with the other. At Hamilton and Onehunga general insanitary conditions seem to be responsible, but no very definite source of infection, such as water or milk supply, has been found at these places. In the city, harbour-pollution has as usual had its effect, notably in the case of two boys living in separate suburbs, who fell ill at the same time, and were found to have been fishing together at the outfall of the Queen Street sewer. In two cases the infection was probably milk-borne, as it was found that they were supplied by the same dairyman in whose household a case of typhoid occurred coincident with the others. Probably the infection was carried by the hands or utensils of the distributor. Pollution of a stream at St. Helier's Bay was apparently responsible for an outbreak among some persons who had camped on its banks during the holidays, as four of the number developed the disease within a few days of the breaking-up of the camp. In by far the majority of cases, the only discoverable source was the too frequent insanitary conditions of homes or places of employment.

SCARLET FEVER.

The fairly widespread epidemic of scarlet fever referred to in my last report has been maintained, there being 367 notifications in the year (49 more than last)—the month of December alone exhibiting a diminution of the epidemic. The city supplied 110 cases, the suburbs 112 cases, and the country districts 145 cases. The city and most of the suburban districts partake in the increase of scarlet-fever cases. At Tauranga a number of cases occurred in one Native settlement compelling the closure of the Maori school there. The schools at Kohukohu and Woodhill had also to be closed on account of epidemics, but in general the cases were widely distributed and no very definite outbreaks occurred in town or country.

At Hokianga an outbreak of disease occurred which on my advice was notified as scarlet fever, although in many respects it was not typical of this disease, and was hard to classify. Details were kindly furnished me by Dr. Browne, Port Health Officer there, who was able to notify 12 cases, although probably amongst the Natives some 30 or 40 cases occurred in all. Though chiefly amongst the Maoris, it also affected Europeans, and in one such family proved very malignant, several children dying. The disease was distinctly infectious. The initial stages resembled measles; a punctiform rash appearing on the third day of illness, but instead of a fall, the temperature continued to rise, and about the fifth day the rash was of a scarlatinal type, with severe sore throat. Subsequently in many of the cases severe dysenteric symptoms appeared—blood being passed copiously—and it was this symptom which probably accounted for the fatal result of some cases. During convalesence there was desquamation of the type seen in scarlet fever. In one case at least there was a history of measles having occurred three months previously which would lead one to exclude this disease. For the rest, the symptoms would seem to suggest ptomaine poisoning with scarlet fever superimposed. It certainly was a much more severe infection than the "fourth disease" described by Dukes.

DIPHTHERIA.

Seventy-one cases have been notified, of which 18 occurred in the suburbs, and 29 in the country districts. This is a great improvement upon 1902–3 (151). The reduction in the number of cases has been experienced in the three divisional areas, but most markedly in the city and suburbs—the city having only a fourth of the cases notified in last report; this I think may in part at least be credited to the greater attention paid to local sanitary surroundings of the dwellings. An outbreak occurred among school-children near Waiuku early in the year, apparently introduced by a visitor from another district, and spread through agency of school-children at school. The school was closed and fumigated by Inspector Winstanley, which for a time checked the outbreak, but in February further cases appeared all traceable to the same school, and necessitating not only fumigation, but a thorough overhaul of sanitary arrangements at the hands of the Education Board.

PLAGUE.

But one case of plague occurred this year. The patient was brought to the Hospital in June, suffering from high temperature, and a large axillary bubo. He was employed in a printing-office in the city, and had been handling bales of paper on some of the intercolonial boats. It is remarkable that the only case occurring in Sydney at this time was also an employee in a printing-office.

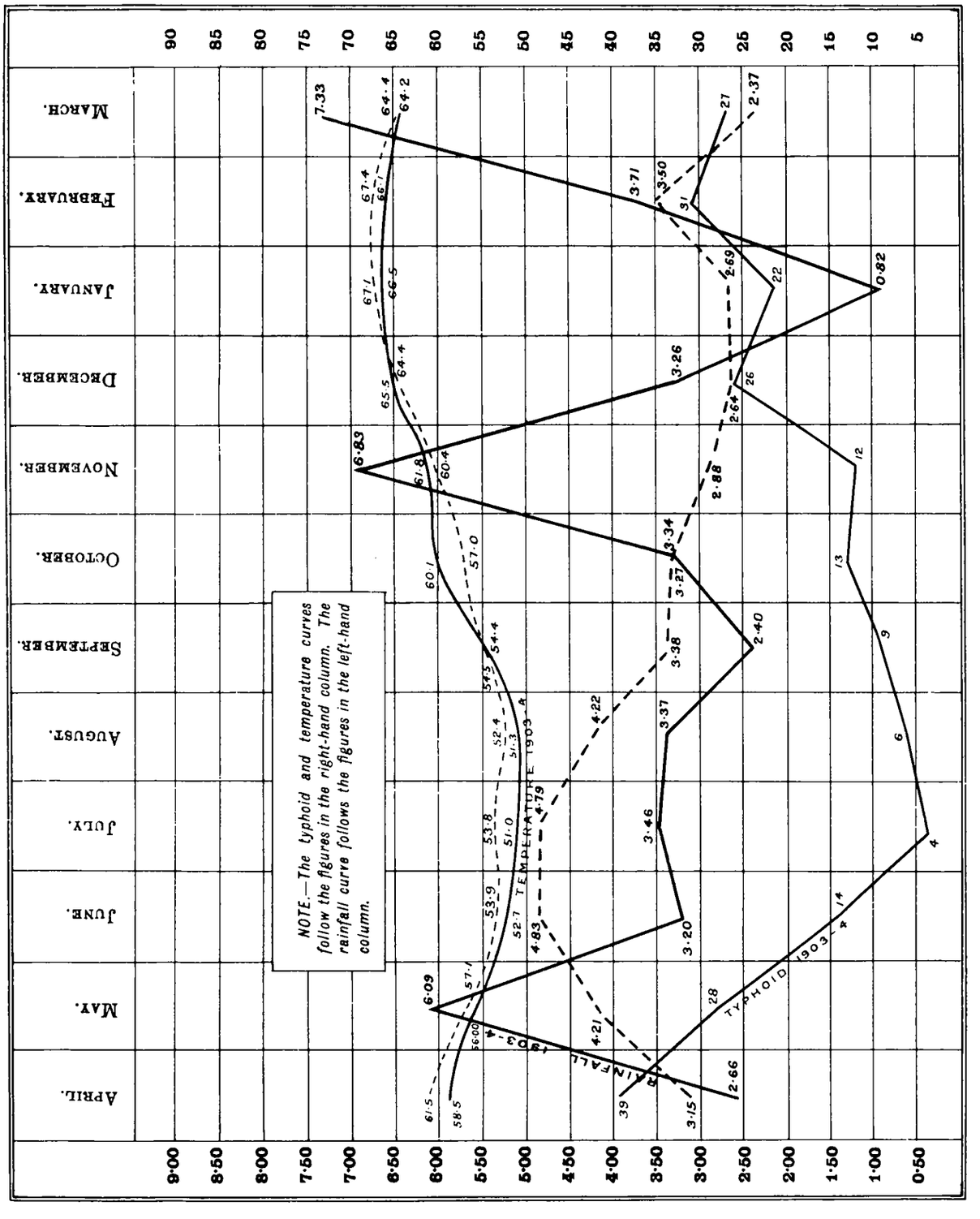
A portion of the affected gland was excised and bacteriological investigation revealed the presence of the *Bacillus pestis*. The patient was treated in the Infectious Diseases Hospital, which was at that time administered by Dr. Woodward on behalf of the Department, and after a protracted illness of 143 days made a good recovery. No infected rats were detected.

BLOOD-POISONING.

The fifteen cases notified cannot be taken as a reliable return—there being much vagueness on the part of medical men as to the requirements of the law in respect of this disease.

ANTHRAX.

One case in a human being was notified this year, and was of special interest in that he was an employee in a bonedust-works, and received the infection by direct inoculation in the neck through carrying sacks of bone. The link in the chain of evidence—if indeed such link were required—connecting this disease with the importation of bones is thus supplied. The man was treated at the District Hospital, and as I was absent from town, Dr. Frost, Hon. Pathologist to that institution, conducted the necessary pathological investigation. From the specimens prepared by her the presence of the anthrax bacillus was detected in the tissues excised from the neighbourhood of the pustule. The patient made a good recovery.



TYPHOID, TEMPERATURE, AND RAINFALL CURVES,

APRIL, 1903, TO MARCH, 1904.

N.B.—The average rainfall and temperature for previous years are marked by the dotted lines.

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Ptomaine Poisoning.

One outbreak of ptomaine poisoning was investigated. This occurred in a bushfelling camp in the Thames County. Sixteen men who had partaken of brawn were affected, the symptoms being of the usual type. Although several of the men were seriously ill, all eventually recovered. The brawn had been made in the camp, and probably the infective organism gained admittance while the food was stored in an unsuitable place.

Several cases of wild-honey poisoning occurred. In one case where two boys in the Onehunga District were affected, I obtained some of the honey and made a bacteriological investigation. Among the symptoms cramp was very marked, and I thought these might be accounted for by the infective agent being an anaerobic organism of the tetanus group. Cultures aerobic and anaerobic, however, failed to reveal the presence of any organisms in the comb-cells.

Leprosy.

One new case of this disease was reported from the Tauranga district, the patient being a Maori lad. The circumstances have been investigated and reported on by Dr. Pomare, who was able to trace a history of heredity.

Small-pox.

The Auckland District was fortunate in escaping the outbreak of small-pox which occurred in the south. Ten suspects were at various times reported, but in each case investigation showed the complaint to be of another nature.

GENERAL SANITARY MEASURES.

The Consumptive Sanatorium, Cambridge.*

This institution was officially opened by the Hon. the Minister of Public Health, during December. There was a large attendance of the public—over two hundred arriving by special train, while double that number of residents in the district were also present. Fortunately, we were favoured with fine weather, and the conveyance of this large number of persons up the steep hill was accomplished without mishap. Every assistance was afforded by His Worship the Mayor of Cambridge and his Council, and many of the local residents kindly placed conveyances at the disposal of the party.

At the time of the opening there was provision for some thirty patients, but it was apparent from the large number of applications that this was totally inadequate; consequently, consent was obtained for further additions. These new buildings are now in course of erection, and when complete will afford a total accommodation for over sixty patients.

Among minor improvements carried out this year were the enlargement of the water-supply dam, the alterations in the septic tank, necessitated by the greater amount of sewage to be dealt with, the erection of a drying-shed, the increase in cooking-accommodation, the provision of sterilising apparatus for sputum-mugs, and so forth. The metalling of the new road has, I am glad to say, been pushed well on before the return of winter.

Of the work of the Matron and nursing staff it is impossible to speak too highly. In so isolated a position, dealing with but one class of disease, and one which from its nature often tends to make the unfortunate sufferer querulous and difficult to manage, the duties of the nurses are arduous and monotonous, yet they have been accomplished cheerfully and efficiently, and with a minimum of friction. It is impossible in a small space to give an adequate idea of the enormous amount of work which has fallen to the lot of Miss Rochfort during the year. I feel I am justified in saying that few women could have accomplished it, and that the sanatorium has been extremely fortunate in obtaining the services of so able and self-sacrificing an administrator. The appointment during the later months of the year of a clerk and accountant, and of Sister Lahmann to undertake the housekeeping duties, became absolutely necessary.

The new year opened with the appointment of Dr. Pentreath as Medical Superintendent, which will place the management on a much better footing, and relieve the Matron of much responsibility. As was foretold in last year's report, the medical work with the increasing number of patients caused too great a strain on the time of Dr. Roberts, the Medical Officer, whose private work began to suffer from his unselfish and conscientious devotion to sanatorium needs. He will be greatly missed by both patients and staff, but, as he himself was the first to point out, the presence of a Resident Medical Superintendent was essential. This appointment will also relieve the District Health Officer of the many administrative duties which the general supervision entailed, as also the constant visits to Cambridge, and a very voluminous correspondence between the Sanatorium and the Auckland office. My duties were varied and numerous—from drawing up supply contracts or discussing building-places with the Public Works officers, to designing culinary utensils or engaging a kitchen-boy—and I found they seriously encroached on the time and attention which should have been paid to matters more usually falling to the lot of a Health Officer. The applications for admission alone formed a formidable item of work. Over one hundred such applications from the Auckland District were dealt with; physical examination was made of some fifty patients, and also of all persons appointed on the staff.

The establishment of this Sanatorium raises many questions as to the scope of such an institution. It is very evident from the number of applicants, and the data gathered as to the number of cases of consumption in the colony, that this Sanatorium alone cannot be regarded in the light of a serious effort towards stamping out the disease. When the additions are complete, some 160 patients may annually undergo the treatment; this will represent probably under a tenth of the cases which should be dealt with. Some, doubtless, are in a position to obtain open-air treatment for themselves, but judging by the list of applicants, the majority are in poor circumstances, and a very large number absolutely destitute; and it may be here remarked that as these cases are the ones which should especially be

aided by the State, and therefore will be in the majority at the Sanatorium, it is improbable that this institution will ever be self-supporting, more especially when we consider the costliness of living in so inaccessible a situation, and with the diet and attention necessitated by the treatment. There remains also two classes of patients beyond the scope of the Sanatorium—namely, those too advanced to hope for benefit from admission, and those who though benefited by the treatment must be discharged as incurable. It is evident that such cannot be allowed to occupy beds for an indefinite time, and so exclude others who might have a chance of permanent cure. To this end a regulation was framed, making six months the limit of treatment, except under special circumstances, and further, with an idea of excluding so far as possible hopeless cases; a medical certificate and application-form was drawn up, requiring full details to be sent of each applicant.

We are faced by the fact then that we require, if we want seriously to cope with consumption in the colony,—

(1) Increased accommodation far beyond the utmost possible limits of the Cambridge Sanatorium;
(2) Some means of disposing of destitute cases who are discharged improved perhaps but yet not fit to resume their duties in life; and
(3) Of cases too far gone to permit of treatment.

As regards the first group, it is satisfactory to learn that several private institutions are being started, but they of necessity deal only with the well-to-do. "The Public Health Amendment Act, 1903," calling on Hospital Boards to make provision for the consumptives in their districts will, if practicable, go far to solve the problem. One difficulty, however, arises in that certain districts from their climates attract large numbers of consumptives, and the cost on the ratepayers in such areas will be consequently unfairly high. An instance of this occurs at Hamilton, where the Board, though willing to deal with cases arising in their own district, naturally object to pay for those from other parts or outside of the colony, who yet may have been residents so long in the district as to be legally admissible as patients. Possibly some special State aid in such cases would be practicable.

For classes 2 and 3 it would seem necessary to establish institutions where the sufferers would obtain what benefit they could from open-air life, but which would be run on a far simpler basis than obtains at Cambridge, and the situation of which would be selected with an eye to economy as well as to health. It would be desirable that the incurables and semi-incurables should be grouped together, as the latter would be able to do light work and assist in the nursing of the others, and so cheapen the cost of management. It would also remove the stigma which would attach to an institution where only the hopeless were sent to die.

Infectious Diseases Hospital, Auckland.

In my last report I went very fully into the circumstances which threw the management of the Infectious Diseases Hospital on to the hands of the Health Department. This position was maintained until the passing of "The Public Health Amendment Act, 1903," compelled the Hospital Board to resume their duties in this connection, and in the beginning of December, I handed back to them the charge of the buildings and furniture. This was a great relief, as the strain on the office by the extra work was very heavy. The cases treated during our occupancy are as follow: Scarlet fever, 50; diphtheria, 10; plague, 1: total admissions, 61. Average stay in hospital, thirty-one days. No deaths occurred. The cost to the local bodies was great, but at least we were able to avoid any spread of infection to patients or staff in the General Hospital. The limited accommodation made the proper classification of the cases very difficult, but through the excellent management of Dr. Woodward and the Matron, Miss Lattimer, no trouble resulted. Had there been a widespread epidemic, we should have been compelled to use the tents which were held in readiness, but fortunately were not required. One permanent benefit resulting from our administration was the purchase of a good brougham ambulance for the exclusive use of infectious cases. Previously, the method of conveyance had been very slipshod. It was found very difficult to collect, under section 38 of the Public Health Act, the fees for treatment of cases from the local bodies—with the exception of the city—and in many cases the matter had to be referred to the Treasury.

The question of hospital expenditure on cases infectious or otherwise loomed so large in the minds of the local authorities that they set up a commission to inquire into the working of the hospital and charitable-aid administration. Nor was the part taken by the Health Department forgotten, and several very interesting meetings were held; but, after a time, the interest seemed to die down, and the final results were somewhat colourless. The vexed question of the site for the Infectious Diseases Hospital continued to engage the attention of the public as in previous years, save that, in the light of the amended legislation, the trouble fell on the Hospital Board more than on the Health Department. Many sites were proposed, and an effort was made by the Board to secure a portion of the Domain, where the temporary buildings now stand. This site was convenient to the Main Hospital and the infectious wards there could not be said to in any way endanger public health. For this reason, the Department took up a neutral position in the strenuous times that followed the introduction of the Bill into Parliament to legalise this, merely insisting that provision should be made in the area so reserved for the treatment of suspected small-pox cases or of plague cases. This was opposed by the Hospital Board and a large section of the public, and it was then proposed that observation wards for dangerous infectious diseases be erected elsewhere. This, as was pointed out to the public bodies would have proved a costly method of obtaining the necessary accommodation, but the Department were prepared to approve any suitable site if the local authorities chose to spend the money. Various sites for this purpose were inspected—more or less suitable—but none having the advantages of Point Chevalier. Although officially neutral, one could not but sympathize with those who objected to having the Infectious Diseases Hospital placed in the most prominent and picturesque site in Auckland, however safe and

convenient it might be; the soil, moreover, being a heavy impervious clay, is not well adapted for hospital purposes. The failure of the Domain Bill was therefore not a matter for regret. After some further delay, and the inspection and rejection of various other proposed sites, the outbreak of small-pox in the South Island finally stirred up the Board to decisive action, and the site at Point Chevalier originally chosen by the Health Department was finally decided on. The Government reserve was handed over for hospital purposes, and negotiations were opened, and are still proceeding, with the owners of the adjacent property, for the acquisition of several acres of land and a roadway to the reserve.

The provision of a proper infectious-diseases hospital is thus advanced a step or two, and it remains for the public and the Hospital Board to decide how long the very insufficient and unsightly structures in the Domain are to remain to represent what should be one of the most carefully arranged institutions in a large community.

Housing of the Working-classes.

It seems at first sight strange that in so young a community the housing problem should arise, yet it is present in about the same proportion one would expect in towns of similar magnitude in England; and, although much is said about the absence of poverty in New Zealand, no one who has worked in the poorer parts of our large towns will deny that squalor and want are to be found much as they are in older communities, and to an extent little suspected by the general public. The large amount of excellent work which is being done by the Salvation Army in the matter of cheap wholesome lodging is in itself a sufficient proof of the existence of much true poverty.

In my report last year I stated that slums of the worst type existed in Auckland, and my statement was taken up and investigated by the Auckland *Herald* in a very complete manner. A debt of gratitude is due to this paper from every one interested in public hygiene, for the excellent series of articles it published on the subject, and in doing so, it roused the city Council to take the matter up and have a systematic inspection made of all ruinous dwellings. The result was surprising, for by the end of the year, Dr. Moir, City Health Officer, and I had visited 160 houses unfit for habitation, and mostly in so dilapidated a state as to be past repair. To these may be added some eight or nine which were already in course of removal as a result of action taken earlier in the year. Even this did not complete the number, as Mr. Haynes, the City Inspector, has a further list still awaiting inspection. Of course it cannot be said that all who lived in these houses were in abject circumstances, but it was evident that in the city alone, among a population of about 38,000 persons, there were about a thousand —say between two and three hundred families—forced to occupy ruinous insanitary houses, owing to lack of means to obtain better accommodation. Probably in other New Zealand cities much the same state of affairs is to be found—the lack of cheap houses leading to overcrowding or the occupancy of such places as I have described in Auckland. It is in this city, perhaps, more than in others that we have to face the question of degraded areas, for although overcrowding exists, it is only in small blocks here and there, as in Grey and Hobson Streets. To quote from my report on the question to the City Council:—

"Too often these areas are a refuge for tenants as degraded as their surroundings, and the respectable poor in the neighbourhood have in self-defence to remove, making way for others of a less particular nature, thus increasing the downward tendency. Even without this moral degradation these houses, neglected by the owners, and tenanted by people too poor to effect repairs themselves and too glad of a chance of cheap refuge to risk their tenancy by asking their landlord to do so, go from one stage of dilapidation to another." . . . .

After describing certain of the areas, the report proceeded to deal with the remedy, from which I may quote the following paragraphs:—

"In the interests of sanitation it would be desirable if such areas were swept clear of dwellings; yet dealt with individually, many of the houses cannot be condemned on the grounds of being in too ruinous a condition. It would be possible, however, to deal with them *en masse* under section 351 of the Municipal Corporations Act, and this course I should strongly urge the Council to adopt." . . . .

"In considering the method to be adopted for the removal of these slum dwellings it must be remembered that it cannot be done wholesale, as it affects a considerable number (probably about a thousand) of persons who would be rendered homeless, and who would find it in many cases difficult to obtain dwellings within reach of their means." . . . .

"It is evident that there is urgent need for houses of such low rentals as 4s. to 8s. a week for the poorer classes. It is also evident that few private owners could afford to put up in the city, houses which could be let at such rates and still provide even the elementary sanitary needs. It becomes then almost the duty of the Council to make such provision. It is no new thing. In the Old Country the housing of the working-classes has occupied the attention of the local bodies for many years, and it would be desirable for the Council to follow in their lead, and benefit by their experience. It does not necessarily entail an absolute loss of interest on the money expended, certainly a gain, could the increased sanitary condition be taken into the calculation. But leaving that out of account, it would be surprising if a few thousands spent on the erection of blocks of model cottage dwellings did not bring in enough to give a Council a moderate interest—too low perhaps to tempt the private individual, but sufficient to warrant a public body making the outlay in the public interest. The cottages might have two, four, or six rooms, according to rent. Each should be soundly built, and have a sink in the kitchen, a gully-trap in the paved back-yard, a washhouse-scullery, and an inexpensive closet. In England it has been found best to provide trough closets for these groups of cottages. A caretaker is appointed for each group, who makes a daily round and sees to the details of sanitation, and reports if any tenant is careless as to dirt, or is damaging the property. (Such caretakers probably would be found to do the work for their house-rent alone, as their whole time would not be occupied with the work). Limewashing of closets, sculleries, and so forth, is done systematically twice a year or so. It would be desirable were the room-walls, instead of scrim and paper, to be of such material as would enable them to be treated with some wash. I would suggest, then, that the Council acquire some of these degraded areas under the Municipal Corporations Act, and erect models such as I have sketched above."

In other centres doubtless the question resolves itself into one of dealing with overcrowding rather than the removal of the ruinous dwellings of the type to be found in Auckland; but in either case the provision of cheap sanitary homes for the poor is a matter demanding careful attention, and one the solution of which will do more to rid the colony of tuberculosis than the most elaborate provision of sanatoria, and will lessen the infant mortality more effectually than will any number of nursing-homes.

Quarantine Work.

Inspection of passengers from Australian ports was resumed on the 28th June, and continued until the end of September. During this time 19 vessels were examined and certificates served to 2,904 passengers: of these 24 failed to report, and the matter of their arrest was placed in the hands of the police. In one case prosecution followed, and a fine was inflicted.

On the arrival of the small-pox-infected ship "Gracchus," special precautions were taken as regards the landing of cargo. Only those who had been vaccinated were allowed to handle the cargo—accordingly fifty lumpers submitted themselves to the operation at the hands of Dr. Sharman and myself. The cargo was specially disinfected and stored in a shed by itself. In order to be prepared for possible emergency, temporary sites for small-pox hospital-tents were secured in Auckland, Onehunga, and Dargaville, and tents were held in readiness; fortunately they were not required.

The provision of accommodation for the fumigation of mails and other articles from overseas has occupied a fair share of attention. Owing to railway alterations the former shed near the railway wharf had to be removed, and it was found very difficult to obtain another site. Thus when San Francisco was declared an infected port the fumigation of the whole mail from that city was impossible, and the southern bags had to be disinfected merely on the outside until their arrival in Wellington. The fumigation of parcels containing second-hand clothing which had hitherto been done by the Customs Department was also interfered with. Fortunately we had plenty of room in the basement of the Health Department office, and one of the former police cells was converted into a fumigation-shed without much difficulty. This work is now being done by the Health Department officers. So far thirty-two packages have been fumigated. After considerable difficulty and many interviews between the Postal and Health Departments and the Harbour Board authorities a site was secured at the Railway wharf. The erection of a shed suitable for the fumigation of mails, &c., was placed in the hands of the Public Works Department, and the work is now completed.

Sanitation of Schools.

No systematic inspection has as yet been attempted. Some little friction between Education Board and Health Office was removed after the election of a new Board which has shown every willingness to conform to the suggestions of the Department and the recommendations of their architect in matters sanitary, in so far as their limited funds permit. School hygiene is surely one of the first objects on which money should be spent, yet we have many instances where there is overcrowding to an extent which must prove detrimental to the health of the children, but no prospect of funds necessary for suitable buildings. So too as regards playgrounds, which in the towns are being gradually built over as the schools enlarge, while in the country they are too often wet, muddy, and dreary, or too rough to allow of properly organized games. In some of the larger cities in other countries large sums are being spent on making the playgrounds pleasant and wholesome, and in the provision of gymnastic appliances, with the hope of attracting the children out of school-hours to use these places instead of playing about the streets. With the steady increasing population in our towns, and keeping in view the influence such places must have on the national physique, it would be well to look forward a little and secure just now suitable and sufficient areas for the purpose. I would again repeat the opinion that I expressed in last year's report that a minimum space per head should be fixed for playgrounds as well as school-rooms. The cleaning of desks and walls and the effectual removal of dust also deserve more attention than at present, as has been pointed out by Mr. Mitchell, architect to the Auckland Board, who has paid considerable attention to the question.

Improvements in drainage in accordance with the suggestions of the Department were carried out at Kamo, Epsom, and Paeroa Public Schools; similar work is in progress at Remuera, and Kauaeranga (Thames). A case of overcrowding at Te Puna School was dealt with, and various minor matters at other places. On account of infectious disease 5 schools were closed and fumigated—3 for scarlet fever, 1 for diphtheria, and another for measles. There is in country places a great tendency to panic among parents when a case of infectious disease appears in the district, and on four occasions I had to advise the Board against granting the application of the Committee to allow the school to be closed.

Hotels and Boardinghouses.

There is much room for improvement in the matter of hotel sanitation, especially in country towns where the comfort and convenience of the guests appears too often to be a secondary consideration; even in districts where there is a considerable traffic in visitors, the owners of hotel properties do not seem inclined to provide adequate accommodation, and bright airy bedrooms and sitting-rooms are the exception rather than the rule, while the kitchen accommodation is often better left uninspected if one wishes to preserve that bliss which is the reward of ignorance. During this year a circular was sent to the Police Department stating briefly the points in sanitation most deserving of attention, and this effort met as usual with hearty co-operation at the hands of Inspector Cullen and his force. Where necessary the suggested improvements were laid before the Licensing Bench with satisfactory results, but in many cases the owners readily acquiesced with our suggestions. Improvements were effected in the drainage, internal structure, and culinary department of three hotels at Cambridge, in drainage at one hotel in the city, and others at Rotorua, Opotiki, Takapuna, and Henderson; and minor matters received attention in hotels at Ngaruawahia, Drury, and Tuakau.

Sewage-disposal.

The application of the septic-tank system to deal with the drainage of hotels, schools, and private houses has received further attention, and where conditions are favourable, it has proved satisfactory. There is, however, too great a tendency on the part of the public, and even of architects and builders, to regard a septic-tank of a hard-and-fast type as a sort of universal panacea for all drainage difficulties. While there is little doubt that the system is the most satisfactory one where the sewage of cities and towns has to be dealt with, there is yet much to learn as regards the best design for tanks and filter-beds, and where the principle is adopted for small installations the greatest caution is necessary. I have not yet seen an effluent from one of these small tanks which approached the excellent results so usually obtained at the large sewage-works of English towns, and the disposal of this effluent often presents

considerable difficulties where space is limited. The usual type of aerating-bed too is apt to give trouble unless there is ample room. By far the most satisfactory result in my experience is obtained where the soil is sufficiently porous to permit of subsoil distribution of the tank-effluent in the manner introduced by Mr. Mitchell at several of the public schools. The natural soil thus becomes the nitrifying agent, and the aerating-bed can be dispensed with. As regards small tanks also it would seem advisable to adopt special methods to insure the slow passage of the fluid, and so avoid the upset of equilibrium which the sudden discharge of a bath or other considerable volume of water would produce. It would be advisable that the departmental officers be consulted before any such work is put in hand.

During the year plans and advice in the matter have been supplied to sixteen persons erecting tanks for private houses, while tanks have been constructed in accordance with my suggestions at four schools, three hotels, one charitable institution, and one butter-factory. The result in the latter case was very satisfactory, and I believe this method well adapted to deal with the perplexing question of the disposal of waste waters from those establishments.

Inspection of Food.

The question of food-inspection is so large an undertaking as to require special inspectors, and until these can be appointed the work done by the district office must continue unsystematic, and therefore unsatisfactory. The methods adopted at bakehouses in the city and suburbs was made a subject for special investigation this year, as also various jam and sweet factories.

Some samples of jam were taken and submitted for analysis, but found satisfactory. One sample of limejuice imported was found to be adulterated.

Action was taken to prevent fishermen from cleaning and washing fish in the vicinity of a sewer-opening in the Auckland Harbour. Finding the warning was being disregarded, I visited the boats and seized and destroyed some fish so washed, and this had the effect of stopping the practice. I had reason to believe that one case at least of gastro-enteritis resulted from eating fish treated in this way. There is great need for the erection of a properly equipped market-place where the fishermen could cleanse and sell fish under sanitary conditions.

Offensive Trades.

Permits for the establishment of offensive trades were issued for gut-scraping at Point Chevalier, and offal-treating at City Slaughter-yards, and at Salmon's works, Mount Roskill.

Some investigation was made into the destination of the filthy rags, the collection of which on the all-too-frequent refuse-heaps about the city affords occupation to many children. Part of the rags go to the paper-mills, and the treatment they here receive renders them incapable of carrying infection. The remainder go to the "flock-mills," and it would be interesting to know whether they undergo any disinfecting process before again coming into the hands of the public, but as there are no such mills in the district, I was unable to ascertain this.

The adding of nightsoil depots to the schedule of offensive trades has placed the control of such places on a more satisfactory basis. It would be desirable if piggeries also were placed on the list.

LEGAL MATTERS.

The amending Act of 1903 has simplified in many respects the administration of the Health Department—notably in the matter of the Infectious Diseases Hospital already referred to.

Increasing the sanitary powers of County Councils and Road Boards has had a good effect especially in regard to by-laws. General sanitary by-laws have been drafted this year for Whangarei and Cambridge Boroughs and for Ohinemuri County, and I understand these bodies will shortly adopt them. By-laws controlling nightsoil and refuse depots were drafted for and adopted by Point Chevalier and Mount Roskill Road Boards, and a by-law *re* keeping of pigs for the Mount Wellington Road Board.

The extension of powers to the Health Officers to deal with ruinous houses has had satisfactory results, and advantage was taken of them to deal with several instances where ruinous houses were removed from the city and re-erected elsewhere. The power to order repairs to a house has been of great service where dealing with insanitary dwellings.

The alteration in the air-space round buildings in the amendment of the Municipal Corporations Act has been brought to the notice of several Borough Councils. One breach of the regulations was detected in the city and brought to the notice of the Council, with the result that the owner had to pull down part of the newly built houses.

It would, I believe, be desirable had the Health Officer power to deal directly with any nuisance or breach of the Act, without having to prove that immediate action was necessary to prevent the appearance of infectious disease. To have to refer cases first to the local authority is not satisfactory where such authority is a small County Council or Road Board.

Prosecutions were undertaken by the Auckland office as follows: Non-notification of infectious disease, 4 persons; failure to report under quarantine regulatioons, 1 person; non-compliance with order *re* nuisance, 1 person. In all cases convictions were obtained.

At the instance of the Department the City Council obtained orders for removal of ruinous houses against 3 persons.

THE SANITARY DISTRICTS.

Auckland City.

This year has been marked by a satisfactory advance in matters sanitary in the city. One reason for this is to be found in the abolition of the ward system of representation on the Council, with all its attendant evils. As each Councillor now represents equally all parts of the city, there is a broader-minded tone in the manner of dealing with civic government, and less of the petty parochial spirit. But perhaps the chief credit of the greater vigour which has been manifest is due to His Worship the Mayor.

All the greater sanitary questions have been kept well to the front by the Hon. Mr. Mitchelson, whose determined efforts have resulted in a final settlement of even such a knotty point as the site for the abattoirs.

The drainage problem has been advanced a step through the engagement of Mr. Mestayer to report on the method best adapted for Auckland. The scheme he has laid out is naturally costly: it could not be otherwise with the geographic features to be overcome; but if the ratepayers have any desire to remove the stigma from their city of having the highest zymotic and infant mortality, and wish for modern drains and a clean harbour, they will at the poll show themselves ready to face the extra rates which the loan for the scheme will necessitate. The Harbour Board have awakenend to the fact that the purity of their foreshore is suffering, and have notified the Council that the pollution must stop. At their invitation, I attended a committee, and laid before them the evidence I had gathered as to the evils which the present system was producing.

A report on an improved water-service has also been obtained from Mr. Mestayer, and he has formulated a scheme which should serve Auckland needs for many years. In his report he draws attention to a dangerous source of pollution existing in the present auxiliary supply from Nihotapu Stream—a result of the short-sighted economy of past Councils who neglected to secure the water-rights of that stream, or to acquire the lands in the catchment-area. This error is now being rectified.

The removal of ruinous dwellings I have already referred to. The work has been taken up vigorously by the present Council, who invited me to co-operate with the City Health Officer, Dr. Moir, and their Sanitary Inspector in this matter. A considerable number of houses have already been removed, and sufficient repairs effected in others; but so many of these houses exist, that in view of the large population affected, the work has to be taken in hand slowly to avoid rendering many homeless.

The site for the abattoir has been finally selected at Otahuhu, and the building operations should shortly be commenced; meanwhile, temporary improvements have been made at the old slaughter-yards, the wooden floors taken up and concrete substituted, and iron placed round the walls of the killing-pens. This, of course, is mere tinkering, but some of the more conspicuous of the evils are in this way mitigated. These temporary improvements were made in response to notice sent at my request by the Grey Lynn Borough Council requiring an abatement of the nuisance which existed. The establishment of a private offal-treatment works has also had a beneficial effect, as the heaps of filth formerly left rotting for days together no longer exist, and the offal is removed regularly and swiftly. Many complaints have been made on this subject, and I have come in, I understand, for no little abuse for permitting this offensive trade to be established in this suburb. But it will only remain there as long as the slaughter-yards exist, and I maintain that, though such places cannot be conducted without unpleasant odours, these odours are less dangerous and offensive than the abuses which their presence has removed. This I clearly pointed out to the Grey Lynn Council before they gave the permit for the works.

The new sanitary by-laws have at last come into force, and there is every reason to hope that they will produce a great improvement, in the matter of plumbing and house connections especially. It is essential, however, that Inspector Haynes should have a staff under him to carry out the large amount of work which these by-laws entail. With this in view, the Council have decided to appoint two Assistant Inspectors.

The nightsoil service has been indescribably bad this year, but fortunately the contract has now expired. I had hopes that this would result in the Council taking up the work directly, and the City Engineer was directed to draw up an estimate of the cost were this plan adopted. To this end I accompanied him in searching for a suitable depot, and excellent spots were found to serve for conveyance either by land or by water. The cost was found to be considerably less than the lowest of the new tenders for the service, but the Council found some obstacle in the collection of rates, and a renewal of the contract system was decided on. This is to be regretted, but, in going over with the City Engineer the new conditions of contract, every former weak point was guarded, and the penalties made more severe, so that if this service becomes as bad as the former one it will be through criminal neglect on the part of the Council to enforce those conditions.

The destructor-site has been fixed, and thus another vexed point has been settled during Mr. Mitchelson's mayoralty. The site is a good one, and so placed as to allow of no reasonable complaint from those in the neighbourhood, provided the plant is constructed on modern lines. The need for a refuse-removal service is very pressing, as the condition of back yards in even good localities testifies. As regards the poor districts, I may again quote from my report to the Council on the housing question:—

"I have already referred to the accumulation of refuse so frequently found—often several feet in depth if the yard is sloping pretty steeply. Tins, rags, sacks, bones, and every conceivable form of refuse lie there, often with a few forlorn fowls or ducks seeking a precarious livelihood amongst the muck, and adding their quota to the general accumulation of horrors. Or sometimes a shed, serving as a stable, may be found in a corner, of course without flooring or drainage, the manure scattered about, and a swarm of flies busying themselves between the filth outside and the food within the dwelling. Place a family of young children in such a yard, and it is not necessary to wonder why the hospital rates are so high."

There is no improvement in the manner of disposal of street-sweepings, and offensive heaps exist in many parts, where their presence is interpreted by the neighbours to be an official invitation to deposit all their household filth also, with most unpleasant results.

Auckland Suburbs.

The movement for a Greater Auckland has been once more brought prominently before the public, and perhaps advanced a step nearer being an accomplished fact; but the scheme is not favoured by the majority of the suburban civic magnates who see in its accomplishment the termination of all the "pomp and circumstance" of office, which they at present enjoy, and further fear that the rates may grow if they should lose control. That their district would benefit to an extent more than compensating for the growth in rates, is too subtle an argument to find much favour. Grey Lynn Borough, being more

inclined to climb out of the rut, went the length of a poll of ratepayers, but the non-progressive party was unfortunately in the majority. If left to the initiative of the suburban bodies, this important scheme has many years of ineffectual struggling still ahead.

The Arch Hill Gully sewerage scheme advanced the length of the formation of a Board, and the drafting of a Sewerage Bill which was placed before the House ; but the project got no further than the Bills Committee, where for some occult reason it was ignominously wrecked. I trust another attempt will be made this year.

The nightsoil services in all the suburbs, with the exception of Devonport, are conducted on the most slipshod and insanitary lines, and complaints of carelessness, or deliberate misconduct on the part of the men employed, are of daily occurrence. It is to be hoped that the effort of the Point Chevalier Road Board to control the conduct of the contractors, may lead to improved methods, or better still to the abolition of the present depots, when closed-pan services, with removal by rail or water, would be the result.

Grey Lynn has been particularly unfortunate in its nightsoil service, to which probably the increase in typhoid cases is partly due.

Devonport is again attempting to secure the necessary loan to complete the drainage scheme, and so finally abolish the nightsoil service. During the year the Council of the borough decided to undertake the disinfection of houses, and their Inspector attended at the Health Department for the necessary instruction in methods.

Newmarket Borough Council has decided to begin the much-needed extension of the drainage, and had a partial scheme laid out by Mr. Metcalfe. They are now applying for a loan for the purpose.

Onehunga has suffered so heavily from typhoid and dysentery, that the adoption of a drainage scheme was imperative. In a report to the Council, I showed that the death-rate during the past three years had been at the rate of 15·5 per 1,000 ; the infant mortality high even compared with Auckland, and the zymotic death-rate double that of England and Wales owing to the large number of deaths from typhoid, diphtheria, and diarrhœal complaints. The water-supply is so situated as to be in constant danger of pollution, and the strictest care is required to safeguard it. In the end the Council obtained the services of Mr. Metcalfe, who had prepared plans for an excellent drainage scheme at comparatively small cost, including a septic tank to avoid pollution of the harbour. A loan has been applied for, and it is hoped that every encouragement will be given to this very important sanitary work. The disposal of nightsoil from this borough has proved a matter of difficulty during the year. The depot for some time past had been at a farm in the Hillsborough district, where it had become a serious nuisance to the neighbours. Another site was found, but the Mount Roskill Road Board, not unnaturally, wished to exclude such places from their district entirely, and adopted by-laws for the purpose; but nowhere else was there a site available. A temporary site was at last obtained, but unless the drainage scheme is carried out, this will prove a very troublesome question to deal with.

At *Remuera* the drainage difficulty is becoming in many places acute, and some comprehensive scheme in the near future will be necessary.

At *Mount Eden* an attempt has been made to dispose of the drainage of certain localities by turning it into crevices in the porous volcanic rocks. Such a scheme is too primitive and dangerous for adoption on a large scale, and after two such areas had been so treated, I opposed any further work of this nature. This district must be prepared to face this difficulty in a bolder spirit, and adopt a more comprehensive scheme.

Country Districts.

Until the Auckland country districts adopt the scheme, now working so admirably in the Wellington Province, of combining for the purposes of inspection, little advance will be made in sanitation. Already the country boroughs and town districts are years behind places of corresponding size in Wellington District, where modern by-laws and up-to-date methods of plumbing and drainage are rapidly being adopted. It is distressing to find in vigorously growing towns considerable sums being spent on drainage, which, owing to lack of knowledge of the first principle of sanitation, may be considered to be absolutely wasted. There is great need for trained supervision of all such work.

Whangarei Borough has felt the need for drainage in the business part of the town, and has had plans for a drainage scheme prepared. Unfortunately, there are physical difficulties to be overcome, which cause the scheme to be an expensive one, and there is hesitation on the part of the Council in facing it. The matter is, however, pressing, and already there is cause to fear that the health of some residents has suffered. The Council are at present engaged on amending their by-laws.

At *Paeroa* the drainage question, owing to the flat, low-lying land on which the town is built, presents some difficulty. This, and the need for reform in the matter of refuse-disposal, and the structure of stables, food-stores, and so on, has led the Ohinemuri Council to ask for co-operation in the matter of by-laws—a model set being in consequence drafted at this office for their guidance.

Waihi has made no advance in the question of sewage disposal. The nightsoil service is, however, well carried out. Action has been taken to secure a good water-supply, which is greatly needed.

Tauranga was specially visited by Dr. De Lisle, who kindly consented to attend to this district at a time when I was unable to visit it. He laid before the Council the dangerous results which had followed from the ever-increasing pollution of the soil in some parts, but it is to be feared that it will be a difficult matter to arouse this town from its state of blissful content with things as they are.

Opotiki.—Having determined on a nightsoil service, the Town Board sought my assistance in the matter of a depot, and in the question of the form of pan, &c., to be adopted. A suitable spot was secured, and the service should presently be inaugurated. This is, perhaps, all that can be expected of the town at present, but being a thriving place, the questions of water-supply and drainage will shortly require consideration.

Rotorua.—It is a matter for congratulation that the Government have at last commenced to lay a sound system of sewerage. The need grew so pressing, that while there remained a doubt as to the work being put in hand, I visited the district with the object of seeing whether something in the way of a series of septic tanks could be adopted as a stopgap. There were many difficulties in the way, and although at one hotel a fairly satisfactory arrangement was made, it is fortunate that any such temporary measures should be now rendered unnecessary. Ministerial consent was obtained to the converting of the small isolation ward into a hospital for infectious diseases where cases could be treated. A set of proposed rules were drafted for, and, I understand, adopted by the Council for the control of this building. In view of the approach of the time when house connections to the sewers would be made, I submitted a criticism of the by-laws already adopted by the Council, and I trust my recommendations have been approved, as in their present form the by-laws are antiquated. The requirements of this town in the matter of a better water-supply should not be lost sight of.

Hamilton is now provided with a water-supply from the Waikato River, which is proving satisfactory. The successive outbreaks of typhoid during the last two years have been traceable to the undrained condition of the main street, but the Council have not yet adopted Mr. Metcalfe's drainage scheme. Steps have been taken, however, to introduce a nightsoil service, and in company with the Borough Inspector, I visited and approved of a site for a depot.

Cambridge Council have been engaged on the consideration of the sanitary by-laws drafted for them by the Department. I trust that a nightsoil service will be adopted. Some improvement in the sanitation of the hotels has been effected.

The other districts do not call for special mention.

SUMMARY OF WORK DONE AT THE AUCKLAND OFFICE.

Owing to the management of the Infectious Diseases Hospital being thrown on our hands, and the constant calls on our time in connection with the Cambridge Sanatorium, the work has been very heavy this year, and much credit is due to Mr. Leplastrier and Mr. Symons for having by their unsparing energy succeeded in avoiding any hitch in the routine of duty.

The present offices are by no means satisfactory, and from position and structure are far from sanitary, a fact not without its influence on the health of the staff. It is to be regretted that the effort to combine with the Agricultural Department in securing new offices did not succeed.

The following briefly summarises the work done: Notices *re* infectious diseases issued to local authorities, 770; accounts for notifications by medical men, 339; accounts for treatment at the Infectious Diseases Hospital, 61; notices *re* examination of passengers, 2,900; notices *re* nuisances, &c., to private individuals, 108; notices to local authorities *re* drainage, nightsoil-service, &c., 32; notices for condemnation or repair of insanitary buildings, 120; complaints investigated, 133; permits for offensive trades, 3; by-laws drafted for six local authorities; applications for admission to Sanatorium, 101; vaccine-tubes distributed, 2,693. Special investigations and reports have been made on proposed site for the Infectious Diseases Hospital, Auckland; sterilising apparatus for bonedust; proposed abattoir-site, Mount Roskill; Rotorua drainage; districts suitable for consumptives; insanitary houses ni Auckland; sanitary statistics of Onehunga.

Physical Examinations.

The following medical examinations were made for various Government Departments: Health Department (various), 78; Prison Department, 1; Public Works Department, 6; Post-office, 4; Justice Department, 1; Education Department, 5; Railway Department, 1; Marine Department, 2: Total, 98.

SANITARY INSPECTIONS.

With so large an area to deal with Inspector Winstanley has been kept busy, and it is evident that there is urgent need of skilled assistance in this work. As in former years my attention has been too much engaged with office and Sanatorium work to do much in this direction.

The following is a summary of inspections made by Inspector Winstanley and myself: General inspection of houses, shops, &c., 4,350; investigations into cases of infectious disease have been made in 17 districts; infected houses inspected, 460; disinfections performed—dwellings 19, schools 7, second-hand clothing 32 packages; schools inspected, 31; abattoirs—proposed sites, &c., 11; offensive trades, 5; stables, cow-sheds, piggeries, &c., 30; rubbish tips, depots, &c., 20.

Districts visited *re* drainage, &c.: Onehunga, Rotorua, Opotiki, Whangarei, Hamilton, Te Aroha, Paeroa, Clevedon, Mount Eden, Remuera.

Factories: Mr. Winstanley has visited a large number of factories dealing with the manufacture of jams and biscuits; he also has made a systematic inspection of bakehouses, fish-shops, and restaurants in the city. In conjunction with the Inspector of Factories we have visited and directed improvements at one printing-office, a sugar-works, several bakehouses, and a jam-factory.

Special Institutions, &c., visited: Costley Institute, Parnell Orphan Home, Veteran's Home, Hamilton Hospital, Remuera Orphanage, St. Mary's Convent, &c.

PATHOLOGICAL LABORATORY.

As in previous years there has been no time for more than a spasmodic effort at laboratory work.

The following specimens have been examined: Sputa, 48; urines, 14; tumours (sectioned), 14; pus, 10; blood—for widal 9, other conditions 3; diphtheria (throat swabbings), 7.

Special Investigations.—Plague case: Guinea-pig inoculated, 1; glands, bubo, &c., excised and cultures made, 4. Anthrax case: Guinea-pig inoculated, 1; cultures made from tissues excised, 1.

Water.—Bacteriological examination was made of the efficiency of a water-filter. The city supply was examined once.

Honey.—Cultures were made from one sample which had produced poisoning.

For the Police Department certain human bones were examined to determine age, sex, &c.

The air-analysis apparatus arrived, and a series of examinations commenced. The Cambridge Sanatorium and the dormitories of one private school were examined. Unfortunately an accident occurred which has necessitated sending to England for a duplicate part of the apparatus.

I have to acknowledge the valuable assistance of Mr. Symons in compiling the charts and statistics for the report.

R. H. MAKGILL, M.D., D.P.H., Cambridge.

HAWKE'S BAY DISTRICT.

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

Department of Public Health (District Office), Napier, 1st April, 1904.

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

I am pleased to be able to report that there has been some steady progress in sanitation in this district during the past year, though there has been no startling rush anywhere. Some portions of the district are conservative in their ideas with reference to sanitation, and are disinclined to move out of the groove in which they have travelled for so long. They favour the view that preventive measures in medicine are unnecessary, that money spent on them is wasted, and I fear that it will need an epidemic of some magnitude to awaken them from their lethargy, and rouse them into action. On the other hand, some portions of the district are fully alive to the necessities of sanitation, and are pushing forward steadily with improvements as fast as their means will allow.

The numerous small local bodies that exist, from the confusion they create in the mind of the District Health Officer, tend rather to clog than to aid him in his efforts to conserve the public health. In the Town of Waipawa itself there are three bodies, the Town Board, the Road Board, and the County Council. Then again the County is cut up by numerous small Road Boards having jurisdiction over small areas. In the Poverty Bay district the Cook County is cut up into several, I believe seventeen is the number, small Road Boards and local bodies. It would tend to efficiency and the smoother working of the Act, if in the country, and outside the boroughs and Town Boards, the County Councils were the only local bodies that the District Health Officer had to approach.

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

Scarlatina.—Napier, 40 ; Hastings, 75 ; Dannevirke, 30 ; Woodville, 80 ; Wairoa, 14 ; Gisborne, 11 ; other districts, 52 : total, 302, against 142 last year.

Typhoid.—Napier, 19 ; Hastings, 7 ; Dannevirke, 1 ; Woodville, 0 ; Wairoa, 13 ; Gisborne, 6 ; other districts, 11 : total, 57, against 82 last year.

Diphtheria.—Napier, 5 ; Hastings, 7 ; Dannevirke, 1 ; Woodville, 6 ; Wairoa, 0 ; Gisborne, 6 ; other districts, 4 : total, 30, against 34 last year.

Tuberculosis.—Napier, 7 ; Hastings, 0 ; Dannevirke, 5 ; Woodville, 4 ; Wairoa, 31, chiefly amongst the Maoris ; Gisborne, 4 ; other districts, 7 : total, 58, against 31 last year.

Septicæmia and Erysipelas.—Napier, 3 ; Hastings, 0 ; Dannevirke, 7 ; Woodville, 5 ; Wairoa, 4 ; Gisborne, 0 ; other districts, 0 : total, 19, against 10 last year.

Measles.—Napier, 2 ; Hastings, 0 ; Dannevirke, 1 ; Woodville, 5 ; Wairoa, 12 ; Gisborne, 4 ; other districts, 43 : total, 67, against 158 last year.

The deaths registered during the year are,—

The Whole of the District.—Total from all causes, 414, against 452 last year : Cancer, 31 ; tuberculosis, 41 ; septicæmia and erysipelas, 5 ; diphtheria, 2 ; typhoid, 4 ; zymotic diseases other than typhoid, 19.

Napier.—Total from all causes, 139 : Cancer, 13 ; tuberculosis, 13 ; septicæmia, 4 ; zymotic diseases other than typhoid, 8.

Hastings.—Total from all causes, 56 : Tuberculosis, 8 ; zymotic diseases other than typhoid, 3. No deaths registered from typhoid, cancer, or septicæmia.

Dannevirke.—Total from all causes, 38 : From cancer, 1.

Woodville.—Total from all causes, 23 : From cancer, 3 ; from tuberculosis, 1 ; from diphtheria, 1.

Gisborne (with the suburbs *Whataupoko* and *Kaiti*).—Total from all causes, 91 : From cancer, 8 ; tuberculosis, 12 ; zymotic diseases other than typhoid, 6.

Below are shown the vital statistics for the combined district and the principal towns :—

Combined District.—Deaths from all causes, 9·4 per 1,000 : From cancer, 0·7 per 1,000 ; tuberculosis, 0·93 per 1,000 ; typhoid, 0·09 per 1·000 ; diphtheria, 0·045 per 1,000 ; zymotic diseases other than typhoid, 0·43 per 1,000 ; septicæmia, 0·113 per 1,000.

Napier.—From all causes, 12,94 per 1,000 : From cancer and tuberculosis, 1·28 per 1,000 ; septicæmia, and typhoid 0·39 per 1,000 ; diphtheria, 0·0975 per 1,000 ; zymotic disease other than typhoid, 0·78 per 1.000.

Hastings.—From all causes, 12·5 per 1,000 : From tuberculosis, 1·7 per 1,000.

Dannevirke.—From all causes, 13·2 per 1,000 : From cancer, 0·4 per 1,000.

Woodville.—From all causes, 24·9 per 1,000 : From cancer, 3·24 per 1,000 ; tuberculosis, and diphtheria, 1·08 per 1,000.

Gisborne.—From all causes, 16·55 per 1,000 : From cancer, 1·45 per 1,000 ; tuberculosis, 2·3 per 1,000 ; zymotic diseases other than typhoid, 1·09 per 1,000.

It is my pleasant duty to point out that the number of deaths for the whole district is nearly 13 per cent. below the number registered last year, although the population has increased somewhat. Napier shows a remarkable decrease in the death-rate. Hastings remains at exactly the same number, 56,

but the population has slightly increased which makes the death-rate proportionately lower. Dannevirke shows a slight increase, but again the population has increased. In Gisborne there has been a slight decrease, though there has been a considerable increase of population. Woodville, which was unfortunate in having the highest proportional death-rate in my district during the year ending the 31st March, 1903, is still more unfortunate this year, the number of deaths having increased about 33 per cent. This, however, is not attributable to any special insanitary condition, nor any special insalubrity in this little town, for the death-rate has been swollen by deaths from cancer, accidents, Bright's disease, heart-affections, apoplexy, and senile decay. I regret to point out that there has been one death from diphtheria. This disease was conspicuous by its absence in Woodville until very recently. Waipawa shows a marked decrease, and Waipukurau, situated only four miles from Waipawa, and in about the same stage of sanitary evolution, has a marked increase. Wairoa has an increase of nearly 50 per cent.

I am pleased to report that there has been a very marked decrease in the aggregate number of cases of typhoid reported this year as compared with last. Napier and Gisborne showing the greatest decrease, while Hastings and Wairoa show a marked increase. The country districts have almost the same number reported.

I regret that scarlatina has been strongly in evidence this year, though happily there have been no fatal cases. Woodville accounted for 80 cases, while Napier, with nine and a half times the population had only 40—just half the number. Hastings, with less than half the population of Napier, and less segregation, had 75 cases. In a scattered district like this it is impossible to command proper isolation of infected persons in the outlying parts. I am aware of several cases of exposure of infected persons in public places in Woodville, but was able to obtain evidence to secure a conviction in only two cases. I was in Gisborne when I received news of an outbreak in Tologa, and was fortunately able to get up there promptly, and nip it in the bud. I desire to put on record that I was ably assisted in my efforts by the leading people of the place and the local constable. An outbreak also occurred at Wairoa, and I was able to ride up at once, and was successful in preventing the spread of the complaint.

PARTICULARS AS TO THE CONDITION OF VARIOUS CENTRES IN THE DISTRICT.

Napier (population, 8,774).—I am glad to say that this town is gradually but satisfactorily advancing in sanitary matters. A new loan has been authorised, which will be expended chiefly in the direction of sewer-extension, and I hope to be able to state in my next annual report that the nightcart in Napier has ceased to be. During the past year the visits of the nightcart have been greatly curtailed owing to the extension of the water-carriage of nightsoil. Mr. Kershaw's plumbing classes are still in evidence, are well attended, and are bearing good fruit not only in Napier, but in the other towns in which they have been initiated.

Clive, Meeanee, and Taradale.—Progress has been made in these small townships in the shape of renovating buildings that have become insanitary from age, and the condemnation and destruction of others that were unfit for habitation, and too far gone for repair. In other respects they remain in much the same condition as they were at the date of my last annual report.

Havelock.—The scheme for water-supply and drainage supplied by Mr. C. D. Kennedy is still in abeyance, but during the coming year I shall again move the Hawke's Bay County Council that a rate may be struck which will enable the work to be carried out. There may be some difficulty in this, as the richer of the inhabitants have already provided themselves with all sanitary requirements, and may not be disposed to tax themselves for a general scheme that would not directly benefit them.

Hastings Borough (population, 3,650).—Many houses that were in the sewer-area at the date of my last annual report, but had not taken advantage of the drainage, have been connected during the year. Other properties on which the drainage connections were unsatisfactory have had the defects made good, and notices have been served on owners of other properties in a like case, calling on them to abate the nuisances on their premises caused by the defective drainage, which notices, if not complied with will be enforced. Hastings has largely outgrown its drainage scheme, and it is absolutely necessary that it should be largely extended in the near future. A loan was spoken of last year, but nothing further has been done in the matter up to the present. Hastings is in the unenviable position of having the largest number of cases of diphtheria of any place in the Hawke's Bay District, but happily there have been no deaths. When cases of diphtheria have been notified, I have invariably visited the premises, and have generally been able to point out sanitary defects, and have taken steps to have them abated.

Kaikora North (population, 268).—There is nothing new to report.

Waipawa (population, 669).—A fresh place has been chosen with my approval for the deposit of nightsoil. Several houses not previously connected with the sewer are now drained, and extension of the sewers is now being carried out. The collection of the nightsoil is still in single open pans, but I will again urge the Town Board to adopt the more cleanly and sanitary method of using the double-lidded pans. The expense incidental to the innovation is the bar to its adoption.

Waipukurau (population, 565).—There is very little fresh to report in this pretty little township. Up to the present nothing has been done to remedy the defective sewerage, and the nightsoil is still collected in the old manner by single open pans. Want of funds hampers the advance of sanitation here, as well as in some of the larger places. The death-rate in Waipukurau is heavier than last year, three deaths are attributable to cancer, and five to tuberculosis. There have been no deaths from zymotic disease. Some of the cases of tuberculosis may have been imported, as Waipukurau bears a well-deserved reputation as a health resort for consumption.

Takapau (population, 150).—The sanitation of this township is bad; it is situated in the Ruataniwha Plains, and fortunately has the benefit of those natural scavengers, sun and wind. The water-supply is plentiful, and is chiefly derived from shallow wells. At my suggestion, the local authority—the

Rautaniwha Road Board—instructed Mr. C. D. Kennedy to prepare plans and estimates for a water and drainage scheme. Mr. Kennedy estimates the cost at £900. Up to the present nothing has been done to give effect to his recommendations.

Ormondville (population, 459).—The Town Board contemplate obtaining plans and estimates for a drainage scheme and water-supply in the near future.

Dannevirke Borough (population, 2,315).—During the past year Mr. Leslie Reynolds has been employed to draw up a scheme for the drainage of this borough. His scheme has been approved of, and the ratepayers have authorised the loan. The work will be proceeded with as soon as the money is available.

Woodville Borough (population, 926).—Mr. Metcalfe has drawn up a scheme for the drainage of Woodville, which has found favour with the Borough Council, but has not yet been referred to the ratepayers. I hope in my next annual report to be able to inform you that the work is proceeding.

Gisborne Borough (population, 2,337).—I regret to say that Gisborne is still without drainage and a public water-supply. It was found impossible to obtain the money required at the rate of interest authorised by the ratepayers, and a fresh poll for the purpose of authorising a loan at a higher rate of interest was rejected. The avowed spring of action of the objectors was not to water and drainage, but to the scheme proposed by Mr. Mestayer. Shortly after the poll had been taken, Mr. Leslie Reynolds and Mr. Hay were employed to prepare reports—the former on water-supply only, and the latter on water-supply and drainage. Both gentlemen differed from Mr. Mestayer as to the best source for a water scheme, and Mr. Hay's proposal to cut off the head-waters of the Te Arai, which was also partly favoured by Mr. Leslie Reynolds, seems to be most likely of adoption. Mr. Hay's proposed drainage scheme was almost identical with Mr. Mestayer's. Before anything is done, it is proposed to form a Greater Gisborne, incorporating into the borough the suburbs of Kaiti and Whataupoko. As both these suburbs are being added to daily, the necessity for water and drainage will soon become acute within their boundaries. It is much to the interests of all three localities that the junction should eventuate, and that quickly, and I hope that a water-supply and drainage scheme for the whole of the combined district will be put in hand immediately after. Considering the rate at which Gisborne is advancing, it cannot go on long in its present stage of sanitary evolution without some serious epidemic breaking out, but before this occurs I am in hopes that the inhabitants will initiate such steps as will prevent its appearance. Gisborne is fortunate in sharing with the rest of the district a phenomenally small number of cases of typhoid, and no deaths have been registered from that complaint. Notwithstanding this, the death-rate of Gisborne—16·55 per 1,000—is the highest in the district after Woodville. This should not be, for from its situation, and the manner in which it is laid out, Gisborne should be one of the healthiest, as it is one of the prettiest, towns in the colony. Though typhoid and diphtheria have claimed no victims this year, I cannot but attribute the high death-rate to the insanitary conditions sapping the vitality of the weaker members of the community.

I have very little fresh to report with reference to the townships north of Gisborne, *Tologa*, *Tokomaru*, and *Waipiro*. A case of typhoid occurred at the last-named township. The residence of the sufferer was in close proximity to an insanitary slump-hole, to which I had called the attention of the Council when I made my visit last year but without effect. Now that sickness has occurred, the matter has, so I am informed, been attended to.

Clyde, *Wairoa* (population, 623).—I regret to have to report that this pretty little township is very backward in matters of sanitation. At my visit there this summer I observed that matters were much in the same condition as when I inspected and reported on the township in 1900, with the exception that there is a common system of nightsoil removal. The removal of nightsoil in double-lidded pans, which I was assurred was being carried out in Clyde, exists only in name, and the method of burying the nightsoil is not without reproach. It will be noted that Wairoa has a larger proportion of cases of typhoid fever than any other place in the district. Napier, with fourteen times the population, has only 50 per cent. more cases. Wairoa is much in need of a water-supply and some form of drainage for the congested portions of the town, and I have written a very strong report on the matter to the local authority—the Wairoa Town Board—but have not been informed that any portion of my report has been acted upon. I will visit the district again as soon as my other duties permit, and will not rest until I obtain improvement in the sanitary condition of the township.

Mohaka.—The post and telegraph office has been improved on my recommendation. I have requested the local authority—the Wairoa County Council—to serve notices on the owner and occupier of the hotel, which is old, dilapidated, badly ventilated and worse lighted, and with sanitary appliances conspicuous by their absence, to have the building pulled down and entirely rebuilt. The new hotel to be fitted with proper sanitary arrangements to be approved of by me. The site on which the hotel stands lends itself to proper up-to-date sanitation. There is a spring on the hill, above which will provide the hotel with an abundance of pure water, and the edge of the plateau on which the hotel stands is an excellent site for a septic tank. The local authority have replied that they object to serve the notices, as they consider that it is a matter purely for the Licensing Committee to deal with. I have pointed out to them, that under section 11 of "The Public Health Amendment Act, 1903," it is the duty of the local authority to serve the notices if so directed by the District Health Officer. The Council has referred the matter to the Chief Health Officer for his opinion, so it is in abeyance for the time being. But the hotel will be rebuilt before the next annual report is compiled.

Prosecutions.

One resulting in a conviction has been instituted in Dannevirke for non-notification of infectious disease. Three prosecutions, resulting in two convictions, have been instituted in Woodville against persons for exposing themselves when suffering from infectious disease. These prosecutions were undertaken directly by the Department.

One prosecution, resulting in a conviction, has been undertaken by the Taradale Town Board at the instigation of the Department against the owner of two houses that were unfit for habitation owing to structural defects, want of repair, and defective sanitary arrangements.

Two prosecutions, resulting in convictions, have been instituted by the Napier Borough Council at the instigation of the Department, against owners of properties with defective sanitary arrangements.

One prosecution, resulting in a conviction, has been instituted in Gisborne, undertaken directly by the Department against a person who was carrying on an offensive trade in close proximity to a butter-factory, without the permission of either the Department or the local authority.

No prosecutions have been undertaken under the Foods and Drugs Act.

Bacteriology.

No work under this heading has been done in this district since I commenced my duties. I have not been provided with the necessary *armamentaria*, and if I did possess it, it is difficult to know how I should find the necessary time that the work would entail, without neglecting some of my other important duties. Happily the interests of public health do not suffer from the want of a laboratory in Napier. This district is in easy touch with Wellington, and specimens requiring bacteriological examination are easily forwarded to the central laboratory.

Sanitary Inspectors.

I regret to say that none of the local bodies in this district have made any appointments in the manner suggested by the Department. Some of the local bodies would be willing to do so if they could obtain the co-operation of other contiguous local bodies in the appointment, so that the combination would provide sufficient work for an inspector to be fully employed, and would enable a sufficient salary to be subscribed to insure the services of a thoroughly competent man. Some local bodies are apathetic, and other absolutely antagonistic. Gisborne Borough has appointed a very able man, but he is their servant, not mine. The Cook County Council seemed favourable to the appointment at my last interview with them, but up to the present, no appointment has been made. I will move in the matter again when I next visit Gisborne, which I expect will be shortly.

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

WELLINGTON DISTRICT.

The Chief Health Officer.

I have the honour to submit the following report for the year ending the 31st March, 1904 :—

The work of the past year has been of an unusually varied character. In May last my services were required at Christchurch in connection with the small-pox cases on the s.s. "Gracchus." The early portion of this year found the officers of the Department busily engaged in fighting the same disease.

With the exception of a case of leprosy in Wellington and a mild case of plague at Wanganui, the Wellington District has been fortunate in escaping the graver forms of infectious disease.

You will be pleased to note that there has been a decided diminution in the notifications of scarlet fever and diphtheria as compared with the two preceding years. The notifications of enteric fever have slightly increased.

The existence of plague in the Australian Continent and small-pox in Tasmania and Christchurch entailed a vast amount of work on the officers of this Department, particularly with regard to the inspection of passengers, the isolation of suspects, and vaccination.

A considerable amount of time has been taken up in interviewing local bodies on various matters pertaining to sanitation—notably with regard to infectious diseases and their accommodation, the erection of hospitals and abattoirs, and the appointment of Sanitary Inspectors.

A general improvement has taken place in the sanitation of the boroughs. This is largely owing to the fact that sanitary inspection is in the hands of competent inspectors, who, though paid by the local bodies, are under the entire control of the Department.

In another portion of this report I draw attention to the urgent need of additional accommodation for consumptives. Efforts in this direction have not been entirely devoid of results. I am pleased to report that the Wellington and Taranaki Hospital Boards are facing this important question. I have every reason to hope that your suggestion with regard to the erection of annexes in connection with the general hospitals is likely to bear fruit, and that the expense entailed will be largely borne by public subscription.

Another matter of importance—not only from a public-health standpoint, but also from its possible influence on an important industry—is the prevalence of infectious mammitis in dairy herds. Some cases of septic sore throat have been traced to milk from these sources. The matter is receiving the attention of the Chief Veterinarian.

As mentioned in previous reports, the whole position with regard to milk-inspection is on a very unsatisfactory basis. It would be far better to place the subject in the hands of one Department, rather than leave it under the dual control of this and the Agricultural Department.

Reference has repeatedly been made to the unsatisfactory condition of our quarantine stations. Without exception the accommodation at our chief ports is insufficient to receive the passengers and crew of one of the smallest intercolonial passenger-steamers. The buildings are old, the hospitals out of date, the water-supplies inadequate, and the general sanitary arrangements defective. The piles of the wharf at Somes Island are so rotten that I expect at any moment to hear of its falling into the sea. The cheapest way out of the difficulty, compatible with efficiency, would be to equip Quail Island as the central quarantine station of the colony. The island is central, easily approached from the mainland, and the climate is certainly preferable to that of Somes Island. With one station properly equipped it would be possible to temporise, provided the buildings at the other stations are maintained in decent repair.

The influence of density of population on the health of a community is universally acknowledged. Inquiries as to the prevalence of tuberculosis in Wellington discovered that in some parts of the city no less than eighty persons are living to the acre, with an average of two persons to each room. Not only in our larger towns, however, is reform needed. In one town of about three thousand inhabitants I was surprised to find no less than seventeen houses erected on 1½ acres. Even in country districts there is a tendency to huddle buildings on altogether inadequate areas. Surely legislation in this direction is urgently needed.

Scarlet Fever.

The attached table shows that the epidemic was generally distributed throughout the district, 871 cases being notified as against 1,143 of the previous year. Forty-four per cent. of the cases occurred in children at school—age, 5–14 years. Like previous years the epidemic was an extremely mild one, only twenty-three deaths being reported, giving a mortality-rate of 2·6 per cent. Nine of these deaths occurred in children under five years. Thirty-eight per cent. of the cases received hospital treatment—a great advance on previous years. Five hundred and ninety disinfections were performed by the Department; the remainder were undertaken by the householders. Of return cases 3·08 per cent. were reported.

There is little of interest to report in connection with the epidemic. Unlike previous years, there was no evidence of infection being spread by means of milk, but it appeared to be by extreme carelessness and ignorance of parents. The disease was of so mild a nature that it was often entirely unrecognised until the patients began to peel.

Infectious Diseases.

	Scarlet Fever.	Enteric Fever.	Diphtheria	Tuberculosis.	Blood-poisoning.	Total.
Boroughs.						
Pahiatua	17	1	13	7		38
Petone	14	1	2			17
Masterton	49	1	2	1	3	56
Marton	9			2		11
Stratford	19	4		1	1	25
Karori	3	1			1	5
Greytown	3	2	1			6
Carterton	15	2		1	1	19
Feilding	27	4	9	2	1	43
Lower Hutt	6	2	3	2	1	14
Hawera	4					4
Patea	2					2
Foxton		2	1			3
Palmerston North	40	3	6			49
Eltham	17	6	4			27
Wellington	411	39	27	45	8*	532
New Plymouth	36	8	1			45
Wanganui	43	27	8	8		86
Eketahuna	9					9
Total	724	103	77	69	16*	991
Town Districts.						
Waverley	15			2		17
Opunake	1					1
Normanby	2					2
Featherston	2					2
Bull's	5	1				6
Halcombe	1			1		2
Manaia	2					2
Waitara			2			2
Total	28	1	2	3		34

* There were likewise two cases of small-pox.

INFECTIOUS DISEASES—*continued.*

—	Scarlet Fever.	Enteric Fever.	Diphtheria.	Tuberculosis.	Blood-poisoning.	Total.
Counties.						
Kiwitea	19					19
Rangitikei	11		2	1	1	15
Taranaki	1					1
Oroua	8	2	1			11
Onslow	10			1		11
South Wairarapa	2					2
Pahiatua	9					9
Horowhenua	17	2	1	1	2	23
Hutt	1					1
Manawatu	8		1			9
Wanganui	18				1	19
Eketahuna	3					3
Masterton	1					1
Waitotara	6				1	7
Stratford	1					1
Wairarapa	4	1	2	2	1	10
Total	119	5	7	5	6	142
Summary.						
Boroughs	724	103	77	69	16*	991
Town Districts	28	1	2	3		34
Counties	119	5	7	5	6	142
Total	871	109	86	77	22*	1167

* There were likewise two cases of small-pox.

CONSUMPTION.

Prevalence.

The prevalence of consumption in the colony requires serious consideration. It is true that the disease is not so prevalent in New Zealand as in other countries, nor is there any reason to believe that it is on the increase; but when our natural advantages as regards climate, soil, and social conditions are taken into consideration, it must be admitted that the mortality returns are larger than might otherwise have been expected.

Mortality returns, however, afford little indication as to the actual prevalence of the disease. More information in this respect has been derived from the number of applications for admission to the Cambridge Sanatorium and the somewhat perfunctory notifications of general practitioners. I say "perfunctory," as a very small proportion of cases of consumption are actually notified through the usual channel—in fact, notification in the strictest sense has proved a failure; but though a practitioner may fail to give the name of his patient, he has ever been ready to inform the Department of the number of patients he has under treatment, and of those cases where, in the interests of public health, departmental interference is necessary. For example, during the past year only forty-two cases were notified in Wellington; but a circular to the medical men practising in the city asking for the number of patients each was attending gained a ready response. By this means 102 cases of consumption were notified, and thirty-five of the other forms of tubercular disease.

It will be seen, therefore, that the practitioner is willing to notify, but he objects—and with some reason—to give the name of his patient. This objection will remain until some distinct advantage to the patient is likely to follow notification. At present notification is of little advantage to the patient—rather the reverse, unless it so happens that the latter wishes to gain admittance to the Government Sanatorium. I fail to see that the Department can insist on notification until it has at its disposal ample accommodation for all those patients who may require sanatorium treatment. I fear that this desirable end is only likely to be attained in the dim future.

Apart from notification, however, quite a large percentage of consumptives are receiving no medical treatment whatever. Many of these unfortunates are far gone in the disease, and have not the wherewithal to pay for professional advice. Denied hospitals or charitable institutions as incurable and infectious cases, they have no alternative but to roam the streets or share rooms with the healthy to the danger of the public. At the present moment I know of thirty-two persons in Wellington who are in varying stages of consumption, who have no visible means of support, and who are taking practically none of the necessary precautions. For instance:—

A woman applied to the Department to admit her husband to the Sanatorium. On inquiry, it was ascertained that she was living in a two-roomed house in a suburb, and, with her husband and two small children, occupying one bedroom. The husband was in an advanced stage of the disease. No precautions were being taken.

Another applicant for admission to the Sanatorium admitted that he shared a bedroom with a friend in a small lodginghouse in Newtown, and that he was ignorant of the necessity of disinfecting his expectoration.

Such instances are not unusual. Under these conditions how is it possible to limit the spread of the disease? In the City of Wellington there is no place for the reception of such persons; the Hospital authorities very properly refuse to admit them, and for the same reasons the Homes for chronic cases shut their doors.

As showing the prevalence of the disease in the country districts I might mention a province which enjoys the lowest mortality from tubercular diseases—viz., Taranaki, with a death-rate of 4·7 per 10,000 living. The population between the Mokau River and Hawera is about 31,333, yet in this portion of the province no less than seventy cases of tubercular diseases have been reported, or rather more than 2 cases per 1,000 living.

Unfortunately there is no system of registration of sickness and mortality among the Maoris, but from Dr. Pomare's reports it would appear that the incidence of consumption is greater on the Native than the European population.

On the above grounds I am of the opinion that there are at the present moment no less than three thousand persons in the colony suffering from some form of tubercular disease.

Communicability.

Though the infectiveness of consumption has been recognised for many years, it may not be out of place to mention a few of the more striking examples that have been brought to my notice. I should like to acknowledge my indebtedness to many medical men who have furnished me with instances in their own practice of the communicability of the disease. With few exceptions the most valuable information has been obtained from practitioners who have been for some years resident among comparatively isolated and unchanging communities. In such districts the doctor is brought into more or less intimate contact with all classes, and is more likely to be made aware of matters affecting particular families or houses over a series of years than his professional brother of the larger towns, where the population is ever changing.

At an up-country township a Stationmaster died of phthisis: within a few months his successor, who, prior to taking up the position, had been subject to asthma, also contracted the disease: a few months later his wife developed pulmonary symptoms: within a year one child died of tubercular meningitis, and another developed a cavity in the lung from which she subsequently recovered, while another child had tubercular mischief in the ankle. The mother and father are both dead. Three men who subsequently worked in the Stationmaster's office contracted tuberculosis — one dying of tubercular meningitis.

In another instance, a man suffering from tubercular laryngitis joined a gang of platelayers. Within six months one of his mates, who had previously enjoyed the very best of health, died of acute tuberculosis, and another is now suffering form pulmonary consumption.

Out of 113 children attending a school, eleven were discovered to be suffering from well-marked phthisis. All these cases were certified to by three medical men. Two of the cases ended fatally. Besides these, there were six or eight mild cases, which were sent home when the school was first suspected. The doctor in attendance, who had been practising in the vicinity for some years, states that consumption was unknown in the school until the attendance of a child who was known to be suffering from the disease in an advanced stage. Since the school has been disinfected and better arrangements have been made for ventilating the class-rooms, no other cases have been reported.

Again, take the case of a boardinghouse situated near one of our chief cities and used as a private hospital for consumptive cases. The proprietor, previously a healthy man, developed consumption and died of it in three years. The house was then taken by another family, and within two years this family lost their eldest girl, aged twenty-three, who died of consumption, and a boy aged eight years, who died of tubercular meningitis.

Statistics.

Before referring to statistics I should explain that though they show the distribution of the disease throughout the colony, deductions drawn from those of a small population cannot be regarded as conclusive, and are very apt to be fallacious; but, nevertheless, it may be of interest to refer to a few which I have culled from the Registrar-General's report and from the books of some of the local Registrars.

In 1902 there were 8,375 deaths recorded in the colony. Of this number 802 were occasioned by some form of tubercular disease—viz., phthisis, 617; tabes mesenterica, 45; tubercular meningitis, 66; other forms of tubercular disease not specified, 74; total, 802. Therefore about one death in every ten occurring in the colony was due to the tubercle bacillus, or, expressed in other words, the deaths from tubercular diseases were three times the aggregate of deaths occasioned by measles, enteric, diphtheria, and scarlet-fever.

Reference to the Registrar-General's report for 1902 shows that for the past ten years (1893 to 1902) there has been little decline in the mortality from tubercular diseases—in fact, in 1902 the death-rate (10·05) was higher than those of the years 1900 and 1901, when it was 9·85 and 9·86 respectively. During the same period the death-rate from phthisis has decreased and has been below the mean (7·934) for the last four years. In 1902 it was 7·93 per 10,000.

Age and Sex Distribution.—The age and sex distribution of the recorded deaths in phthisis for 1902 is similar to that of other countries, the greatest number of deaths being among males, and between the ages of twenty and thirty-five; of a total of 337 deaths among males no less than 164, or nearly half, taking place at those age-periods. Of a total of 275 deaths among females, 140, or more than half, occurred between the ages of twenty and thirty-five.

Chief Towns and Suburbs.—Of our chief towns Christchurch heads the list with 11·5 deaths from phthisis, Wellington being second with a death-rate of 9·3 per 10,000 living. Attention may be called to the low death-rate of Auckland, which, curiously enough, is one decimal point below the phthisis death-rate of the whole of New Zealand. It is hard to account for the high death-rate of Christchurch. Density of population has apparently little to do with it, as to fifteen persons living to the acre in that town there are fourty-one persons to the acre in Wellington—in fact, the influence of density of population is only shown in Wellington. In the area enclosed by Courtenay Place, Cambridge Terrace, Buckle and Cuba Streets, the population amounted to 6,298, or seventy-three to the acre. In this area the death-rate from phthisis is 17 per 10,000.

Of the provincial districts Otago heads the list with 11·439 deaths per 10,000 living, the lowest being Taranaki with only 4·311, which is curious when the rainfall of that province is taken into consideration. It is also strange that the mortality in the Auckland Provincial District is more than 2 per 10,000 higher than in the town itself (including suburbs), and stranger still that when the popu-

lation of the chief town and suburbs is deducted this province is second only in mortality-rate to Otago. The same also applies to the latter provincial district. Though Dunedin has the second lowest death-rate of our larger centres, the Otago Province has the highest death-rate when the population of the city and suburbs is deducted. I know of nothing in either of these provincial districts to account for the comparatively large rural mortality. In the Auckland Province the influence of the Cambridge Sanatorium has not yet been felt. I can only conclude that the increased mortality is due to the fact that for some time past certain districts in both these provinces have enjoyed a reputation for climatic advantages which has attracted consumptives from other parts of the colony.

Briefly, these statistics go to prove that though our death-rate from consumption (7·9) is considerably below that of the Old Country (13·1), yet when we approach the conditions of life in the Old Country—*i.e.*, with regard to overcrowding, &c.—the death-rates come very close to those of the United Kingdom.

Tabes Mesenterica.—The same tables will also show that the death-rates from tabes mesenterica and other forms of tuberculosis per 10,000 births for the ten years 1893 to 1902 is only 18·3, as compared with 42·5 per 10,000 births in England and Wales. This is quite in accordance with the information we have as to the existence of tuberculosis in our dairy herds: whereas 25 to 30 per cent. of the cows in the United Kingdom are said to be tubercular, in this country only about 10 to 15 per cent. are affected with the disease. We can also assume that the precautions taken with regard to the inspection of stock, slaughterhouses, and dairies will tend to reduce this mortality still further.

In connection with this, I regret that advantage has not yet been taken of the unanimous opinion of the British Medical Association last year that mammitis in cattle should be made a notifiable disease. In view of the possibility of other diseases than tubercle being transmitted to man by diseases of the bovine udder, it is all the more to be regretted. The recent accounts of a contagious mammitis in cows, a disease which we know to exist in the colony and to which in the United Kingdom more than one epidemic of fatal sore throat has been traced, surely emphasizes still further the necessity of notification.

Influence of Immigration.

It is frequently said with more or less reason that the yearly influx of consumptives into the colony from the United Kingdom has a very decided influence on the spread of the disease. Statistics show that the average yearly immigration to this colony for the decade 1893 to 1902 amounted to 219,876 persons, or a yearly average of 21,897 immigrants. Of this total only 25,687, or 11 per cent., came from the United Kingdom. By far the larger portion came from the Australian Colonies. It is hardly likely that many consumptives would come from the Australian Continent to obtain the benefits of the New Zealand climate. A certain proportion, however, would come from the United Kingdom *via* the Australian ports, but I believe most of the physicians at Home recommend consumptives to journey to New Zealand by the "direct" boats. Though the Imbecile Passengers Act has been in force since 1882, it is only during the past three years that advantage has been taken of that Act to prevent indigent consumptives from landing on these shores.

I am indebted to the Secretary of the Customs Department for the following particulars as to consumptive passengers who had to give the necessary bond of £100 before being allowed to land in the colony. This information affords some clue to the number of consumptives arriving yearly, but it gives no indication as to the influx of patients in better circumstances: In 1899 there were 2 passengers; 1900, 1; 1901, none; 1902, 6; 1903, 4: total, 13. During the period the Port Health Officer, Wellington, turned back three passengers.

Additional information on this subject is to be gleaned from the Registrar-General's report for the year 1902. It will be thereby seen that 13 males and 2 females died from phthisis within one year of arrival, and that 5 males and 2 females died of the same disease within two years of arrival in the colony. Dr. Makgill states that of the 50 cases admitted to the Cambridge Sanatorium 29 were born in New Zealand, 18 in England, and 3 in foreign countries. Of those born in England 3 contracted the disease within one year, 4 within two years, and 4 within four years of their arrival in the colony.

I consider that these figures rather go to show that the influence of immigration as a means of spreading disease is somewhat overestimated. There is no doubt, however, that a large proportion of consumptives from the United Kingdom derive very much benefit from our climate, and that many ultimately recover; but be this as it may, they are a source of some danger to the community, and hence the advisability of admitting them to the colony is to be questioned. Though it is very hard to deny anyone the advantage of this climate, I think it is time that the Legislature considered the advisability of refusing to allow consumptives—except under special conditions—to land in New Zealand. I must also take this opportunity to protest emphatically against the practice of some physicians at Home of sending out unfortunates, who, without means, or friends to go to, are indiscriminately packed off to this colony, only to be sent back if the shipping company importing them fails to sign the necessary bond; or who, if successful in passing the Customs authorities, drift into our hospitals and swell our rates.

Measures adopted.

Much remains to be accomplished before the Department can be said to be grappling with the disease in a comprehensive manner. Since the inauguration of the Department three years ago, a great advance has been made. Notification is compulsory—or supposed to be so; pamphlets on the disease have been distributed; disinfections have been performed; popular lectures have been given; and, above all, a sanatorium for the accommodation of some thirty-five patients has been established.

Notification of the disease—incomplete though it has been—has enabled the Department not only to approximately gauge the prevalence of the disease in the colony, but has also enabled it to have places of doubtful sanitation visited, to have the necessary instructions or advice given to the patient and his friends, and to have those premises disinfected which have been recently occupied by the sick,

Visits of Inspection.

These visits have only been made to two classes of patients—(1) those who were not being attended by a medical man; (2) those where the medical man in attendance considered a visit from a departmental officer necessary in the interests of public health.

Very often these latter visits discover instances of overcrowding, insanitary house-sites, or other conditions of life unfavourable not only to the patient but to the public. Practically, therefore, it is left to the medical man to see that the patients' friends observe all the necessary precautions.

Dangers of Departmental Interference.

I think very little, if anything, is gained by the Health Officer making an unsolicited visit. Of the many duties he is called upon to perform, none require more tact than when dealing with a person suffering from consumption. Apart from the nervousness of the patient and his friends caused by the visit of an official, there is a distinct tendency on the part of the former to resent departmental interference. This feeling—a feeling I can easily appreciate—is often shared by the medical man in attendance; moreover, the public is only too ready to regard a consumptive as a species of pariah, and the visit of an official is regarded by neighbours as affording ample evidence that the patient is a source of danger to the neighbourhood. On more than one occasion I have known great hardships follow such a visit; but, nevertheless, I am of the opinion that when the public becomes better educated as to the causes of consumption, and the comparatively simple precautions necessary to prevent its spread, departmental visits will not be resented.

The public hardly realises that very different measures have to be adopted against consumption from those undertaken against the spread of the more acute forms of infectious disease. The latter are of comparatively short duration, and during the acute stage render the patient absolutely unfit to perform his ordinary duties; isolation for a few weeks occasions little hardship. Consumption, on the other hand, is a disease of long duration, in most instances attacking its victims at the most useful period of life. It would be manifestly unfair, therefore, to insist on isolation, and prevent unfortunates from earning their livelihood; and much more unjust would it be to put restrictions on the lives of a not inconsiderable proportion of our fellow-colonists, unless it could be done, not only with advantage to the public, but with advantage to the patients and their families. Were adequate sanatorium accommodation available, there would be little difficulty in persuading patients that it would be to their interests to undergo the open-air treatment. The isolation thus brought about would be a great safeguard to the public, but under present conditions this is only to be dreamed of.

Popular Education.

Experience gained as a departmental officer fairly convinces me that a great deal can be done by popular instruction. Of the many unfortunates who have consulted me concerning the possibility of obtaining admission to the Cambridge Sanatorium, very few were aware of the importance of living in well-ventilated rooms, and of disinfecting expectoration. It is hard to kill old traditions, and the popular idea of "catching" cold by means of an open bedroom-window is very hard to break down. Apart from the curative value of sanatorium treatment, its educational advantage is of considerable value. The patient restored to his family will be confident of the value of an open-air life, and will undoubtedly impart his views to his friends. This influence is, I am glad to say, being already felt. Besides this, much may be done by means of popular instruction. Lectures on the elements of healthy homes and healthy living are likely to bear fruit, as evidenced by the excellent attendance wherever they have been given.

Additional Sanatoria.

I have constantly referred to the urgent need of additional sanatoria. At the present moment there are some hundred and fifty applications for admission to the Cambridge Sanatorium. By the time the applicant's turn comes round the majority will be past all hope of successful treatment. Is it not terrible to think that persons of small means have little chance of getting the only form of treatment that holds out any chance of ultimate cure? It has been shown that hospitals and charitable institutions shut their doors to the consumptive. What is to be done? Patients in various stages of the disease apply personally to this office. They have heard of the open-air treatment. If they can only get to Cambridge they consider (poor souls!) that their lives will be saved. They arrive full of hope. It is not nice to tell these poor people that there are a hundred or more applications on the list which must be considered before theirs, and that there is practically little chance of their being admitted. It is sad to see hope die away from their faces, and to think that they are returning in despair to their homes or boardinghouses.

Accommodation is needed for two classes of consumptives—(1) those in whom there is a reasonable chance of ultimate cure, (2) those in whom there is no chance of ultimate cure. Naturally, there would be no advantage in sending class 2 to any special sanatorium. Your recommendation as to the treatment of such cases is an excellent one—that on the grounds of hospitals situated in suitable climates annexes should be erected for the open-air treatment. Such annexes would cost very little, and might with advantage be attached to all of the forty-seven hospitals in the colony. Shelters should be provided in each district in proportion to the number of cases likely to require relief, details of which could only be ascertained by local inquiry. The erection of such annexes would relieve the congestion in the applications for admission to the Government Sanatorium, and would, moreover, allow that institution to be retained for specially selected cases. Patients showing no improvement from treatment in a local annex might be drafted to Cambridge as the vacancies occur. It is only by the erection of additional accommodation that the Department can hope to limit the spread of the disease.

Ways and Means.

It must not be imagined from the foregoing remarks that I am of opinion that the Government should bear the whole brunt as to the cost of these annexes—far from it. The public of this colony is only too inclined to look to the Government for assistance in everything: this speaks badly for its enterprise, its independence, and, I regret to say, its charity. Consider the charitable institutions of other countries! Are the people of New Zealand uncharitable? Far from it. The urgency of the matter only requires to be put before the public, and a ready response would be met to an appeal for public subscriptions. In this statement I am strengthened by my recent experience in Taranaki, where subscriptions towards a local annex are now being raised. Even as I write I hear that the people of that district have responded so generously that the erection of a local sanatorium is an assured fact. In the cause of suffering humanity it is to be hoped that other districts in the colony will follow the excellent example set them by the people of Taranaki. It is not a great sum that is required. If every man, woman, and child in the colony contributed one solitary shilling, with the help of the Government subsidy the matter could be settled at once. Would not the fourteen insurance companies doing business in the colony and the 445 lodges of friendly societies subscribe liberally to such a fund? It would surely be to the interests of the assurance companies and friendly societies to assist in the erection of sanatoria where their subscribers or members could obtain the benefits of the modern treatment of a disease which in the dawn of the twentieth century the medical profession can proudly describe as one that can be prevented and one that can be cured.

Nurse Holgate is doing excellent work in the way of providing accommodation for sufferers of the working-class in Wellington, but is sadly hampered for want of funds.

It is reassuring to note that the matter has been taken up by the New Zealand Branch of the British Medical Association. At the last meeting held in Wellington the following resolutions were passed unanimously: "That this Branch of the British Medical Association is confident that the prevalence of tubercular diseases in the colony is greater than would have been expected when the natural advantages of the country are taken into consideration, and the meeting takes this opportunity of impressing on the public the immediate need for organized effort with a view to controlling the spread of the disease."; and "That the previous resolution be forwarded to the Mayors of the chief towns in New Zealand, and that they be asked to take steps to discuss the matter with other local authorities and the public in order to adopt some practical means at once."

In response to an inquiry from the Mayor of Wellington for further particulars, the following letter was forwarded:—

New Zealand Branch, Medical Association, Wellington, 25th July, 1904.

SIR,—

We have the honour to submit, for the consideration of his Worship the Mayor, the following answer to your letter of the 29th April:—

At the present moment there are 137 cases of tubercular diseases in Wellington and suburbs—namely, consumption, 101; other forms of tubercular disease, 36.

Of those persons suffering from consumption no less than thirty-two show no visible means of support, and may therefore be regarded as indigent cases. Most, if not all, of these unfortunates neglect to take the usual precautions, and many share bedrooms with healthy persons. They are, therefore, a source of considerable danger to the community. It is particularly with regard to the accommodation of this class that the co-operation of your Council is solicited. We would therefore ask your Council to consider the following suggestions:—

1. That the Wellington Hospital Trustees be invited—
   (*a.*) To provide twenty beds at the Home for Chronic Diseases for the reception and treatment of the hopeless cases;
   (*b.*) To erect at Otaki accommodation sufficient for the open-air treatment of ten hopeful cases;
   (*c.*) To allow all patients who are able to follow their usual occupations the use of the Berhampore Hospital. By this means the patients would not be a source of danger to their families or fellow-lodgers.

   NOTE.—The utilisation in non-epidemic times of an infectious-diseases hospital for the open-air treatment of consumptives has been tried with much success by Dr. Newsholme, of Brighton, particularly for those not sufficiently far gone in the disease as to render them unable to follow their usual occupations. Dr. Newsholme states that not only did the patients derive much benefit from the treatment alone, but also from the experience gained as to the value of fresh air and disinfection of expectoration. In the event of the Berhampore Hospital being required for its original purpose, the patients could be discharged immediately.

2. That your Council insist on the enforcement of the by-law with regard to spitting in public places and tramcars, and place notices in conspicuous places calling the attention of the public to the danger of such a practice.

3. That on taking into consideration the tendency to overcrowd in certain parts of the city, and the excessively high rents paid for very inferior accommodation, we are of opinion that your Council might well consider the larger question as to the erection of houses for the working-classes.

Our sub-committee would be very glad to meet a committee of your Council for the purpose of discussing this matter at greater length.

We have, &c.,

THOMAS CAHILL,
WALTER FELL,
ALBERT MARTIN,
THOMAS VALINTINE,
} Members of sub-committee appointed by Council.

The Town Clerk, Wellington.

WELLINGTON.

Population, 46,633; birth-rate, 29·22; death-rate, 11·30. Infectious diseases reported—Scarlet fever, 411; enteric fever, 39; tuberculosis, 45; diphtheria, 27; blood-poisoning, 8; small-pox, 2. Inspections made, 514; disinfections performed, 229; houses condemned, 25.

The work of the year has been satisfactory, although it must be confessed that much more might have been done, particularly with regard to the condemnation of houses unfit for occupation; but, judging from the experience of some of the larger towns of the United Kingdom, it may be just as well that too much energy was not expended in this direction. House-rents in the poorer parts of the

city are already high. The tendency, therefore, to overcrowd is bad enough, and wholesale condemnation would render this tendency more acute. The Wellington Corporation might well consider the problem as to the housing of the working-classes.

A large number of business premises in the central portion of the city are in a very dilapidated and insanitary condition. Many belong to large estates which have leased them for long periods; under the terms of the leases the present lessees would have no redress if the buildings were condemned. The Department, therefore, is loth to inflict the hardships that condemnation would undoubtedly entail. In the case of one large estate, where with few exceptions the buildings are dilapidated, the leases have yet six years to run. This is a matter for the serious consideration of the Corporation.

The general sanitary condition of the city has much improved: this improvement is largely owing to the excellent understanding that exists between municipal and departmental officers. Under the present *regime* complaints forwarded by this Department are promptly attended to.

United efforts on the part of the above might well be directed to the condition of the milk brought into the city. At the present time, as mentioned in another part of this report, the whole question is on a very unsatisfactory basis.

Infectious Diseases.

As compared with last year a considerable diminution is noticeable in the number of infectious diseases reported in the city—especially with regard to scarlet fever. The latter, however, is still prevalent and shares a tendency to spread with the advance of the winter months. Only 3 deaths were reported, giving a mortality-rate of 0·7 per cent. Though there was little difficulty this year in persuading patients to go to the Hospital, the overflow ward at Berhampore was not once required. Twenty-seven cases of diphtheria were reported, as against 89 in the previous year. In typhoid alone there was an increase, 39 cases being notified, as against 24 in 1902–3. Five deaths occurred from this disease—a mortality of 12·8 per cent.

Phthisis.

The prevalence of consumption in Wellington is dealt with in another portion of this report.

During the year 44 deaths were recorded, giving a mortality-rate of 9·4 per 10,000. In the more thickly populated portions of the city the mortality-rate is 17 per 10,000. At the present moment there are 101 *known* cases of phthisis in the city; of this number 32 may be regarded as indigent cases. With few exceptions these unfortunate persons are a constant source of danger to the community. They often share bedrooms with the healthy, and take no precautions as to disinfection of their sputa.

Until there is suitable and sufficient accommodation for hopeful and hopeless cases in the neighbourhood of the city little can be done to limit the spread of the disease.

Smoke Nuisance.

After much delay this matter is likely to receive the immediate attention of the Corporation. With a view to prosecution of the chief offenders, minute observations have been taken by municipal and departmental Inspectors as to the number of minutes in each hour that "black" smoke issues from certain chimneys.

Combined action on the part of the Corporation and Department should result in a diminution of a very real and serious nuisance to many of the residents of Wellington.

KELBURNE.

Many complaints have reached the Department concerning the sanitary condition of Kelburne. Having no system of drainage, the residents have to choose between allowing slop-wastes to accumulate on their sections or discharging them into the water-tables. Of the two evils the latter is to be preferred. Some residents have installed septic-tanks; here, again, the water-table receives the effluents. Some thirteen houses are connected with a 6 in. drain which discharges into the water-table. If this drain were connected with the sewer in Salamanca Road, much of the present nuisance would be obviated. The Corporation should lose no time in connecting this suburb with the drainage system, otherwise trouble is bound to arise. It is also very desirable that the Corporation should undertake a weekly removal of refuse.

KILBIRNIE.

This suburb has been visited several times during the year. It is high time that the Corporation should adopt some system for the removal of waste waters. At present the latter are allowed to run into a small creek which ultimately finds its way to the sea. The north end of the suburb might easily be connected with the drainage system. Great difficulties are in the way of adopting similar measures for the drainage of the low-lying portions of South Kilbirnie. I fear there is no alternative but to allow residents in this part of the suburb to run their slop-wastes on to the beach.

LOWER HUTT.

Population, 1,822. Infectious diseases reported—Scarlet fever, 6; enteric fever, 2; diphtheria, 3; tuberculosis, 2; blood-poisoning, 1.

The Council was at some pains to inaugurate a system of nightsoil-removal. At some expense suitable pans were obtained, and a depot selected on some waste lands known as Scab Island. After much doubt as to whom the lands belonged, it was decided that as an accretion they belonged to the Wellington Harbour Board. The latter objected, fearing that the deposit of the nightsoil of some three thousand persons might result in the silting-up of the harbour. Hence sanitary matters are at a standstill until another site can be selected. Despite these drawbacks the sanitary condition of the borough is fair.

PETONE.

Population, 3,780. Infectious diseases reported—Scarlet fever, 14; enteric fever, 1; diptheria, 2.

The sanitary condition of this borough is good. The nightsoil system is working well. The majority of the houses are connected with the drainage system for slop-waters.

ONSLOW.

Population, 1,499. Infectious diseases reported—Scarlet fever, 10; tuberculosis, 1.

Sanitary matters in some portions of this borough are in a very unsatisfactory state. Kaiwarra particularly is the cause of a deal of trouble. For the past four years the Council has discussed the advisability of establishing a system for the removal of nightsoil, and the Department has approved of a suitable site for the depot in the neighbourhood of Wadestown. Unfortunately the Council has allowed the matter to rest at that.

KARORI.

Population, 1,212. Infectious diseases reported—Scarlet fever, 3; enteric fever, 1; blood-poisoning, 1.

As in other suburbs the unsatisfactory methods of slop-waste disposal have occasioned a deal of inspection and correspondence. So far the Council has done nothing to rectify one of the worst nuisances occasioned thereby; nor has the Council inaugurated a system for nightsoil-removal.

NEW PLYMOUTH.

Population, 4,405. Infectious diseases reported—Scarlet fever, 36; enteric fever, 8; diphtheria, 1.

Drainage-works are now being installed. The sewers and drains are being laid under the supervision of Inspector Kendall.

The recommendations of the Department as to the alteration in site of the rubbish-depot are now being attended to.

During the year five unhealthy houses have been demolished. Quite recently six other houses have been condemned as unfit for human habitation, and will be removed in the course of the ensuing year.

The general sanitary condition of the borough has been greatly improved since the appointment of the above-mentioned officer.

STRATFORD.

Population, 2,027. Infectious diseases reported—Scarlet fever, 19; enteric fever, 4; tuberculosis, 1; diphtheria, 1.

With few exceptions the houses in the more central portions of the borough have been connected with the recently installed drainage and water systems. In the course of the year all will be connected. The Railway Department has been requested to conform to the borough by-laws by connecting the station with the water-system. The septic tank and filter-beds appear to be giving satisfaction. The general sanitation of the borough has greatly improved.

MANAIA AND OPUNAKE.

Inspectors Kendall and Wilson have visited these townships, which have adopted the by-laws recommended by the Department.

ELTHAM.

Population, 1,400. Infectious diseases reported—Scarlet fever, 17; enteric fever, 6; diphtheria, 4.

A drainage and water scheme is now being installed. Many houses should be connected during the year.

A smart outbreak of typhoid occurred during the fall of the year, but the cases were almost entirely limited to the neighbourhood of the Eltham Hotel, which had to be closed in consequence. Considerable alterations have been effected at this hotel. In connection with this it is pleasing to record the great assistance rendered the Department by the stand taken by the Patea Licensing Committee.

Eltham has suffered a great deal through the insanitary habits of former residents. The subsoil has been extensively polluted by excreta-pits. Inspector Kendall is insisting on these being cleaned out and filled in. In this work he is receiving the support of the Borough Council.

INGLEWOOD.

It is to be hoped that during the year this borough will be connected with a water and drainage scheme: the Council has already taken the initiative. Provision must certainly be made for the drainage of that portion of the town between the Inglewood Hotel and the post-office.

WAITARA.

The sanitary condition of this township has been much improved during the past three years.

Some correspondence has taken place between the Department and the Town Board as to the nuisance caused by the freezing-works. The owners have agreed to give effect to all the Department's requirements.

WANGANUI.

Population, 7,334. Infectious diseases reported—Scarlet fever, 43; enteric fever, 27; diphtheria, 8; tuberculosis, 8.

It would be well for the sanitation of Wanganui and its adjoining suburbs of Aromoho and Durietown if the inhabitants of the two latter could come to some definite agreement with the Borough Council whereby they could be included in a "Greater Wanganui." The sanitation of these two suburbs is far from satisfactory, and is a constant menace to the health of the inhabitants of borough and suburbs alike. The Borough Council should make every possible concession to the latter.

The system for the removal of refuse in town and suburbs is far from satisfactory, and steps have been taken with a view to improvement. A uniform receptacle for refuse is badly needed.

The by-law should be enforced as regards poultry-keeping in the borough.

Many old buildings require removal; several of these have been condemned, but the Borough Council has neglected to take action.

As the existence of plague-rats in Wanganui was definitely determined in 1900–1, it would be as well for the Council to undertake a systematic method for the destruction of rats.

The usual outbreak of enteric occurred in the autumn, twenty-seven cases being reported. Without exception insanitary defects were found on the premises where the cases occurred.

As pointed out in previous reports, the sewers are out of date, having all the defects of the "combined system." The sewer-outfalls should be carried to low-water mark in the river. This precaution would obviate the nuisance complained of by residents on the river-bank.

The installation of the new water-supply from Okehu is eagerly waited for.

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

Marton.

Population, 1,101. Infectious diseases reported—Scarlet fever, 9; tuberculosis, 2.

The sanitation of this borough is fair. Unfortunately it is not provided with a drainage system. After much delay, a creek, which is practically a public sewer, has been diverted clear of the Club Hotel, under which it formerly ran. The future will show whether the expenditure occasioned by this diversion (except as far as the hotel is concerned) is justifiable.

A septic tank has been installed at the Club Hotel, and another is required at the White Hart. It is unfortunate that the septic tank at the Marton Hotel is not working satisfactorily.

A systematic system of scavenging is also required in this borough.

Rangitikei County.

Population, 7,570. Infectious diseases reported—Scarlet fever, 11; tuberculosis, 1; diphtheria, 2; blood-poisoning, 1.

In this is included the rising townships of Hunterville, Mangaweka, and Taihape. A drainage scheme has been installed at the latter, and an effort is being made to attain similar works at Mangaweka.

The above-named townships are under the administration of the Rangitikei County Council; therefore they possess no local authority in the strict sense of the term. From a public-health point of view it would be better if "The Town Districts Act, 1886," were repealed. This subject has been gone into at greater length in my previous reports.

Inspector Wilson has done good work in this district.

Masterton.

Population, 3,949. Infectious diseases reported—Scarlet fever, 49; enteric fever, 1; diphtheria, 2; tuberculosis, 1; blood-poisoning, 3.

The sanitary condition of Masterton is distinctly good. The drainage system has been considerably extended during the past year, but many necessary connections remain to be made. Like other towns, a better system is needed for the removal of rubbish. It is difficult to persuade those responsible that this important matter is likely to be carried out with better results by the local authorities themselves, rather than by contractors. Naturally the latter do not do more than they feel called upon to do, and they are inclined to allow rubbish to accumulate on premises where occupants neglect to pay the customary fees.

Carterton.

Population, 1,205. Infectious diseases reported—Scarlet fever, 15; enteric fever, 2; tuberculosis, 1; blood-poisoning, 1.

The water-supply works are nearly finished. The question as to main drainage is to be settled by poll shortly. General sanitation, fair.

Greytown.

Population, 1,122. Infectious diseases reported—Scarlet fever, 3; enteric fever, 2; diphtheria, 1.

The prospect of a water or drainage scheme in this borough is very remote.

The present system of removing nightsoil is very unsatisfactory, and will continue so until the Council decides to pay for this out of the rates instead of leaving it for the contractor to collect his dues from the householder. The disadvantages of the latter system are apparent.

Inspector Dolby has done good work in this district. It is therefore to be regretted that he was attacked by means of an anonymous letter, addressed to the Greytown Borough Council; but still much more is it to be deplored that inquiry showed that the letter in question had actually been written by the Mayor of that town. Naturally I had no alternative but to ask the Council to make other arrangements for the inspection of the borough; but the heinousness of the proceedings was evidently regretted by the Council, as by a majority of 7 to 2 I was requested to withdraw the letter of resignation, and allow Inspector Dolby to continue his duties.

Pahiatua.

Population, 1,209. Infectious diseases reported—Scarlet fever, 17; enteric fever, 1; diphtheria, 13; tuberculosis, 7.

In this borough a water and drainage scheme is being installed. It should be completed by the end of the ensuing year.

Featherston.

Population, 629. Infectious diseases reported—Scarlet fever, 2.

This pleasantly situated little township is kept fairly clean. The septic tank at Card's Hotel can hardly be deemed a success. There is a prospect of the town being provided with a public water-supply.

Palmerston.

Population, 6,534. Infectious diseases reported—Scarlet fever, 40; enteric fever, 3; diphtheria, 6.

Until the new drainage system has been installed the sanitary condition of this rising borough is not likely to improve. The ensuing year should see the new septic tanks in working-order. A great many houses in the drainage-area might very well be connected with the sewers immediately.

The borough by-laws badly require revision and bringing up to date, particularly with regard to plumbing and poultry-keeping. The plumbing in this town is scandalous, much of it being left to mere boys. Many of the waste-pipes are only of 26 B.W.G. iron, and a number run under the houses.

The removal of nightsoil is only enforced over portions of the borough; the area must be increased.

Owing to the exertions of Inspector Perry, the removal of rubbish is being better attended to. A uniform rubbish-receptacle is badly needed. The custom of using the river-bank as a rubbish-tip must be stopped. A town of the size of Palmerston should be provided with a rubbish-destructor.

Feilding.

Population, 2,289. Infectious diseases reported—Scarlet fever, 27; enteric fever, 4; diphtheria, 9; tuberculosis, 2; blood-poisoning, 1.

The new drainage and water works should soon be in working-order. As at Palmerston, up-to-date by-laws are required. Taking into consideration the fact that there is no drainage, the sanitary condition of the borough is good.

Horowhenua County.

Population, 4,654. Infectious diseases reported—Scarlet fever, 17; enteric fever, 2; tuberculosis, 1; diphtheria, 1; blood-poisoning, 2.

A good deal of work has been done in the townships of Levin, Otaki, and Shannon, which are under the administration of the above county. Inspector Brownlie was engaged at the latter end of the year in a house-to-house inspection in these towns. His requisitions have had a good effect, particularly those with regard to the general cleansing of premises, the filling-in of cesspools and excreta-pits, and the adoption of the pan system.

Leprosy.

On the 11th July, 1903, I received from the police a report as to a suspicious case in the person of a Chinaman living in a fruiterer's shop in Newtown. Dr. Pollen kindly visited the premises and found the case to be one of anæsthetic leprosy. The patient had some tuberculated patches on his face, and a good deal of psoriasis covering his body. His interossei were much wasted; an extensive area at the back of each calf, particularly the left, was devoid of sensation. The patient was isolated in a hut on Somes Island. For some time he seemed to improve markedly, but on the 10th March, 1904, he showed symptoms of chronic interstitial nephritis, and died in a few days of uræmia.

A Suspicious Case.

On the 2nd January I received word from Dr. Christie, of Wanganui, to the effect that he had a suspicious case in the person of a Chinaman, eight weeks out from Canton. When seen by Dr. Christie he had considerable enlargement of the axillary and inguinal glands, a temperature of 104°, and a pulse of 160. These constitutional symptoms lasted about forty-eight hours. There was marked tenderness, and a considerable amount of periadenitis about the inguinal glands. These glands subsequently suppurated. On arrival at Wanganui I found that the patient had left that morning for Wellington, where he was subsequently discovered in a fruiterer's shop in Newtown. When I saw him, with Drs. Ewart and Adams, all his constitutional symptoms had abated, but his glands were still enlarged, and pus was oozing from the bubo in the left groin. Examination of this pus gave negative results. The patient was removed to Somes Island, where he remained twelve days. His co-employees were isolated in the gardens at Aramoho for five days, and the premises where he stayed at Wanganui and Wellington were thoroughly disinfected.

T. H. A. Valintine, D.P.H., M.R.C.S., L.R.C.P., Lond.,
Assistant Chief Health Officer.

Prosecutions for Breaches of the Public Health Act.—Wellington District.

No.	Date.	Offence.	Result.
	1903.		
1	May 4 ..	Breaking quarantine while suffering from scarlet fever	Fined £2, and costs £3 5s.
2	July 17 ..	Ditto	——— fined 10s., and costs £3 9s.; case against ——— dismissed.
3	Aug. 15 ..	Breach of quarantine restrictions—not reporting as licensed	Fined £3, and costs £3 10s.
4	Aug. 8 ..	Ditto	Fined £3, and costs £4 13s.
5	Sept. 26 ..	Ditto	Fined £3, and costs £3 10s.

Prosecutions under the Adulteration Prevention Act.—Wellington District.

	1904.		
1	Feb. 3 ..	Selling light-weight bread at Petone	Fined £1, and costs 7s.
2	„ 3 ..	Failing to stamp bread at Petone	Fined £1, and costs 16s.
3	„ 3 ..	Selling light-weight bread at Petone.. ..	Dismissed.
4	„ 3 ..	Failing to carry beam and scales in his bread-cart at Petone	„

NELSON-MARLBOROUGH-WESTLAND DISTRICT.

Dr. Mason, Chief Health Officer, Wellington.

THIS report deals with the work done during about eighteen months' residence in this district, between August, 1902, and March, 1904. The remaining time was spent in assisting in the Wellington and Christchurch Districts.

The records of infectious diseases in the whole district are almost valueless as comparative statistics for the reason that in the southern part of the district the law of notification would appear to be ignored not only by some medical practitioners, but to a greater extent by the public generally; also, there seems much reason for believing that throughout the district second and succeeding cases in the same house are not notified. In such a widely extended district records of infectious disease will only be of value when such outbreaks can be investigated by an Inspector close at hand. It has now been arranged to provide the Marlborough Sub-district with its own Sanitary Inspector apart from the Nelson centre. It must be urged that Westland shall be treated in like manner.

On the 31st January, 1904, when at Wellington, notification of a case of "suspected variola" at Wakefield, Waimea County, was received. Next day the case was seen, and I had no difficulty in concurring with the opinion then formed by the medical attendant that the proper diagnosis was "Varicella."

NELSON CITY.

The present drainage system of the city is not complete. Very many parts of the city have no drainage at all; this would not be so serious a matter were it possible for householders to dispose of all slops, &c., on their own land. The sections generally, and the position of many on the sides of the hills, do not, however, lend themselves as suitable for the methods of Dr. Vivian Poore.

There are three parts in this as in any sewerage system—(1) domestic or house drainage; (2) sewers proper; (3) sewage-disposal.

1. *Domestic Drainage in Nelson.*

It may at once be said that the ways in which this has been carried out are astoundingly antiquated; the standard of plumbing-work is extremely low, and many of the fittings found in drain-laying and plumbing are obsolete. That I should have this to say of the plumbing of Nelson is not to be wondered at, since there has not been a single by-law or regulation for such sanitary work in Nelson until the advent of our Department. Furthermore, I am informed that the commonest specification in vogue for plumber's work in buildings is "The cheapest man gets the job," consequently in Nelson is to be found a style of work which would not, for instance, have been permitted under the by-laws of Christchurch twenty years ago. Much has been done in the past eighteen months to remedy these defects; I find the better plumbers only too willing to do work up to Wellington style, but they are quite handicapped by the destructive "undercutting" of the less scrupulous. A set of efficient by-laws are now being prepared, which at least will remove from Nelson the stigma of being behind Masterton, Stratford, and New Plymouth in these matters. If the demand for by-laws in sanitation be an indication of a town's advancement, then indeed Nelson has never shown a progressive tendency up to this.

Let me not be thought to exaggerate. Here are some of the sanitary defects noted: In not a single case was a house-drain found properly disconnected from the sewer; Buchan or intercepting traps were unknown. House-drains were without ventilation, not even when water-closets were connected. Water-closets with the flushing-rim of basin directly connected with water-main: flushing-tanks are now being enforced. Unventilated soilpipes of seamed galvanised iron. A drawn-lead soil-pipe I have not often seen. When cast iron is used, putty joints are found. It is amusing to note the result of evil associations: A plumber came from Wellington specially engaged for a certain contract; he used cast-iron pipes, no doubt—not the best, however—but instead of lead caulking, as would have been required in Wellington, he fell so low as to use putty. A bath-waste untrapped, and a water-closet on an upper story discharging into a rain-water hopper on that floor-level, with a window 3 ft. from the open soil-pipes: this, too, in a good house in a central position. A system very peculiar to Nelson is that of sealing rainwater-pipes into drains with an obsolete trap, known as a running siphon, at the foot of the downpipe. I need hardly say that with a high temperature and small rainfall such as Nelson can boast of such rainpipes are likely to be more often untrapped than trapped. Sink and bath waste-pipes directly sealed into the drain to the sewer: when the plug was removed, or through the overflow-pipe, sewer-gas was thus able to flow uninterruptedly into the house. When even such waste-pipes were trapped drawn-lead P. and S. traps were very uncommon. Not a "wiped" joint anywhere, until lately. A large school had an inside water-closet without ventilation-pipe, and all rainwater-pipes fixed in direct connection with the sewer: the course of sewer-gas is evident. Another school, comparatively new, had an elaborate and foul tin-can arrangement, tinsmith-made, as a trap attached to a lavatory-basin. These are but a few of the defects noted they will suffice. It is in the remedying of defective sanitary methods such as these that the results of our Department's presence in Nelson are most marked.

2. *Sewers Proper.*

The existing sewerage of Nelson is a huge patchwork. Most commonly the sewers are evolved from open watercourses which have been "culverted." How they have been graded or constructed it is impossible to say. There is no general system; a bit has been added on here and there at different times. Of intentional ventilation there is almost none; and, as previously stated, these so-called sewers are not disconnected from the house-drains. What sewers there are, properly so called, carry surface water and sewage. Open ditches expected to convey only surface-water, but much contaminated by sewage, are a constant source of nuisance and annoyance.

3. *Sewage-disposal.*

This consists of the very primitive method of allowing the sewers to empty on to the tide-covered flats of the harbour at the entrance to the city. It is almost unnecessary to add that as the number of drain-connections increase so does the foulness around the sewer-outfall.

Much more I had written upon the question of drainage for the city. Granted even that there was not the ever-present enteric fever as an additional argument, enough has been said to indicate the necessity of new sewerage.

A complete scheme, though at first rejected by the citizens, has now been passed by a large majority; so that the incidents of the lengthy struggle to obtain that scheme, and the full details of all the defects under the old *regime*, had perhaps better at this stage be passed over unnoticed.

Water-supply.

Nelson City has a high-pressure water-supply of excellent quality; the capacity of the reservoir is now being greatly enlarged.

Enteric or Typhoid Fever in Nelson.

For the years ending the 31st March, 1903, and 1904, twenty-seven and twenty-nine cases respectively of enteric fever have been notified amongst the residents of Nelson City. Only one of these cases came from another city, and yet was sufficiently long resident in Nelson to make it somewhat doubtful that she had contracted the disease elsewhere. In each year six of these cases ended fatally.

These figures are startling for such a small population as that of Nelson City—say, 7,050. A health resort must be able to boast of a less number, or none at all. A mistaken notion is that cases of infectious disease—even scarlet fever—are mainly imported, invalids coming to Nelson for the benefits which Nature alone manifests; but it must be obvious that the scarlet-fever or typhoid patient does not get much opportunity to select a suitable place in which to develop the disease.

The incidence per month of the notifications for each year are recorded thus :—

	1st April, 1902–3, to 31st March, 1903–4.			1st April, 1902–3, to 31st March, 1902–3.
April	8	13	November ..	..	..
May	4	2	December ..	1	3
June	1	..	January ..	5	..
July	1	..	February ..	1	9
August		..	March ..	5	1
September		..		—	—
October	1	1		27	29

The disease crops up in almost all parts of Nelson. With increased statistics of the past, no doubt one could point to certain typhoid zones, but my figures and information are yet too limited to enable me to do this.

The cause of the outbreak is not the water, for, if so, we should have the disease more widespread, and not reaching epidemicity at regular periods. It is not the milk, because the victims are not at the raw-milk-drinking age, and we should have then a much larger proportion of cases under fifteen years of age. The only part of the food-supply which is certainly suspicious has been the probable sewage contamination of the oysters. Yet another outbreak cannot be wrongly put down to the returned troopers, for if they had been the cause at the beginning of the period here indicated there would have been irregular outbreaks consequent upon each separate introduction of the bacillus, whereas the figures show a definite curve in each year, with a maximum in late summer and early autumn, thus maintaining the Old-World character of the disease so well expressed by the American term "fall fever."

In the investigation of many cases it was found that a case or cases had occurred in the same house even as far back as fifteen years. The contamination of the soil by the typhoid bacillus must be regarded as the cause in these instances, and I have particularly urged upon the City Council the necessity of efficient house-drainage as the only means of at least preventing further pollution of the city sections.

Investigation of the Oyster-supply.—Towards the end of March, 1903, enteric fever, which, I regret to say. must now be said to be endemic in Nelson, showed a tendency to epidemicity, corresponding roughly in time to a similar outbreak, though less severe, last year. Examining the report of these cases when seeking a cause, it was noted that in the whole number of persons attacked a larger proportion had partaken of oysters than would represent the ratio of the oyster-eating to the non-oyster-eating portion of the community. A year ago Dr. Roberts, then Acting District Health Officer, had ordered the "beds" to be moved to the Boulder Bank, instead of remaining where they had been for years that—is in the neighbourhood of the pilot-station and the baths. Late in March, 1903, with my own eyes I saw oysters being relaid on the prohibited ground. Personal investigation and the reports of the Sanitary Inspector revealed the following obnoxious state of things: The oyster-laying ground (there were no "beds" properly so called, in construction or intention) may be said to have occupied a central position in a 60-chain stretch of the foreshore of Wakefield Quay from the entrance of the Port of Nelson; central also to the two main directions from which sewage came at the flow and ebb of the tide. At flood tide the contents of ten drains—seven at least carrying domestic sewage—and of a large culvert which brings down the sewage of some twenty houses in Stepneyville and Victoria Crescent—in past years a "typhoid zone"—were carried up to and over the oysters. At ebb tide the raw sewage of the greater part of the domestic drainage of Nelson City, and all the street-drainage—greatly diluted by the harbour waters, I admit—and the more close-at-hand contents of all the drains, many carrying human excreta, of the various houses, hotels, wharfs, stores, &c., at The Port, were borne over the succulent bivalves. Further, the central area itself receives sewage from the baths, pilot-station, and

boat-sheds. These details, though not conclusive proof that the oysters were contaminated by sewage, yet seemed so disgusting and dangerous that I had no hesitation in preparing the following notice :—

NOTICE.—EXPOSURE OF OYSTERS TO SEWAGE CONTAMINATION.

Notice is hereby given that the "laying" or "relaying" of oysters on any part of the foreshores of the Harbour of Nelson is forbidden except as below stated.

In pursuance of section 87 of "The Public Health Act, 1900," oysters found on the said foreshore after this date will be seized and dealt with as unfit for human consumption.

The relaying or storing of oysters on the Boulder Bank is permitted.

It has been said that for years these beds had been in use, and yet not much, if any, enteric fever existed contemporaneously. Of course, it is possible that the sewage of those days did not contain the specific organism causing the disease, but has of late become "seeded" therewith. Again, the number of houses connected by the water-carriage system to the city sewers, and the total volume of sewage from The Port and city, has increased of late years. Later investigation (after the 31st March, 1903) by my colleague Dr. Anderson, Acting District Health Officer in Marlborough, has supported the fear that even on the inside of the Boulder Bank oysters are not secure from sewage contamination; and I now unhesitatingly declare it my opinion that so long as its foreshore continues to be fouled by sewage, untreated in any way, any and all oysters wherever laid within the Harbour of Nelson must be considered to be unwholesome and dangerous to the health of the consumer.

Since writing the above, through the courtsey of ex-Councillor Akersten, I have read the excellent and detailed report made by him on this matter in 1896. His experiments on the direction of the currents in the harbour bear out all I have written above; but though in 1896 it may have been possible, yet now I could not sanction even that place within the Boulder Bank which his experiments show to be comparatively out of the course of sewage. One is always faced by an axiom—applicable to all adulterated foods—that when a man buys oysters he wants oysters only, and does not wish to pay for added sewage, with perhaps typhoid bacilli.

Examination of the shops and conditions under which oysters were retailed showed nothing to which exception could well be taken, and I desire to express my thanks to those dealers who tried to meet all requirements to the best of their ability.

The numbers of other notifiable infectious diseases in Nelson for the years 1903–4 are as follows :—

Month.	Scarlet Fever.	Tuberculosis.	Diphtheria.
April	2	1	..
May	7	1	1
June	5	..	..
July	11	..	..
August	20	1	1
September	13	3	..
October	6	1	1
November	2	..	..
December	..	..	..
January	2	..	..
February	4	1	..
March	1	..	..

Hospital for Infectious Diseases, Nelson.

During the period dealt with, such cases of scarlet fever as could not be isolated at the infected house have been treated in a ward partitioned off but yet within the main building of the hospital. That this ward is within a few yards of the operating-theatre one would have thought should have been sufficient reason for the various local authorities concerned to have diligently furthered the matter of providing a proper building removed as far as possible from the existing general hospital. Nothing, however, was done, and but for the amendment to the Act it is unlikely that any advance would have been made. The Hospital and Charitable Aid Board have now made allocations amongst the contributing bodies to provide for such a building.

Infectious Diseases Ambulance.

Soon after my arrival in the district I recommended the obtaining of such an ambulance. This, I am glad to say, has been provided, and is housed, and disinfected after use, by the City Council.

Disinfection of Premises.

The Council have at my suggestion undertaken the disinfection of premises. I have to record my satisfaction at the way in which the work is done; it is not all I should wish, but it is a very good beginning. The courtesy and diligence of their officers is thoroughly appreciated by the householders.

On the 5th January, 1903, a man, F. G. B., was found travelling in a railway-carriage from Nelson to Brightwater suffering from measles. He was convicted at the Nelson Courthouse on the 20th of that month, and fined 10s., and also 9s. costs to cover the expense of fumigation of the infected carriage. Defendant pleaded that he was not aware of the railway by-law.

Condemned Houses.

Four houses have been certified to and pulled down under section 349 of the Municipal Corporations Act. Four others were placed under the ban of this section unless they were rendered fit for occupation within six months. Many others remain for consideration.

Nightsoil Service

The service is voluntary for parts of the city. The contractor does his work in a manner much more satisfactory than such contractors generally are credited with in other places.

The excreta are disposed of on a cultivated section about a mile outside Nelson. That the pails are of wood and unsealed when being removed has been alone permitted because of a hope, now fulfilled, that a main sewerage system would soon be installed. The circulation of wooden pails, perhaps contaminated by typhoid excreta, has been guarded against as far as practicable.

Rubbish Collection and Disposal.

A voluntary system of rubbish-collection has been established; but the very fact of making a charge per week defeats its good intention. Very often the very householders whose back yards should not be converted into private rubbish-tips tips are unable to make this payment. Such services which are entirely in the interests of the health of the community at large should undoubtedly be met by a general sanitary rate, if a satisfactory result is to be obtained. The final disposal of household refuse is at the rubbish-tip on a portion of a mud-flat owned by the Corporation. This on my first inspection was in a very disgusting condition—a festering heap, and eyesore, directly at the main entrance to the city. Regulations were made to minimise the evil, and though very tardily carried out, yet it is to be hoped that the knowledge that this refuse can be disposed of here without the perpetuation of a nuisance will encourage the City Council to attend to the matter so thoroughly that at least the inquisitive visitor will not make his first acquaintance with the sanitary developments of Nelson through a stinking and unsightly rubbish-tip.

Fish Poisoning.

Two cases of suspected poisoning from cured fish were reported. Investigation of some fish said to be of the same batch proved the absence of any poison therein. The remains of what fish had been actually partaken of by the sufferers were immediately after the occurrence destroyed by burning or burying, thus removing all available positive evidence.

Arsenical Poisoning.

To remove any apprehension of the presence of arsenic in rolled oats, because of its having been found in large quantities in one sample, I caused six samples to be taken by the Inspector of Weights and Measures. They were all certified as free from arsenic by Dr. McLaurin, Analyst to the Department.

Domestic Milk-supply.

Towards the end of the departmental year 1902–3 many verbal complaints reached me from time to time as to the quality of the domestic milk-supply in Nelson. Whilst quite convinced of the futility of taking action when such a low standard prevailed, as required by the amendment of 1883 to the Adulteration Prevention Act, yet a partial investigation was initiated by me, the results of which were significant. Six samples were obtained by the Inspector of Weights and Measures. The Analyst reported one to have been curdled in transit, one of good quality, and four to have been watered. I quote the following words from Dr. McLaurin's report on the analyses of the samples sent him. He says, "The standards in milk required by the Adulteration Prevention Act are not less than 9 per cent. of solids not fat, and not less than 2·5 per cent. of fat. Since the passing of this Act, however, the methods of analysing milk have been improved, with the result that by the use of modern methods about 0·5 per cent. more fat is extracted than by the older methods; consequently the standards must be altered to 8·5 per cent. of solids not fat, and 3 per cent. of fat. It is obvious that under the present law there is ample room for manipulation of the milk without bringing it within the reach of penalties under that statute.

I am obliged to the manager of the Bridgewater Butter-factory for the information that in April, 1903, of 156 composite samples of milk, the highest test obtained was 5·6 per cent., and the lowest 3·8 per cent.; the average of the 156 samples, 4·467 per cent. I understand that other samples throughout the colony will show much the same results; and, furthermore, I am informed by the Dairy Industry Department that the chemical analysis as used by the Analyst gives a higher reading by under 1 per cent. than the Babcock test. It seems therefore urgent that an alteration be made in the standards provided in this Act in order to allow of no opportunity for the selling for domestic purposes of separated, partially separated, skimmed, or watered milk as pure milk.

The following table shows some of the standards adopted for milk in various places:—

Place.	Fat.	Non-fatty.	Percentage by Weight of Solids.
	Per Cent.	Per Cent.	
Paris	4	9	13
Treasury Department, United States of America	3·50	9·50	13
New York	3	9	12
Inland Revenue Department, England	2·75	8·50	11·25
New Zealand Adulteration Prevention Act	2·50	9	11·50
Dairy Industry Act, New Zealand	3	..	..

RICHMOND AND MOTUEKA.

The Boroughs of Richmond (population 543) and Motueka (population 886) have been visited. Having the advantages of mainly rural conditions, they do not possess any sanitary systems, except a small and excellent high-pressure water-supply in the former. Nothing so far has arisen in these towns outside the sphere of the Sanitary Inspector.

Brightwater.

The manner in which scarlet fever is spread in rural districts by infected scholars is well exemplified by an epidemic here. A sister of a little boy who was ill with an unsuspected disease, but who afterwards is said to have "peeled," attended school. The girl who usually sat next her became ill, and was allowed by the parents to reattend school while desquamating, the parents adhering to a belief that she was suffering from German measles. A brother of the girl who sat near the last-mentioned is the next to be notified, and then a baby whose sisters attended the same school is another case. A thorough cleaning-down and renovating of the school was the outcome of this outbreak; it was needed.

Puponga.

In May, 1903, enteric fever attacked three adult males at this place. The general sanitary conditions were found to be just those amongst which one would expect such an epidemic.

Denniston.

In no place that I know of does the term "engineering difficulties" in regard to sewerage appear more appropriate than in Denniston. There is little or no soil above the rock, and at present slops, nightsoil, &c., are mainly got rid of by the "washing-down" of a frequent and copious rainfall. A sewer or main drain—greater part wooden—carries off the waste waters and excreta from one part of Denniston, but only to deliver it a little further down at the top of the zigzag pathway, which is the main approach to the town. On the occasion of my visit there had been one hot day, and my down journey across those sewage waterfalls was far from pleasant. Eight cases of diphtheria were notified during the year 1902–3. The houses generally are poor and small, the hotels very untidy, and the whole place gives one the Old-World idea of poverty, yet I am given to understand there is much money amongst the inhabitants.

It is hard to elucidate some means to improve the generally insanitary conditions. I have recommended the Buller County Council to have the drains improved, and the wooden part removed; to prohibit the entrance of nightsoil into those drains, as the manner of the present sewage-disposal by pouring it over the cliff is so objectionable; and to inaugurate a nightsoil service which though expensive and difficult in the carrying-out is quite necessary and unavoidable. The Council up to this say they have been handicapped by their inability to strike a special rate for Denniston, but I have little hope that the powers given by the last amendment to the Public Health Act will be availed of.

The filthy state and insufficiency of the school privies in this town were an abomination. I am glad to say improvements have been made, but regret that months should have been taken, during which the disgusting conditions continued to menace the scholars' health.

Millerton.

This place is not quite so bad as Denniston, but, unless something is done, it has all the potentialities for a similar record. Drainage here, also, is extremely difficult. The town is built mainly on bare rock, or with a few feet of soil above the rock. A nightsoil service is an essential. I have addressed the County Council in regard to this town. Their infrequent meetings, however, render it extremely difficult to get any movement in sanitary matters worth chronicling.

Granity.

This is a picture pleasant to the eye after Denniston and Millerton. Here—what is remarkably absent in the Westport district—are to be found houses neatly and brightly painted, with tidy surroundings. The question before the County Council of completing the retaining-walls of the creek is an important work, and will improve the town from an æsthetic as well as a public-health standpoint.

Westport.

Drainage.—From the want of success I have had in my endeavours to find out how the borough is sewered I can only conclude that the rumours are correct that the sewerage in part consists of wooden sewers, in other places of earthenware pipes with clay joints, and elsewhere of proper sewers. What the falls are I have not learnt; these data are, however, of great moment in enabling our Department to give sanction to an extension of the connecting of water-closets to the existing sewers.

Rubbish-tip and Nightsoil-depot.—A petition has been received requesting the aid of the Department in having this removed elsewhere. It seemed hardly necessary, seeing that no nuisance was being committed, and that the Borough Council had already gone to some expense in preparing the site. It may, however, be said truly that had our Department been made aware of the Council's intention to select the position consent would not have been given to a site so near the town whilst others were available.

Nightsoil Service.—A sealed-pan system has been introduced lately, but would appear to be drifting back to the uncovered type. As to whether this is due to absence of desire to work the sealed-pan system as it should be worked, or to a mistaken notion that the advent of water-closets will remove the difficulty, I will not express an opinion. With an outlay of from £10 to £12 per water-closet connection the day must still be a long way off when a sealed-pan nightsoil service efficiently carried out can be dispensed with in Westport.

Water-supply.—A splendid high-pressure water-supply of good quality has been obtained for and laid on to the borough.

Infectious Diseases.—Westport showed a remarkable immunity from infectious disease throughout the period. No notifications were received, and during the year 1902–3 I have no reason to suspect the concealment of any cases. Six houses were notified as being infected with scarlet fever during 1903–4.

Hokitika.

The suggestion of alterations of many insanitary attempts to drain houses in the borough where no actual nuisance was caused has been held over pending the ratepayers' opinion upon the proposed complete water and sewerage scheme. The whole scheme, which provides for a combined system of sewage draining into the harbour, has now been passed.

A number of houses are under ban of condemnation, and await personal inspection by the District Health Officer.

Ross and Kumara.

Much remains to be done by personal inspection and action by the Sanitary Inspector whom it is proposed to appoint for the district.

Marlborough Sub-district.

Blenheim can now boast of having, after years of contention, at last dealt with the nuisances of Colley's Hollow and Lock-up Creek in a thorough manner. Burgesses have passed the scheme for filling in these hollows up to natural surface-level, and for the connecting of existing house-drains to a main underground drain to be laid at both places. A series of necessary sanitary reforms for the borough have been quite overshadowed by those long-continued sources of much discussion and many reports. Such sanitary reforms include a system of rubbish collection and disposal, the introduction of a sealed-pan system instead of the present highly offensive nightsoil service, a general high-pressure water-supply, and a small drainage system. It seems surprising that in a town of this size there is so far really no live interest in a separate sewerage system for at least the central portion of the town.

During the year eleven insanitary houses were ordered to be repaired, and nineteen were condemned as unfit for habitation.

A detailed house-to-house inspection of Picton by Inspector Middleton contributes to the work done during the year. I have considered the question of a nightsoil service for the town, but have been unable to obtain sufficient evidence to warrant my recommending the provision of what, when the town increases in population, will undoubtedly be an early requirement.

I have also inspected most of the other places mentioned in the Inspector's list given below.

Sanitary Inspectors' Reports.

Nature of Inspection.	April.	May.	June.	July.	August.	September.	October.	November.	December.	January.	February.	March.	Totals other than Inspections.	Total Visits made.
From 1st April, 1902, to 31st March, 1903.														
Infectious diseases investigations ..	6	10	6	17	29	34	52	154	212	103	12	12	..	647
School-teachers notifications *re* infectious diseases	8	8	6	14	15	14	24	104	50	60	8	8	230	..
Requisitions issued for remedying sanitary defects	6	19	7	9	5	4	6	16	17	23	..	..	..	112
Requisitions complied with	..	15	7	9	4	3	4	9	12	19	..	..	83	..
House premises reinspected	11	16	5	..	..	..	..	..	..	..	9	..	..	41
Nuisances investigated and abated in addition to sanitary defects	4	17	7	3	2	2	..	..	..	..	..	..	..	35
Hotels inspected	4	..	..	..	3	10	6	1	..	4	..	8	..	36
Public schools inspected	5	..	..	1	3	11	4	2	..	..	..	..	..	26
Private schools inspected	2	..	..	..	..	..	4	..	..	..	..	..	..	2
Boardinghouses inspected	..	..	..	..	..	..	4	..	..	..	..	..	..	4
Fruit-shops inspected..	..	..	..	..	..	11	..	..	..	..	..	..	..	11
Meat shops inspected	..	..	..	..	..	..	4	..	..	2	..	..	..	6
Bakehouses inspected..	..	..	3	8	..	2	1	..	..	..	..	..	..	14
Fish-shops inspected	..	3	..	..	..	..	..	..	..	..	..	..	..	3
Oyster-saloons inspected	..	3	..	..	..	..	..	..	..	..	..	..	..	3
Milk-shops inspected	..	..	..	2	..	..	..	..	..	..	..	..	..	2
Dairies inspected	..	..	..	10	2	8	..	4	..	..	..	..	..	24
Cow-sheds inspected	2	..	..	14	2	9	..	4	..	..	..	..	..	31
Jam-factories inspected	..	..	..	1	..	..	..	..	..	..	..	..	..	1
Starch-factories inspected	..	1	..	..	..	..	..	..	..	..	..	..	..	1
Bacon-factories inspected	..	..	1	..	..	1	2	..	..	..	..	..	..	4
Fruit-preserving factories inspected ..	..	..	..	..	..	..	1	..	..	..	..	..	..	1
Butter-factories inspected	..	..	1	..	..	1	..	..	..	..	..	1	..	3
Houses disinfected	..	..	..	..	..	1	*	4	4	1	12†	12†	34	10
Houses referred to District Health Officer for condemnation	..	1	2	..	2	..	..	..	..	..	..	..	..	5
Outbuildings referred to District Health Officer	..	..	..	..	5	..	..	..	..	..	..	..	..	5
House premises inspected	..	..	..	..	..	..	..	..	..	..	..	..	..	655
Total number of visits ..	..	..	..	..	..	..	..	..	..	..	..	..	..	1,682

* Cab disinfected. † Disinfected by local authority.

SANITARY INSPECTOR'S REPORTS—*continued.*

Nature of Inspection.	April.	May.	June.	July.	August.	September.	October.	November.	December.	January.	February.	March.	Totals other than Inspections.	Total Visits made.
From 1st April, 1903, to 31st March, 1904.						M.	M.	M.	M.					
Infectious diseases investigated ..	26	18	13	17	32	16	2	6	4	..	12	10	156	..
House premises inspected	45	36	104	16	28	16	11	8	4	..	66	16	..	350
„ reinspected	13	8	..	7	6	..	..	..	..	..	..	..	..	34
Notifications to school-teachers ..	24	22	8	23	28	9	5	4	3	..	..	8	134	..
Hotels inspected	..	..	3	8	..	..	..	V 1	..	59	..	..	..	70
Townships inspected	2	2	3	..	..	..	..	..	..	11	..	..	18	..
Factories inspected—														
Butter	..	..	..	..	..	..	..	..	..	7	3	..	..	10
Bacon	..	..	..	..	1	..	..	..	..	..	..	..	..	1
Cheese	..	..	1	..	..	..	..	..	..	..	..	..	..	1
Creamery	..	1	..	..	..	..	..	..	..	..	..	..	..	1
Workshops	1	3	..	1	..	..	..	..	..	..	..	..	..	5
Fruit-shops	..	..	2	..	..	..	..	..	..	..	..	3	..	5
Meat-shops	*	..	2	..	..	..	..	..	..	8	..	..	..	10
Fish and oyster shops, &c.	..	§	1	..	..	2	2	..	..	..	..	6	..	11
Nuisances investigated	3	..	..	..	2	..	1	1	1	..	..	2	..	10
„ abated	2	..	..	..	2	..	1	1	1	..	..	2	9	..
Requisitions *re* sanitary defects ..	5	5	2	4	9	..	..	1	1	..	4	30	61	..
„ complied with	3	4	2	2	3	..	..	1	1	..	4	..	20	..
Schools inspected	..	..	1	4	1	..	..	V 1	..	2	..	..	..	9
Buildings referred to District Health Officer for condemnation	..	..	..	6	3	..	..	..	..	8	3	18	..	38
Total number of visits ..	..	..	..	..	..	..	..	..	..	..	..	..	..	555

* Oyster-beds.

Partly included in and also in addition to the above summary, the following townships and places have been inspected: Collingwood, Waitapu, Central Takaka, Motupipi, Riwaka, Motueka, Upper Moutere, Lower Moutere, Ngatimoti, Orinoco, Thorpe, Dovedale, Neudorf, Pigeon Valley, Stanley Brook, Cable Bay, Wakapuaka, Stoke, Richmond, Appleby, Hope, Brightwater, Spring Grove, Wakefield, Wai-iti, Foxhill, Belgrove, Motupiko, Denniston, Coalbrookdale, Burnett's Face, Millerton, Mine Creek.

I may reiterate, in conclusion, that with towns of small population so widely apart as in the three sub-districts of Nelson, Westland, and Marlborough, I am convinced that no very satisfactory result can be obtained by the District Health Officer unless a competent Inspector be associated with each sub-district.

JAS. P. FRENGLEY, M.D., D.P.H.,
District Health Officer.

BLENHEIM.

Department of Public Health, Blenheim, 26th June, 1904.

Dr. Mason, Chief Health Officer, Wellington.

THIS district, from a public-health point of view, continues to make excellent progress. The local authorities take a keen and intelligent interest in sanitary matters, and appear to be anxious to assist the Department and its officers in every possible manner. Great assistance has also been given by the local Press. Both newspapers take every opportunity of strongly supporting sanitary reforms. The consequence of this is that Blenheim of to-day is very different from the Blenheim which the Chief Health Officer so adversely reported on some three years ago. It is true that the great abominations, Collie's Hollow and Lock-up Creek, are not yet filled up, but the Council intend to commence the reclamation about March next. A vigorous crusade against old, insanitary houses was conducted by Dr. Frengley, with the result that many hovels and unsightly buildings no longer disfigure the town. Amongst others, the old Literary Institute has been replaced by a new and attractive building.

The district has been comparatively free from epidemics. In this relation it is interesting to note that whereas formerly diphtheria was a terrible scourge in Marlborough, only one case has been reported during the year. The small-pox scares were responsible for a revival of vaccination, but unfortunately the revival lasted only as long as the scare.

At the request of the Blenheim Borough Council, the Chief Health Officer decided to station a Sanitary Inspector in Blenheim. Such an appointment was very necessary, and will greatly advance the interests of public health in this district.

W. ANDERSON,
Acting District Health Officer.

WESTLAND SUB-DISTRICT.

Greymouth, 9th June, 1904.

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

I HAVE the honour to report on public-health matters in the Westland Sub-district during the year ending the 31st March, 1904.

Infectious Diseases.

There have been 180 cases of infectious diseases reported during the year, but I am afraid this does not nearly represent the actual incidence of disease, partly because many cases that are mild and of no danger in the householder's opinion are never seen by a doctor, and partly because many cases that have had medical attention have not been reported. As there has been no resident inspector in the sub-district, it has not been possible to take active steps with regard to such cases, nor has it been possible to carry out satisfactory disinfection in the large majority of notifications. Owing to the appointment in April of an efficient and energetic Sanitary Inspector, I hope to have a more satisfactory report in this respect next year.

The 180 cases are made up as follows: Scarlet fever, 166; tuberculosis, 9; diphtheria, 4; enteric, 1 (Reefton). They were distributed as follows: Scarlet fever—Blackball 48, Brunnerton 3, Greymouth 46, Kumara 25, Reefton 37, Ross 7, total 166; tuberculosis—Reefton 7, Greymouth 2, total 9; diphtheria—Reefton 2, Ross 1, Greymouth 1, total 4.

There was no suspicion of plague and no disease among rats.

The sanitary condition of the towns has been in the hands of locally appointed Inspectors of Nuisances, who have had little authority or support, but they have generally done their best to improve the state of affairs, and in minor matters have succeeded fairly well. In such things as defective plumbing, insufficient ventilation, and overcrowding of boardinghouses and hotels they have been at fault, but this has been unavoidable, owing to the want of special training.

Water-supply.

During the year very satisfactory water-supplies have been installed in Greymouth and Westport, and these towns are benefited accordingly.

Hokitika now has a scheme under consideration for the supply of pure water, and it is hoped that the work will be inaugurated during the present year.

Reefton and Ross have had good supplies for years.

Drainage.

The works at Greymouth and Reefton having been completed are now in a satisfactory condition. Hokitika is considering drainage in connection with the water-supply.

Abattoirs.

The old slaughterhouses are still in existence, but are kept in much better state, owing to the frequent inspections of the special officer, whose presence in the sub-district has safeguarded the public from the consumption of much diseased meat as well as of impure milk.

During the year visits were paid to the sub-district by Dr. Frengley, the then Health Officer at Nelson, but owing to pressure of work in other parts of the district his stay in the different centres was not as long as I could have wished. His advice and help was much appreciated.

Charles G. Morice, M.D.,
Acting District Health Officer.

CANTERBURY DISTRICT.

Dr. Mason, Chief Health Officer, Wellington.

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

Vital Statistics.

The only statistics available are those compiled by the Registrar-General which refer to Greater Christchurch and Woolston. The desirability of information concerning the health of other towns has been previously drawn attention to.

Birth-rate.

The birth-rate per 1,000 population for the colony in 1903 was 26·61; for Christchurch City, 26·59; for Christchurch City and Woolston, 26·76. The birth-rate for Christchurch is therefore well up to the average. It is, however, lower than Auckland (30·09) and Wellington (26·63), though higher than Dunedin (22·79).

Death-rate.

The death-rate per 1,000 population for the colony in 1902 was 10·50; Christchurch, 12·24; Christchurch and four suburbs, 12·14. The following table, taken from the Registrar-General's report in the *New Zealand Gazette* of the 25th February, 1904, gives the returns for Christchurch and Woolston for 1903:—

	Population—Census, March, 1901.	Estimated Mean Population, 1903.	Births registered in 1903.	Proportion of Births to the 1,000 of Population.	Deaths registered in 1903.							Proportion of Deaths to the 1,000 of Mean Population.
					Males.			Females.			Total Deaths.	
					Under 1 Year.	1 and under 5 Years.	5 Years and over.	Under 1 Year.	1 and under 5 Years.	5 Years and over.		
Christchurch...	57,041	47,681	1,268	26·59	74	18	183	59	18	191	543	11·29
Woolston ...		2,877	85	29·54	1	1	9	2	3	12	28	9·73
Totals ...	...	50,558	1,353	26·76	75	19	192	61	21	203	571	11·29

The death-rate for Christchurch and Woolston (11·29) is lower than the average death-rate for the four cities (11·75); it is lower than Auckland (12·23) and Dunedin (12·47), but it is higher than Wellington (10·93).

Zymotic Disease.

Of the 145 deaths in Order 1 of the Registrar-General's classification, in the four cities, Christchurch and Woolston are responsible for 40, distributed as follows: Measles, 17; scarlet fever, 12; influenza, 2; whooping-cough, 7; typhoid fever, 2. In the previous year Christchurch compared favourably with the other cities in this respect, in spite of the fact that there were no deaths from measles. The measles epidemic attacked this town considerably later than the other three cities. This year the 17 deaths from measles place Christchurch in an unfavourable light, but if these are deducted from the total the mortality from the other diseases is less than in any of the other cities.

Diarrhœal Disease.

Of the 78 deaths from these diseases in the four cities Christchurch was responsible for 10, which is an improvement on 1902, when there were 31 deaths under this heading.

The Registrar-General's statistics deal with the year ending the 31st December, 1903, whereas this report deals with the year ending the 31st March, 1904, which is a detail that might be advantageously altered. In the period, 1st January to 31st March, there were 14 deaths from diarrhœal disease in children under five years, and three deaths in persons over five years of age. The dry summer and hot weather were probably the chief contributing causes.

The occurrence of these deaths emphasized the fact that the Health Officer depends on very haphazard chances in being informed of such deaths. Last year the Registrars throughout the district were requested to fill up printed forms and send them to me when a death from infectious disease was notified. The carrying-out of this arrangement is not, I understand, obligatory on their part, but merely a matter of voluntary assistance rendered to the Health Department. With the exception of Christchurch, Timaru, and one or two other towns, I have not received any such returns. Diarrhœal disease not being a scheduled infectious disease, I was not notified of these deaths, and I only found out their occurrence from casual information. Even when I discovered that a certain number of deaths had occurred from this cause, it was impossible to obtain immediate information from the Registrar of the occurence of other deaths, as, owing to registration of deaths not being required under thirty-one days, the information from registration is practically useless for health purposes. The only way to get the information was to inspect the book of licenses for cemetery burial issued by the City Council, and this only accounts for a small proportion of all the burials in the city. This is certainly a roundabout way of obtaining information that is most necessary to the Health Department, and even this limited information can only be obtained in Christchurch, and not in other towns without special arrangements. I should suggest that all deaths should be registered within seven days, and that arrangements are made that a weekly return of all deaths may be sent to the District Health Officer by all Registrars. In the chief towns, at all events, the small objections that make the enforcement of registration within seven days a little difficult could be easily overcome.

Infantile Mortality.

This was 10·05 in Christchurch as compared with 12·15 in Auckland, 9·27 in Wellington, and 6·25 in Dunedin.

Phthisis.

Out of 174 deaths from phthisis in the four cities in 1903, 37 occurred in Christchurch—a less number than in any of the other towns. In 1902 the number was 57, which was higher than in any of the other cities.

INFECTIOUS DISEASE.

Table No. 1.

	Population.	Enteric Fever.	Scarlet Fever.	Diphtheria.	Tuberculosis.	Erysipelas.	Septicæmia.
Amuri County	1,142	...	8	...	...	...	...
Akaroa County	3,669	...	4	...	2	1	...
Ashburton County	11,342	...	2	..	...	...	...
Ashburton and suburbs	...	3	41	2	9	...	2
Rakaia	...	...	24	...	2	...	...
Ashley County	11,599	...	10	1	3	...	...
Amberley	...	1	1	...	2	...	...
Rangiora	...	...	26	1	1	...	...
Kaiapoi	...	...	27	...	2	2	...
Oxford	...	...	7	...	1	...	...
Ohoka	...	...	6	...	...	...	...
Cheviot County	1,120	...	...	...	...	...	...
Cheviot	...	...	4	...	...	...	...
Geraldine County	5,991	...	3	...	...	...	...
Geraldine	...	...	14	...	3	...	...
Temuka	...	4	23	1	...	...	...
Orari	...	...	3	...	...	...	...
Kaikoura County	1,765	...	...	...	2	...	...
Kaikoura	...	2	8	...	...	...	...
Levels County	5,496	...	...	...	...	...	...
Timaru	...	5	55	10	3	3	...
McKenzie County	1,642	...	..	...	...	...	...
Fairlie	...	...	...	...	2	2	...
Burke's Pass	...	...	6	...	...	...	...
Selwyn County	30,787	1	21	...	3	...	...
Christchurch	...	15	348	21	28	35	3
Woolston	...	...	18	...	1	2	...
Avon	...	...	...	1	3	...	...
Riccarton	...	3	11	1	2	...	...
Heathcote	...	1	4	3	1	...	...
Papanui	...	...	49	2	3	2	...
Addington	...	1	16	2	3	1	...
Dallington	...	...	...	...	1	...	...
Spreydon	...	3	7	...	...	...	...
Halswell	...	1	. .	...	1	1	...
Lincoln	...	...	4	...	...	...	...
Sumner	...	...	4	1	2	1	...
New Brighton	...	...	11	2	...	...	...
Lyttelton	...	5	79	24	8	3	...
Belfast	...	...	5	...	1	...	...
Southbridge	...	...	11	...	...	...	...
Leeston	...	1	...	...	...	...	...
Dunsandel	...	1	2	...	...	...	...
Burnham	...	1	...	...	...	...	...
Waimate County	5,653	...	1	...	...	...	...
Waimate and district	...	9	47	...	1	...	...
Waitaki County	9,086	..	5	...	...	...	...
Oamaru	...	2	38	...	...	...	...
Kurow	...	...	7	...	2	...	...
Herbert	...	1	3	...	1	1	...
Palmerston South	...	...	7	...	1	...	...
Totals for Christchurch and district	...	23	453	30	42	40	3
Grand totals	...	60	970	72	94	54	5

In this return every case notified in every house is recorded.

SCARLET FEVER.

Table No. 2.

——	Apl.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Totals.
Christchurch	62	38	32	46	49	47	9	6	2	4	3	8	306
Woolston	3	3	2	1	3	2	2	1	...	...	...	1	18
Avon	...	...	...	...	3	...	1	...	...	...	...	...	4
Addington	1	2	1	2	4	3	...	...	...	...	.	...	13
Papanui	3	1	...	2	14	20	1	1	...	...	...	...	42
Heathcote	...	1	...	...	...	1	...	...	...	...	...	...	2
Spreydon	2	2	...	1	...	...	...	...	...	1	...	...	6
Riccarton	2	2	1	1	3	1	1	...	...	...	...	...	11
New Brighton	2	2	2	3	...	1	...	...	...	...	...	...	10
Sumner	3	...	...	...	1	1	...	...	...	...	...	...	5
Lyttelton	12	18	9	20	4	3	1	...	1	...	...	...	68
Timaru	9	6	22	5	1	1	1	1	3	1	1	2	53
Oamaru	6	2	2	10	3	4	1	...	1	...	...	...	29
Temuka	...	2	...	...	...	...	3	11	2	1	...	...	19
Ashburton and suburbs ...	2	5	9	3	3	3	3	2	...	2	...	1	33
Waimate and suburbs ..	4	5	3	7	7	7	1	2	3	1	2	...	42
Rangiora	16	5	1	1	...	1	...	...	...	...	...	...	24
Kaiapoi	2	6	8	1	4	2	...	...	1	...	...	...	24
Akaroa County	...	1	...	...	...	...	...	...	...	...	2	...	3
Southbridge	3	...	...	...	...	1	...	1	1	...	...	...	6
Oxford	3	...	3	1	...	...	1	...	...	...	...	...	8
Kurow	...	...	...	...	2	...	3	...	2	...	...	...	7
Belfast	2	...	...	...	1	1	...	...	...	...	...	...	4
Geraldine	...	6	3	2	...	...	1	...	...	2	...	...	14
Rakaia	...	6	2	4	1	...	...	...	...	...	...	...	13
Totals for Christchurch and district	73	49	36	53	76	74	14	8	2	5	3	9	402
Gross totals	137	113	100	110	103	99	29	25	16	12	8	12	664

In this table only one case has been counted to one house when two or more have been notified on the same notification.

At the beginning of the year (April) scarlet fever was widespread throughout the district. In the Christchurch district, Bottle Lake Hospital was already in process of construction. The new building was opened for the reception of patients in July. The ward at the General Hospital which had been used for their reception was then closed.

The cases decreased in May and June, rose again in July and August. In September there was an outbreak of about twenty-five cases in the Papanui district, which was certainly caused by infected milk. The cause of the outbreak was carefully inquired into by me, in conjunction with Inspector McPherson, of the Stock Department, but the source of infection could not be found. From the incidence of cases I was inclined to believe that the cases were infected on the same day, and that there must have been some accidental source of infection in the distribution of the milk, and that the infection did not occur on the premises of the dairy. Since September there have only been occasional cases in Christchurch, and there has been no recurrence of a real epidemic.

Table No. 2 shows that after July there were only isolated cases throughout the district except in Christchurch, with one exception. This exception was Temuka, in which eleven cases occurred in November. As Temuka escaped the epidemic in 1902 I was afraid that an epidemic might now occur in the town. After the occurrence of the first few cases I sent Inspector Middleton down to investigate. He reported that apparently the infection was being spread from the school, as some of the children had been attending while still in the peeling stage. I went down myself on receiving his report, and as for various reasons the presence of one of the local practitioners would be of considerable assistance to me, I suggested to the Chairman of the School Committee that he should ask one of them to meet me. Accordingly Dr. Paterson met me at the school, and gave the Mayor, the Chairman of the School Committee, and myself useful information as to the cases that he had attended. As a result of the examination of the school-children a certain number were directed to be kept at home; the school was closed for a few days, and disinfected; and arrangements were made for the disinfection of any infected premises on the same lines as had been previously adopted in Christchurch. Only three more cases occurred during the year after this was done. The inference certainly is that the steps taken, which were only the ordinary routine steps that would be taken by any Health Department under similar circumstances, were effective: the sequel, however, was interesting from another point of view. The School Committee, as is the way with School Committees, had no funds at their disposal to meet such an extraordinary expenditure (about £2). The accounts were sent in to the South Canterbury Education Board—medical practitioner's fee of one guinea, and the expense of disinfecting the school, £1 or thereabouts. The medical practitioner's fee, although he had spent the best part of an afternoon in giving his assistance in investigating the cases, was apparently thought a most unjust demand, and was disallowed. The expenses for disinfecting the school were paid after various criticisms from members

concerning the high-handed action of the Health Department in putting the Board to the expense of having the school disinfected. The course of procedure that should have been adopted, apparently in some of the members' opinions, would have been for the Health Officer to have waited for a meeting of the Board and obtained their sanction before involving the Board in such an extraordinary expenditure.

Age and Sex Distribution.

0–5 Years		5–10 Years.		10–15 Years.		15–20 Years.		20–30 Years.		30–40 Years.		Over 40 Years.		Total.
						Christchurch and District, 1902.								
M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
14	24	27	43	32	32	22	17	31	31	9	10	1	3	296
						Christchurch, 1903.								
14	11	26	47	14	33	20	33	28	46	3	12	3	3	293

In 1903, 55 unknown.

In the last annual report I said that it would appear that a larger number of persons over the age of ten have been attacked in proportion to those under the age of ten than would have been expected, judging from the statistics of other countries. The statistics for 1902, though recording the ages of only 296 cases out of 433 cases, are now given, as the more complete statistics for 1903, in which 293 cases are recorded out of 348 cases, show very much the same age-distribution.

The statistics in Dr. Valintine's report for the Wellington District for 1902 show that the same has occurred there. The age-distribution as shown in the above tables is entirely different from that shown in the statistics of other countries, on which statistics are founded the text-book statements that the incidence rapidly increases and reaches its maximum in the fifth year of life; after that period it decreases steadily year by year. Even if it is granted that the adult population in New Zealand is less protected by previous attacks than in other countries, this is no explanation of the large proportion of cases occurring over the age of five years, and the comparatively very small proportion of cases that occur under the age of five years, if the text-book statements are assumed to be correct. From the figures shown in the above tables it would appear that there is little gained in sheltering a child from infection during the first few years of life, as it would appear that there is no real insusceptibility in the ages under thirty. Children under the age of five are certainly less exposed to infection if there are no other cases in the houses than are older persons, but not less in Christchurch than in other countries. When statistics of a larger number of cases are available it will be interesting to see if the same relative age-distribution continues to occur.

More females were attacked than males, as is usual. Of the 348 cases in Christchurch in the above tables, 205 were females and 126 males, the sex of 17 cases being unknown. Of the total number (851) in the district where the sex is recorded, 511 were females and 340 males.

Mortality.

The case-mortality is decidedly low. There were 12 deaths among the 366 cases reported in Christchurch, giving a mortality of 3·28 per cent. There were 17 deaths among the 453 cases reported in Christchurch and district, giving a mortality of 3·75 per cent.

TYPHOID FEVER.

Table No. 3.

——	Apl.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Totals.
Christchurch	1	2	...	...	1	...	...	...	3	3	3	2	15
Heathcote	...	...	...	1	...	...	...	...	...	...	...	...	1
Riccarton	...	...	...	...	...	...	...	...	...	1	2	...	3
Spreydon	...	...	...	...	...	...	...	...	...	...	3	...	3
Addington	...	1	..	...	...	...	...	...	...	...	...	...	1
Halswell	...	...	...	...	...	...	...	...	...	...	...	1	1
Lyttelton	...	...	...	1	...	...	...	1	1	...	2	...	5
Killinchy	...	1	...	...	...	...	...	...	...	...	...	...	1
Dunsandel	...	...	...	...	...	...	...	...	...	...	1	...	1
Burnham	...	...	...	...	...	...	...	...	...	1	...	..	1
Leeston	...	..	..	...	...	...	...	...	...	...	...	1	1
Waimate County	1	2	1	2	1	...	...	...	1	1	...	...	9
Oamaru	...	1	...	1	...	...	...	...	...	...	...	...	2
Ashburton and suburbs ...	...	...	...	...	1	...	...	...	...	1	...	1	3
Temuka	...	...	...	...	...	...	1	1	1	...	...	1	4
Timaru	...	...	1	...	...	...	...	...	...	2	2	...	5
Amberley	...	...	...	...	..	1	...	...	...	...	...	..	1
Herbert	...	...	...	...	...	...	...	...	1	...	...	...	1
Kaikoura	...	...	...	...	...	...	...	...	...	...	...	2	2
Totals for Christchurch and suburbs	1	3	..	1	1	...	...	...	3	4	8	2	23
Gross totals	2	7	2	5	3	1	1	2	7	9	13	8	60

There have been isolated cases in various parts of the district, but no outbreak resembling an epidemic. In cases where any inquiry has been made into the source of infection no definite source had been found. In fact, as far as results of inquiries go, each case appears to start *de novo*.

DIPHTHERIA.

Table No. 4.

——	Apl.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Totals.
Christchurch	1	1	3	4	...	2	3	3	1	...	1	2	21
Addington	...	...	1	...	1	...	...	...	...	...	...	...	2
Papanui	...	...	...	...	1	...	...	...	1	...	...	...	2
Riccarton	1	...	...	...	...	...	...	...	...	...	...	...	1
Heathcote	..	1	...	...	1	1	...	...	...	...	...	...	3
Avon	...	...	1	...	...	...	...	...	...	...	...	...	1
Sumner	...	...	...	1	...	...	...	...	...	...	...	...	1
New Brighton	...	...	...	...	...	2	...	...	...	...	...	...	2
Lyttelton	3	5	2	2	2	4	1	1	3	1	...	...	24
Ashburton	...	1	...	...	...	...	...	...	...	...	...	...	1
Timaru	1	2	2	2	...	...	...	1	1	...	...	1	10
Temuka	...	...	1	...	...	...	...	...	...	...	...	...	1
Rangiora	...	...	...	...	...	...	...	...	...	...	...	2	2
Leithfield	...	...	...	...	1	...	...	...	...	...	...	...	1
Totals for Christchurch and district	2	2	5	4	3	3	3	3	2	...	1	2	30
Gross totals	6	10	10	9	6	9	4	5	6	1	1	5	72

Lyttelton again heads the list with a total of 24, as against 46 of last year. There has been no epidemic, but, as the returns show, cases keep on cropping up pretty regularly.

MEASLES.

There was a widespread epidemic of measles throughout the district at the beginning of the year, which continued up till the middle of winter. The occurrence of 17 deaths in Christchurch shows that measles is here, as elsewhere, the most fatal of the infectious diseases.

TUBERCULOSIS.

Ninety-four notifications of phthisis were received during the year, which is a slight increase in the number (77) received in 1902. Of these, 45 occurred in Christchurch. There were 37 deaths.

The weapons for fighting this disease are still sadly wanting. Dr. Greenwood has established a private home near New Brighton. The District Nurse, Nurse Maude, has, by voluntary contributions and assistance from working-men's clubs, started a camp for the reception of incipient cases of phthisis in working-men: rations are provided by the Charitable Aid Board in the case of those without means. This seems to me to be essentially a step in the right direction, as there is no doubt there are many cases which, if taken in time, can be cured by the very simple and inexpensive treatment of camping out.

The benefits of such an undertaking are not limited to the few persons directly benefited. Tuberculosis in New Zealand could not, in any case, apart from financial and other considerations, be fought by the establishment of Government sanatoria; but, as has been constantly pointed out, must be fought by the intelligent co-operation of the public. The establishment, therefore, of a camp, however primitive and however small at the start, supported largely by working-men for working-men, indicates that public opinion is working in the right direction. The cases received here must necessarily be limited to the very early ones.

I understand that the Hospital Board proposes to establish open-air shelters at Bottle Lake as soon as funds are available. In these shelters curable cases at a later stage, which require more careful supervision and more attention, can be accommodated. Provision must also be made for the incurable consumptive, who is at present living under conditions which make him a source of danger to his own household and the general public.

When this accommodation is available, I think it would be advantageous if the notification of tuberculosis to the Health Department should be considered as necessary as the notification of scarlet fever or any other infectious disease.

SMALL-POX.

The occurrence of two cases of small-pox on the s.s. "Gracchus" in May, 1902, and the steps taken in connection with it, have been fully reported on already. The outbreak in Christchurch in January has also been already dealt with. In both cases it was exceedingly fortunate that accommodation had been already provided, which afforded facilities for dealing with the patients and contacts. The assistance given by the public in general and all local officials on both occasions greatly facilitated the work of the Department. After the serious business of the play comes the harlequinade. When the danger is over the letter-writer to the paper, generally anonymous, relieves the tension by (unconsciously) giving a comic turn to the business. The letter-writer who signs his name has at least the courage of his opinions, although they may differ from one's own.

The two outbreaks and their consequences, direct and indirect, took up the greater part of half the year. The adjustment of compensation for goods injured and destroyed is a difficult and worrying business. Small-pox being non-existent in the colony, one could afford to take no risks in the matter of disinfecting infected clothing, &c.; and in all cases where there was any risk of the disinfection by the means at our disposal being incomplete, the article was destroyed. This involved a considerable expenditure on the part of the Government, which is generally expected to follow in the steps of Aladdin and give new things for old. If a steam disinfector had been available a considerable amount of this expenditure would have been saved. I have since recommended the City Council to erect a steam disinfector: I pointed out the saving in expenditure that would have occurred if one had been already provided; but as the past expenditure had not tapped the pockets of the City Council, but had been paid by the Government, this argument had little influence. The Sanitary Committee were in favour of it for this and other reasons, but the City Council, from economical considerations, could not see their way to incur the expenditure. From their point of view they may have been in the right. But the only logical conclusion to come to, in my opinion, to prevent future unnecessary expenditure in compensation for articles that could be disinfected, is either for the Government to erect disinfectors and put them under the control of the Health Department, which is undesirable from many points of view, or to make the local body clearly responsible for the payment of compensation for goods which had to be destroyed owing to the lack of reasonable facilities for proper disinfection.

EPIDEMIC JAUNDICE.

The following notes of cases kindly supplied by Dr. Gosset, of Leeston, show that there may be some connection between epidemic jaundice—about the cause of which little seems known—and influenza.

The letters indicate the name of the family, and the numbers in parentheses the order in which the members were attacked:—

Date first visited.				
June 9.	A	(1).	Boy	Ill some time before seen. 12th: Bile in motions.
July 3.		(2).	Girl (14)	Home a week. Bilious attack and jaundice.
June 11.	B	(1).	Girl	Jaundiced 12th to 23rd.
July 7.		(2).	Boy	Jaundiced. Playmate of A.
July 8.	C	(1).	Boy	Playmate of A (1) and B (2). Jaundiced on 7th. Temperature subnormal, pulse 50, intense depression, no jaundice.
July 9.		(2).	Boy	Gastric influenza, no jaundice.
July 10.	D	(1).	Girl	Jaundiced.
July 15.	E	(1).	Boy	Fainting-fit, jaundiced on 18th July.
July 16.	F		Schoolmaster, male adult ..	Gastric influenza, depression, no jaundice.
July 24.	G	..	Male adults living in same hut, on D's section	Gastric influenza, no jaundice.
July 27.	H	..		Gastric influenza; 2nd August, jaundiced.
Aug. 6.	D	(2).	Boy	Jaundice varicella.
Aug. 15.	E	(2).	Girls	Jaundice 16th; temperature 99·6°.
Aug. 15.		(3).		Jaundice.
Aug. 22.		(4).		Jaundice 15th; stomach out of order.
Aug. 19.	I	(1).	Girls	Temperature normal, pulse 84; severe vomiting, intense depression, followed by jaundice.
		(2).		? Jaundice.
Sept. 4.	J		Girl	? Scarlet fever; 6th, suspected gastric influenza; 9th, jaundiced.
Sept. 6.	K		Girl	Same school as J. Jaundiced.

The families A, B, and E lived in adjoining houses; C and D were just opposite them on the other side of the road; G and H were living on D's section. With three exceptions the persons attacked were children. Other types of influenza were not prevalent at the time.

I brought these notes before a local meeting of the British Medical Association in Christchurch on the 15th October, 1903, and it was evident, from the experiences of some of the medical men present, that a similar epidemic was occurring in Christchurch at that time. In a large town the source of infection of each case could not be traced as was done in Leeston.

General Sanitation of the District.

The formation of Greater Christchurch promised great things for the future; but, unfortunately, the first large scheme proposed for the benefit of the district—namely, the water-supply, was an absolute failure. The scheme proposed was to obtain the water from artesian wells, and pump it into a reservoir on the Port Hills and direct into the mains. There were many details in the scheme which could be so twisted and turned as to raise all sorts of objections which would appeal to the ratepayer who was influenced by other people's opinions and who did not use his own judgment. The majority of the opponents who expressed the wish for a gravitation supply from the Waimakariri, and harped on the statement that private supplies would be interfered with more by sinking one large well than by the continual sinking of private wells, would probably have been opponents to any other kind of scheme that could have been devised.

Sydenham had, previous to amalgamation, arranged to have a water-supply of its own, but arrangements for this supply were held over until the poll had been taken on the general water-supply for Greater Christchurch. As this proposal was not carried, Sydenham is now going on with the scheme first pro-

posed, the main features of which are the sinking of a deep well, the pumping up into a water-tower, and distribution by ordinary reticulation. It is to be hoped that when this scheme is completed and the advantages are apparent to all who have the capacity for observation, a water-supply scheme for the whole of Christchurch will be again brought forward and successfully carried at the poll. Until then a general water-supply is out of the question, and equally so is any great advance in sanitary improvements in the city.

Woolston, and the Road Boards of Heathcote, Avon, Riccarton, and Spreydon.

At my suggestion, delegates from these local bodies met to consider the advisability of combining together to arrange for a joint system for the collection of nightsoil, and to appoint one sanitary inspector for the combined district. Complete unanimity prevailed on the question of removal of nightsoil until it was discovered that a pan rate could not be levied, but only a special rate on all parts of the district where defined by special order: under this system of rating the owner of a house and several acres of land, or even land without any house, within the defined district would have to pay in proportion to the value of his property, and not in proportion to the benefits received. In the hope that powers to levy a pan rate may be given to the Road Boards during the next session, this much-needed improvement has been practically dropped. With regard to the question of an inspector for the combined district, much difference of opinion prevailed; one Board considering that the inspector of such a district would not have nearly enough to do, while another Board considered that the district was far too large for one inspector, and he would have far too much to do. Such a complete difference of opinion arises naturally where any such question is discussed without adequate consideration having been previously given to the matter.

Sumner.

The drainage scheme has been completed, and within a short time all the houses in the drainage-area will be connected with the sewer.

It is proposed to consider the practicability of a similar scheme for Redcliffs. An extension of the water-supply has also been decided upon.

Lyttelton.

The most necessary improvement required in Lyttelton is a proper drainage scheme, and this necessity will have to be faced by the ratepayers sooner or later.

Temuka.

The drainage scheme has been completed, and appears to be working satisfactorily. Practically all the houses within the drainage-area are now connected.

Timaru.

Plans have been prepared by Messrs. Meason and Marchant for a complete scheme of drainage for the whole area which will in the near or distant future form the Borough of Timaru. It is proposed to take a poll for the purpose of raising about £20,000 for completing the scheme within the thickly populated portion of the town. The present house connections are made in a very slipshod way, and there are no proper by-laws regulating the plumbers' and drainlayers' work. Complete by-laws for these purposes have been laid before the Council, and will be adopted, when the new sewers are laid, for house connections.

Oamaru.

The needs of Oamaru in the matter of drainage are similar to, but not so urgent as, those of Timaru. A thorough inspection of the town was made by Inspector Middleton, and many serious defects were found in the matter of sanitary fitments. Recommendations were sent to the Council as to the best way of rendering these sanitary fittings safe as far as possible for the time being, as it was recognised that they could not be altered so as to comply with modern requirements without greater expense being incurred than was warranted under the circumstances. A system for the collection of household refuse was recommended, and by-laws were drawn up and laid before the Council for the purpose of specifying the details in house connections necessary, for carrying out the rubbish removal, and for other sanitary purposes.

Waimate.

After much consideration for many years, the question of providing a water-supply was taken to the poll for the first time, and, in spite of strong opposition from some parties in the town, the poll was carried. Unfortunately, the poll prescribed conditions under which the money could not be obtained at that time, so that another poll had to be taken. Fortunately, the second poll was also successful; but, unfortunately, while other towns do not appear to have much difficulty in obtaining money when the poll is once carried, Waimate has not yet managed to raise the money, so that the opponents of the water scheme are for practical purposes still victorious.

Akaroa.

Plans have been completed and accepted for a drainage scheme, and the money has been obtained, so that within a short time it may be expected that the drainage scheme will be complete. As there is already an abundant water-supply, there will be no difficulty in the complete water-carriage system. The sewers will discharge into two septic tanks at the two ends of the town. Owing to the little fall obtainable, it is difficult to get suitable sites for these tanks, and one has to be put practically in the middle of the town.

Country Districts.

During the last year all the smaller centres of population have been inspected, and, as a rule, found fairly satisfactory. A large number of nuisances have been remedied in these districts at the instance of the Department.

QUARANTINE.

The occurrence of small-pox on the "Gracchus" has already been alluded to. The ship "Emily Reed," from Tasmania, was shortly afterwards quarantined for a week owing to suspicions of infectious disease among the crew. During the time that the Quarantine Regulations were in force, large numbers of passengers were examined. A small percentage failed to report themselves, and no clue could be discovered to their whereabouts. The majority of passengers were somewhat casual at turning up on the right days and hours.

PROSECUTIONS.

Two persons were fined £1 and costs for failing to report under the Quarantine Regulations.

A hotelkeeper in Timaru was fined £4, and £3 10s. costs, for failing to notify the occurrence of scarlet fever in the house, according to the Act, and wilfully allowing a man suffering from scarlet fever to leave the hotel in a cab, and travel with the public. The man was traced in the Otago District, and successfully prosecuted by Dr. Ogston.

Two bakers at Ashburton were summoned for using alum in bread. Unfortunately, however, one of the solicitors employed in the defence brought forward a clause in the Act which, I believe, had not before been drawn attention to—namely, the limitation of time within which the complaint must be made. This clause makes difficult the carrying-out of a successful prosecution in places distant from the analyst.

MEDICAL EXAMINATIONS.

Five persons employed in railway construction were examined for injuries received, owing to accidents at their work, for the Public Works Department. Four persons were examined for the Postal Department, and one for the Customs Department.

HUGH E. FINCH, M.B., D.P.H.,
District Health Officer.

OTAGO AND SOUTHLAND DISTRICT.

Department of Public Health, Dunedin, 29th June, 1904.

The Chief Health Officer, Wellington.

I HAVE the honour to send you my annual report on the sanitary work accomplished in the Otago-Southland District, during the year ended the 31st March, 1904.

PLACES VISITED.

This year I made a round of inspection of a district which I had hitherto been enabled to visit only in part—namely, what is known as the Goldfields District of Otago, during the course of a drive round which I was able to make a fairly close inspection of some twenty townships in the fourteen days in which I was absent from Dunedin. I also, in shorter trips, visited several groups of places in various other parts of my district. With the exception of a few small remote places, I have now surveyed the whole of my district, and have gained a good working knowledge of my domain, and entered into communication with the local authorities comprised in it.

The townships and country districts to which I have devoted attention within the year are as follows (sixty-nine in all): Albert Town, Alexandra, Allandale, Arrowtown, Balclutha, Bendigo, Bluff, Beaumont, Burnside, Cambrian's, Clyde, Cromwell, Drybread, Dunback, Eweburn, Gabriel's Gully, Gap Road, Gibbston, Gore, Green Island, Hamilton's, Hill's Creek, Henley, Idaburn, Ida Valley, Invercargill, Kaitangata, Lawrence, Limehills, Luggage, Mandeville, Millburn, Milton, Morven, Mosgiel, Naseby, Ophir, Owaka, Palmerston, Patearoa, Pembroke, Port Chalmers, Pukerau, Quarantine Island, Queensbury, Queenstown, Ranfurly, Riversdale, Riverton, Roxburgh, Rough Ridge, St. Bathan's, St. Leonard's, Shag Point, Stirling, Tahitika, Tapanui, Tinker's, Warepa, Waikouaiti, Waipahi, Waipiata, Waipori, Waitati, Wedderburn, West Plains, West Taieri, Winton, and Wyndham. These places, which were visited by myself or my Inspector in Dunedin, received some 112 visits.

My Inspector (Cameron) at Invercargill has visited alone, or along with me, the following places (thirty-four in all, making ninety-six visits to them): Balfour, Bluff, Clifton, Colac, Croydon, Croydon Bush, Edendale, Gore, Kingston, Knapdale, Lowther, Lumsden, Makarewa, Mandeville, Mataura Island, Mataura, Mossburn, Nightcaps, Orepuki, Otautau, Riversdale, Riverton, Ryall Bush, Seaward Bush, Seaward Downs, Spar Bush, Thornbury, Waianiwa, Wallacetown, Wallacetown Junction, West Plains, Winton, and Wyndham. We have thus made visitations in 103 places of more or less importance, and have been at them some 208 times during the year, without counting numerous visitations of the towns and suburbs of Dunedin and Invercargill, and of these I have myself been to about sixty localities.

NATURE OF THE WORK ATTENDED TO DURING THE YEAR.

In order to demonstrate the amount and general character of the duties which occupied our time during the period under review, I have set the most important of these out as under. Many of them were in my two principal towns, and were seen to mostly by my Inspectors; but where they appeared of importance, requiring my personal inspection and instruction to local authorities to have them done, I in a goodly number of these accompanied the Inspectors in order to be able to speak or write

about them from actual knowledge. This was especially the case during my visits to the Goldfields towns, where I combined inspections with interviews with and letters to local authorities on the various defects I had observed.

And here I may state that, speaking generally, I found things progressing, and that the local authorities were becoming alive to a sense of the duties required of them by the Public Health Acts, and that where I pointed out sanitary defects requiring improvement, they willingly and readily attended to my requests.

Summary of Matters attended to during the Year.

Premises inspected, 292; drains, &c., examined, 354; refuse-tips examined, 49; preserving-works, slaughter-yards, cream and butter factories, laundries, boiling-down works, poultry-farms, fruit-marts, 78; old houses examined and condemned, or ordered repairs to, 29; nuisances by imbeciles, cancer cases, &c., 6; river and water-supply pollution, 3; articles examined microscopically or chemically, &c., 32; shops examined (butchers, bakers, grocers, fish, dairies), 132; hotels examined, 31; stables, piggeries, fowl-runs, &c., examined, 109; nightsoil complaints attended to, 16; seamen's quarters on ships examined (by request), 4; water-supplies to towns examined, 3; drainage schemes examined, 4; oyster-storage examined, 1; meat, &c., condemned, 16 (*circa*); premises and articles disinfected personally, 55; infectious (local) hospitals advised on, 4; examination of persons for Post Office, Public Works, and Telegraph Departments, 16; samples collected and sent to Professor Black for analysis, 22; letters written to Town Clerks, 138 (*circa*); letters written to County Council Clerks, 47 (*circa*); letters written to Harbour Boards, 12 (*circa*); letters written to Drainage Engineers, 19; and, in addition, various miscellaneous matters running into several hundreds.

Local Authorities and Sanitary Work.

Although many of my local authorities appear to have no conception of the duties the Public Health Act lays upon them in the way of general sanitary work, and indeed have made no provision for the carrying out of these, beyond having a vague idea that their clerks or engineers may, when their other duties leave them a little time, pay attention to these, and thus practically doing nothing, of which the inaction of the Vincent County Council in the Mount Pisa affair is a good instance, still, I have to record the fact that in some districts we have now men instructed and active in these duties. This has been the case in Southland for over a year, where a man, instructed by my Inspector, now undertakes the disinfection of premises after infectious diseases for the Borough of Invercargill, and also for most parts of Southland and Wallace Counties. In Queenstown and Lake County we have an Inspector to undertake these duties, and also in the Boroughs of Palmerston and Hawksbury, and the counties adjacent to them.

I generally take every opportunity, by conference or letter, to impress on such of the local authorities with whom I am in communication the necessity of having a man locally to carry out the work required of them in this matter, quoting frequently, *in extenso*, the sections of the Public Health Act for their information. In some places the benefit of this has been apparent, as, for instance, when measles attacked Kaitangata, the local authority there, advised and vigorously seconded by Dr. Fitzgerald, promptly brought the disease to an end; and in Queenstown, where the scarlet fever threatened that tourist resort, when I pointed out that the presence of the disease might seriously interfere with the annual influx of visitors, the local authority put their Inspector to work, under the supervision of Dr. Douglas, and promptly stamped out the disease, so that the town was clean in time for the tourist season. I might quote several other instances where places are awaking to their responsibilities, but must content myself with stating that Naseby and Arrowtown, much-neglected towns in the past, have now, thanks to the active co-operation of their respective mayors, been put into good sanitary condition. Much work has still to be done, but I have the satisfaction to know that the spirit of reformation is awaked, and that the good work is going on, slowly perhaps, but surely, throughout my district.

Among other instances of progress, I may mention that I have been consulted about the water-supply of towns in five cases, and regarding schemes of drainage in four cases, while a few of my towns are considering or undertaking the municipal collection of nightsoil at my request. I have also been requested to give advice in four instances where provision for infectious diseases has been contemplated, either as a temporary or a permanent matter.

I must not omit to mention that in the City of Dunedin Inspector Donaldson has actively co-operated with us in our work, and that, although the suburban local authorities might do more, they are beginning to carry on the work of sanitation in an increasingly diligent manner.

Infectious Diseases.

I have had quite a lively time with infectious disease this year. First an outbreak of small-pox, then one of chicken-pox closely following it, next a pretty smart epidemic of (true) measles, one of scarlet fever in one of our tourist resorts, and lastly, the occurrence of typhoid fever at a sheep-station.

Small-pox.

On the 13th of May, 1903, I was asked to see two men on board a tramp steamer which had come from Java, by way of India and Ceylon. They had been already seen by a doctor in Dunedin, who gave no diagnosis, and the captain was anxious to have them left behind for treatment here, as he was sailing for the northern ports in about an hour. When I saw them they were verging on delirium, complaining of pains, principally of the head. On one of them a rash resembling measles was observable, on the other no rash of any kind. In both the general condition suggested malarial or typhus fever, and the former was not improbable, as they had come from a malarious country, but the latter was

only a faint suspicion. Again, pneumonia appeared more probable, but an examination of the lungs excluded it practically. I made a minute examination of their whole bodies, and failed to determine the exact nature of the disease, arriving at the only conclusion possible, that the men were in the prodromatory stage of a still undeterminable disease.

The Hospital had refused to admit them, and I would willingly have sent them to Quarantine Island, but for the fact that some thirty patients from the Industrial Institution had been allowed to occupy the buildings there, by special authority from Wellington, while convalescing from scarlet fever, and I thought it would be unjustifiable to admit men in a feverish state, suffering from an indefinite disease, to a place where they might probably contract another disease.

Although there was nothing in the appearance of the men's illness to warrant me in detaining the ship in quarantine, I thought it well to telegraph to the Port Health Officer at Timaru, which was her next port of call, warning him that there was sickness on board, and that he had better visit the ship and treat the men as he thought advisable. I learned a few days afterwards that the men had been found when they arrived at Lyttelton to have developed small-pox, the eruption having come out after they left Dunedin.

A few days after the ship, the "Gracchus," had left the Port of Dunedin, Dr. Fulton requested me to see a lady who had arrived in Dunedin by that ship, and who had miscarried. The reason for his request was that she was showing a rash of which he had doubts. I saw her with him the same day, the 17th May, finding her back and breast sparsely covered with a vesicular rash. As the rash lacked the essential characters of small-pox—namely, it was not at all on the forehead and wrists, the vesicles were oval, had not a shotty feeling, they were not surrounded with a red zone, nor were they umbilicated, while the vesicles did not become pustules, merely drying up as vesicles, and scaling off, leaving not a trace of scarring and came out in successive crops, I did not consider that I had to do with small-pox, differing as it did from the book description of the disease, and from the hundreds of cases I had seen at Home and on the Continent. The lady herself accounted for the vesicular eruption by ascribing it to her recent confinement, as she assured me that such a rash was very common in the hot climate in which she had resided for some time, at the beginning of lactation. It is to be noted that the lady had a number of scars about her hands, which she stated were the sequelæ of cow-pock, contracted while milking a cow suffering from that disease, a considerable time ago. As the case was one with some suspicion attached to it. I placed the house and its occupants in quarantine, and, with the concurrence of the doctor who had been attending her during confinement, took the entire charge of her for the whole course of the illness. Meantime, all the occupants of the house were vaccinated.

None of the people of the house apparently were infected, and the time of incubation was on the point of expiring when I was summoned to see one of the daughters of the family who had been in attendance on the sick lady. I found her suffering from an erythematous rash about the breasts, which looked suspicious, and on making a minute exploration of the whole body I found on the front of the right wrist two papules which had the characteristic shotty feeling and the reddened areola which one associates with small-pox. One of these in a day or two became vesicular, later pustular, covered with a crust, finally, as it disappeared, leaving a pit of a pink colour. There could be no mistake that this one was a case of modified small-pox. The case was a striking evidence of the modifying character of vaccination, as, through the vaccination, which had been done about a fortnight before the pocks appeared, the attack was of the very slightest nature, and but for the prodromatory rash, which was accompanied with moderate headache, this patient felt perfectly well after the pocks came out, nor was there the slightest secondary fever, so often fatal in unvaccinated cases of small-pox.

Presuming that the first case was small-pox, the second, who was in close attendance on her, may have received the infection by handling her, and being constantly in the same room; but, as she had washed all the clothes of the first patient, it is equally possible that she received infection from these, from rubbing them on the affected wrist—a thing which has not infrequently been observed in washer-women—the clothes having been infected while the former was in contact, as she stated that she not only had met with the two sailors who were found to have the disease on their arrival at Lyttelton, but also with the man who went from Melbourne, from the ship, to Tasmania, carrying the disease to that colony, and who, it was found, had been sick, apparently with small-pox, for a fortnight before the ship arrived at Melbourne. The source of the second patient's infection is then possibly twofold—either direct from the first, whose disease must then have been actually small-pox, or else, indirectly, from handling infected clothes.

This terminated the event, so far as we were concerned, as none of the other inmates of the house, or any one who had been in contact with the household before the disease broke out, took infection; and, after a due interval, the house and all articles in it, as well as all the possessions of the first patient which come from the ship, were thoroughly disinfected.

Meantime, we were fully occupied not only with the disinfection of the ship's cargo which was collected in one of the wharf sheds, which we also disinfected, but, with the assistance of some dozen of our medical students, who willingly volunteered their services, under the direction of Dr. H. De Lautour, to whom was assigned that duty, all the wharf labourers and their families were vaccinated and kept under daily observation for two weeks. And not only these, but every one who had been on board the ship while in Dunedin Harbour on any pretext was traced and vaccinated as well as kept under observation. Happily this was not required, as no one in this district took the disease. I might mention that some six hundred persons were vaccinated during this period, either by myself or Dr. De Lautour, or by students under our direct supervision, and that the number of primary vaccinations was very much augmented, while a great number of secondary vaccinations took place.

During the course of my attendance on the above-mentioned cases, I heard incidentally that one of the passengers by the "Gracchus," who had left the ship at Melbourne, had been confined to bed for a fortnight before arrival there, and that the two sailors and my first patient, with others, had

been frequently in and out of his cabin. On making further inquiries about this man, he was found to have gone to Launceston, with the intention of later coming on to New Zealand; I therefore wired to the Chief Health Officer, warning him. Finally it was ascertained that he had recently arrived in Wellington, where he was stopped, and, I believe, put into quarantine for a time. The steamer by which he had arrived in New Zealand happening to be in Dunedin Harbour, I had the cabin cleared out, cleaned, and fresh-painted, and the bedding, &c., disinfected.

In this connection it may be useful, in the interest of the public health, to notice a discussion which has been going on in America regarding the nature of an epidemic, held by some to be a mild form of small-pox, by others not to be real variola, and which, from the description of it in recent literature, bears a close resemblance to the disease whichmy first patient suffered from. The notices of this doubtful disease appeared in some of the local American medical journals in September, 1900; but of these I had cognisance only about the end of May, 1903, as summarised in the Year-book of Medicine and Surgery for 1902. The fullest description of this disease, of which some thirteen hundred cases occurred in Minnesota and Tennessee, is as follows: "The disease bore a similarity to small-pox. There was in many cases the same onset, with headache, backache, and fever; and there was a papular eruption followed by a vesicular eruption; the contents of the vesicles later became opaque, but usually had none of the appearances of actual pus; the vesicles were flattened, but not umbilicated, and when filled with fluid were conoidal, not hemispheric. There was in no case an ulcerated surface left after the removal of the crust, and the vesicles always desiccated and did not separate, thin scales being formed instead of crusts. There was no secondary fever, no inflamed margin round the pustules. Nausea and vomiting were rare, as was itching; pitting was likewise rare."

In the end of January, this year, while the small-pox was in Christchurch, I saw, by request of a medical man here, two children suffering from a well-marked eruption of chicken-pox; and having a report sent me that a man near Orepuki had a rash of a doubtfal nature over his body, I went there, finding the case one of erythema from exposure to heat.

These outbreaks of small-pox, though somewhat costly, have had their advantage, as vaccination and revaccination have been encouraged, and the colony is now better protected than it was formerly. We performed, as I have mentioned, some six hundred vaccinations in the office in connection with the "Gracchus," and some two hundred and fifty in connection with the small-pox in Christchurch. And we have used or issued about 975 tubes of vaccine lymph in the former, and 1,590 in the latter. Assuming that two individuals were vaccinated from each tube—probably a good deal under the mark—over five thousand individuals are now protected who were not so, or only partially so.

Varicella (Chicken-pox).

The danger of small-pox spreading throughout the colony had just ceased, when I received information that chicken-pox was raging somewhat fiercely in the Counties of Bruce and Clutha. As it was possible that this might be small-pox, I went out to investigate. The cases were evidently chicken-pox. I visited a number of families, and traced the infection to a child who had come from Dunedin (she had no connection in any way with any of the small-pox patients, or with the "Gracchus" contacts) and had been attending school at Stirling. It appeared that she had been sent to the country convalescing from chicken-pox.

The disease was mild, with no fatalities, and soon ceased when the school was for a time closed and other precautions taken.

I found on inquiry that many children had been ill with chicken-pox in Dunedin and other parts of the country during the early months of the year; but, as that disease is not notifiable, I had received no notices of them.

Measles.

In the middle of December I was notified that a considerable number of cases of true measles existed in Kaitangata, and that some were also in the neighbouring town of Balclutha.

I visited these places and went to most of the houses in which they were, receiving the information from Dr. Fitzgerald, of Kaitangata, that a child had come from the Taieri, where she had been for a visit to friends. Ten days after her return home a rash appeared, but was not recognised by her parents, who are working-people, and she was sent to school. Eleven days after three children were seen by Dr. Fitzgerald, who diagnosed measles. These sat on benches immediately surrounding the first child, and, on the following day, two children were ill who occupied benches a little farther off; on the next day nine more sickened from benches next to these, till the whole school-room had received infection, and then the disease spread to the neighbouring class-room. The measles was thus seen to have radiated outwards from the first case. As the cases now numbered some fifty-nine children, I decided to have the school closed for a time, and that Sunday-schools should also be discontinued. Before being reopened the schools were disinfected, and the trouble ceased.

I found, on visiting the neighbouring town of Balclutha, that five households contained measles. These were in close proximity to one another, and the sick children had been playing together. Here a different source of infection was apparently disclosed. A man came from Oamaru, where I ascertained from my colleague, Dr. Finch, the measles had been prevalent for some time, to work at the railway-station. Soon after his child developed an eruption of measles, then it broke out in a neighbour's family eleven days afterwards, and in that of another four days later, and so on, till five households were smitten. Here, too, the disease rapidly subsided when proper precautions had been observed.

There were no deaths in either locality.

Scarlet Fever.

As may be seen by the table accompanying this report, scarlet fever, which has been raging throughout the district for the last two years, has been gradually tapering off, probably from the fact that it has attacked all capable of taking the disease. I have, however, been from time to time exhorting local authorities, school-teachers, &c., to do all they can to limit its spread.

In one instance where it broke out in Queenstown, a favourite health resort, at the beginning of the summer tourist season, I thought it well to make a special visit to that place, visiting every family, and conferring with the local authority and Dr. Douglas regarding the steps to be taken to limit the spread of the fever. In that I am glad to say we were successful, and the disease was stamped out before the tourist season actually opened.

Typhoid (Enteric) Fever.

This disease—which hitherto, of late years at any rate, has not bulked largely in my district—has this year come to the fore in rather a troublesome way. While throughout my whole district my returns showed 7 cases in 1901–2, with 4 in Dunedin; and in 1902–3, 16 cases, with 5 in Dunedin; last year (1903–4) produced 41 cases, with 15 in Dunedin.

This increase in Dunedin, I think, may to some extent at least be set down to the disturbance of old drains in connection with the new system being at present carried out. In the part of my district, however, outside Dunedin, the large increase is to be ascribed to an outbreak at Mount Pisa Station, near Cromwell, of which I append a detailed report. The cases traceable to this place were not confined to the station, or even its immediate neighbourhood; but the individuals infected with the fever, deserting the station, carried it with them to their homes, and were there laid up. Thus we had cases from that source at Arrowtown, Lowther, Waikouaiti, and Dunedin, all of which had to be followed up; and it may be here mentioned one case went as far as Wellington, though that was in May, and therefore did not come under the scope properly of this year's report.

History of the Outbreak of Enteric Fever at Mount Pisa Station.

This station is one of the oldest in the district of Central Otago, and is situated some nine miles from Cromwell, on the Pembroke Road. The buildings have been recently renewed, and are, as a whole, good, the men's quarters being built of cob, whitewashed inside, with earthern floors. The cook-house and mess-room (one building) is built of weatherboards with iron roof, lined with scrim and paper, so far as regards the cooking-chamber, the mess-room having only bare boards. The cooking-chamber is floored with concrete, the other division having an earthern floor. The station-house is some 100 to 150 yards distant from the men's quarters, and the wool-shed is at a distance of from 500 to 600 yards at least from these. Passing through the station buildings is a stream of apparently good water coming from rather a bare mountain-side, the mountain (Pisa) rising here to a height of 7,000 ft. This stream, an artificial water-race, furnishes the water-supply of the station, which lies in a region in summer frequently without water from rain for long periods of time. The water for cooking, &c., is drawn by hand at a point within 15 yards of the cook-house. Here, and above and below, the race, which in time has become a tortuous stream, has many willows growing partly on its banks, partly in its bed; and between the willows grass grows somewhat luxuriantly. At the opposite side of the race from the men's quarters there is a small paddock of perhaps about 2 acres used as a stack-yard, partly fenced, on which there is a good crop of long grass. There are good latrines of corrugated iron both for the men's quarters and for the shearing-shed, at a convenient distance from both. They are distant from the former some 30 yards at the nearest point. They have no receptacle, but are in the usual style, holes dug in the shingly soil. The latrines at the men's quarters are at the banks of the race, but at a point lower down the race than them; and as the soil is loose and shingly, and the flow of the race rapid, any soakage from them presents no source of danger, as the soil would form an efficient filter, and the soakage would be rapidly carried away from the station.

I have now caused the whole water-supply to the station to be taken in pipes from a point in the race several hundred yards up the hill, whence it is conveyed to the house and cook-house, the water thus being no longer taken from the race in the neighbourhood of the dwellings. The men's huts have been thoroughly disinfected, with their contents, by carbolic acid and perchloride of mercury. The cook-house and mess-room have been burnt down, and new ones will be erected farther from the race. The latrines have been shifted from their present position; the holes filled up with soil with plenty of grass-roots in it mixed with lime, to disinfect the contents of the holes, which are now buried by more than a foot of soil. The paddock, to which the men were known to have resorted instead of using the latrines, has been ploughed up and mixed with quicklime, to be left to weather during the winter; and branches cut from the willows and other trees about the station have been strewn over the paddock, to be burnt on its surface when they are dry enough. In fact, the whole place has had a thorough disinfection in every way I could think of; and I may mention that the manager has carried out my suggestions with the utmost zeal.

Origin of the Outbreak.—Among the men who came to the station for the shearing were two who arrived on the 29th of December from about Glenavy, in Canterbury. One of these, S., was off work on the 2nd January, complaining of sickness and diarrhœa. He worked again on the 4th and 5th, was off between that and the 10th, when he worked till the 12th, but complained of his back. He again stopped on the 13th, and finally left the station on the 15th. The other, H., also arrived on the 29th December, and worked till the 14th of January, though he had complained of illness for several days before. He was off work till the 18th, when he did a little, complaining the while of his head and of feeling generally ill, suffering from sickness and diarrhœa. He left the station on the 20th or 21st January. This man had been working at Waikakihi before coming to Mount Pisa. These men were evidently suffering from what the Germans call "typhus ambulatorius"—ambulatory typhoid.

The disease having now arrived at the station it spread among the men employed there. On the 3rd of February 2 men were taken ill; on the 5th, 2; on the 10th, 4; on the 11th, 12th, 13th, and 14th, 1 respectively; on the 17th, 2; on the 22nd, 2; and on the 17th March, 1: 17 in all. Most of these went to Cromwell Hospital for treatment; but, when the disease was evidently established at the station, many of the men left, going to their homes or to other places. Thus, two went home to Lowther, and taking ill were sent to the Invercargill Hospital; one went to his home in Dunedin, where he was treated; one went to Waikouaiti, and was subsequently brought to Dunedin Hospital; another went to the Arrow district, and was treated in the Arrowtown Hospital. Besides these who caught the infection at Mount Pisa, the man who went to his home at Waikouaiti gave the infection to his father there, who was taken ill on the 27th March.

With this the disease apparently terminated; but it may be well here to mention, though it properly comes within the scope of next year's report, that a new outbreak occurred in May, 1904, two men, wool-classers, being taken ill on the 11th, and one who had gone to a station in the same neighbourhood, practically, on the 15th May; while I learned that a man was ill in the Wellington Hospital, who had come from Mount Pisa.

Among the other precautions I took was to have some of the water analysed by Professor Black on two occasions; but, while containing some organic matter, it was quite pure enough for domestic use.

In acting in this matter, when I first heard that cases were dropping into Cromwell Hospital in some number, in addition to the pamphlets I sent to the station-manager, I wrote to the Chairman and also to the Clerk of the Vincent County Council; and, when I received a telegram from the Chief Health Officer that it would be unadvisable for me to leave Dunedin for the necessary four or five days, in view of the existence of small-pox in Christchurch and its possible spread to Dunedin, I sent Inspector Cameron to investigate and report on the place.

I think it will not be amiss to mention that in spite of several letters to the County Council pointing out their duties, and quoting the Public Health Act in support of my directions, not one of their officials did anything, not going near the station nor even asking the station-manager what he was doing in the way of precautionary measures and cleaning his place. They have utterly ignored their duty.

I may again add, to wind up the history of this epidemic, that when the renewed outbreak was reported to me in May, I paid a personal visit to the station, recommending a more thorough cleaning-up as above noted, which has now been done. So far, however, this has not been reported by the County Council, but by the manager of the station.

While writing the above I have read, in the *Australasian Medical Gazette*, an article by Dr. Halford, of Brisbane, treating of enteric fever, in which he makes the following statement: "In investigating an outbreak at a shearers' camp, I was forced to the conclusion that the food-supplies were infected by flies coming from a long trench used as an earth-closet by the men. The cases occurred among men who occupied a certain hut, which was also in one part of it the mess dining-room. This building was closest of all to the open cesspit, and in the direction of the prevailing winds." Again, in speaking of another outbreak which occurred at the Boggo Road Gaol, he remarks, "I came to the conclusion that the virus came from the closet-pans and urinals, which were situated to the windward of the part of the gaol which supplied the cases; that flies carried it into the cells, or infected portions of food secreted by the prisoners, or picked up by them after being discarded as waste; that the urinals and closets received infected dejecta from prisoners convalescent from the disease." In the Mount Pisa case there is good reason to conclude that infection was conveyed by flies, which were very numerous at the time, infesting the cook-house from the paddock, which it has been shown was used by the men in preference to the more distant latrines.

Besides the above-noted cases at Mount Pisa, there was a small outbreak of typhoid fever, with one death, at Pembroke, Wanaka. This place I visited, and spent two days examining the township and in visiting the houses and their surroundings in which fever had occurred. I think I am right in concluding that the cases are traceable to a shallow well in close proximity to the house in which a case had occurred about eighteen months before. I found reason to conclude that the dejecta from the patient had been thrown on the ground surrounding the well, to which it had percolated or been conveyed by the underground water. The young woman, who died from hæmorrhage of the bowels, had been in the way of drinking the water from this well. I may mention that the water of most of the township is derived from deep or shallow water which issues from a shingly terrace, apparently coming from a distant river, and that, except where it is collected in shallow wells and liable to surface contamination by soakage, it is safe enough for domestic use. I found the reports of the cases were exaggerated, and that, with the exception of two patients, most of them were doubtful.

Diphtheria.

Of this disease we have fortunately had very little. Ten cases in all were reported. Many of these were of a doubtful type, some of them indeed simply follicular stomatitis, which hardly laid the patients up. No common factor was found to account for them beyond dirty drains and suchlike, and not one of them was traceable to another. They were all visited, and the necessary steps taken to insure isolation and disinfection of premises, &c.

Blood-poisoning.

Four cases of this were returned. They were all due to some definite cause, and had no special significance.

Tuberculosis.

The notification of this disease is still unsatisfactorily performed, since, though 116 deaths were registered in two registration districts, we only received notification of seventy-nine cases. To those, especially where the patient died, we have given attention as far as possible.

Infantile Diarrhœa.

During the first three months of the year there were rather a large number of cases of diarrhœa, principally among children, with a pretty heavy mortality. The chief centre for these was Invercargill, and I think there was some reason to associate this with the condition of the ditches, which, in the suburbs chiefly, but also in the town itself, serve to receive the slop-drainage of its houses. The condition, too, of the Puni Creek, now serving as a sewer, probably added to the causes of this disease. The hot and dry weather had also something to do with it, as these late summer months were unusually dry in the district, tending to low subsoil water and dry ditches.

I took advantage of this to urge on the Invercargill Council the desirability of attending to their drainage and to the Puni Creek.

The deaths from the principal zymotic diseases during the year from the two chief centres, Dunedin and Invercargill Registration Districts, from which alone I have been able to collect information, are :—

	Dunedin.	Invercargill.	Total.
Scarlet fever	11	3	14
Enteric fever	2	1	3
Measles	2	..	2
Diphtheria	2	..	2
Blood-poisoning	1	..	1
Tuberculosis	101	15	116
Diarrhœa (under five years)	9	24	33

In addition, there were 2 deaths from enteric fever at Cromwell, from the Mount Pisa Station, making 3 deaths from that epidemic during the year.

These deaths were registered on the undernoted months, and the table may be useful as showing to some extent the influence of the seasons on the mortality of various diseases in this district.

Diseases.	April.	May.	June.	July.	Aug.	Sept	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Total.
Scarlet fever	2	3	2	1	3	2	...	1	...	...	...	...	14
Enteric fever	...	1	...	...	...	...	...	...	...	...	...	2	3
Measles	1	...	1	...	...	...	...	...	...	...	...	...	2
Diphtheria	...	...	...	...	1	...	1	...	...	...	...	...	2
Blood-poisoning	...	...	...	...	...	...	...	...	...	...	1	...	1
Tuberculosis	13	11	3	6	9	16	17	9	7	10	6	9	116
Diarrhœa (infantile)	2	2	...	...	1	2	...	...	...	8	11	7	33

Return showing Number of Notified Cases of Infectious Diseases from 1st April, 1903, to 31st March, 1904.

Disease.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Total.
DUNEDIN.													
Scarlet fever	39	28	12	5	15	6	4	3	6	2	..	..	120
Measles	2	..	..	..	..	..	..	1	..	2	..	..	5
Tuberculosis	1	2	..	1	..	1	2	1	4	2	..	2	16
Enteric fever	..	..	..	..	1	..	1	6	2	..	2	3	15
Diphtheria	..	..	..	3	..	..	..	..	..	..	..	..	3
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
SOUTH DUNEDIN.													
Scarlet fever	3	6	..	5	1	..	3	1	..	1	..	..	20
Measles	..	..	..	..	..	..	..	1	..	..	..	..	1
Tuberculosis	..	..	..	..	..	..	..	..	..	..	1	..	1
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	1	..	..	1
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
CAVERSHAM.													
Scarlet fever	3	1	2	6	3	..	..	1	..	..	1	..	17
Measles	..	..	..	..	..	..	..	..	..	..	..	..	..
Tuberculosis	..	..	..	1	..	2	..	..	..	..	..	3	..
Enteric fever	..	..	..	..	..	..	1	..	..	..	..	1	..
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
MORNINGTON.													
Scarlet fever	6	2	3	1	..	1	..	..	..	..	..	..	13
Measles	..	..	..	..	..	..	..	..	..	..	..	..	..
Tuberculosis	..	..	..	..	..	..	..	..	..	..	1	..	1
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
ROSLYN.													
Scarlet fever	6	7	5	1	2	..	2	2	1	..	..	..	26
Measles	..	..	..	..	..	..	..	..	..	..	..	..	..
Tuberculosis	..	..	..	..	..	..	..	..	..	..	..	1	1
Enteric fever	..	..	..	..	..	..	1	..	1	..	..	..	2
Diphtheria	..	..	2	..	..	..	..	..	..	..	..	1	3
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
ST. KILDA.													
Scarlet fever	2	5	3	1	..	..	1	..	..	..	..	..	12
Measles	..	..	..	..	..	..	..	..	1	..	..	..	1
Tuberculosis	..	..	..	..	..	..	..	..	..	1	..	..	1
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	1	..	..	..	..	..	1
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
NORTH-EAST VALLEY.													
Scarlet fever	4	5	..	3	1	..	1	1	..	..	..	..	15
Measles	1	..	..	..	..	..	..	..	..	1	..	..	2
Tuberculosis	..	..	..	..	..	..	1	..	1	..	..	..	2
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
MAORI HILL.													
Scarlet fever	2	4	1	..	..	1	1	..	..	..	..	..	9
Measles	..	..	..	..	..	..	..	..	..	..	..	..	..
Tuberculosis	1	1	..	..	..	..	..	..	..	..	..	..	2
Enteric fever	..	..	..	..	..	..	1	..	..	..	..	..	1
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
WEST HARBOUR.													
Scarlet fever	2	1	..	..	..	3	..	1	..	..	..	..	7
Measles	..	1	1	..	..	..	1	..	..	..	..	..	3
Tuberculosis	..	..	..	..	..	..	..	..	..	..	..	..	..
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
PORT CHALMERS.													
Scarlet fever	9	12	3	..	3	..	2	..	..	1	..	..	30
Measles	..	..	..	..	..	..	..	..	..	..	..	..	..
Tuberculosis	..	..	..	..	..	..	..	1	..	..	2	..	3
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	1	..	..	..	..	..	..	..	..	1
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
TAIERI COUNTY.													
Scarlet fever	1	4	5	2	..	2	..	..	..	..	1	..	15
Measles	..	..	..	..	..	..	..	..	..	..	..	..	..
Tuberculosis	..	..	..	..	..	..	..	..	..	..	..	..	..
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	1	..	..	..	..	..	..	..	..	..	..	..	1
INVERCARGILL.													
Scarlet fever	9	25	12	9	9	13	5	6	18	4	3	11	124
Measles	..	..	..	..	..	..	..	..	..	..	..	..	..
Tuberculosis	..	..	..	2	..	5	..	..	2	..	..	..	9
Enteric fever	..	..	..	..	..	..	..	..	1	..	..	..	1
Diphtheria	..	..	..	..	1	..	..	..	2	..	..	..	3
Blood-poisoning	..	..	..	..	..	..	..	1	..	..	..	..	1
TUAPEKA COUNTY.													
Scarlet fever	1	8	5	4	6	9	5	2	..	..	1	2	43
Measles	1	..	..	..	..	..	..	..	..	..	..	..	1
Tuberculosis	..	..	3	3	..	..	1	3	1	2	..	..	13
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
BRUCE COUNTY.													
Scarlet fever	3	2	4	2	2	..	..	..	..	..	..	..	13
Measles	..	..	..	..	..	..	..	..	54	..	..	..	54
Tuberculosis	..	..	..	..	..	..	..	..	..	..	..	..	..
Enteric fever	2	..	..	..	..	..	..	..	..	1	..	..	3
Diphtheria	..	..	..	..	..	..	..	..	..	..	1	..	1
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
LAKE COUNTY.													
Scarlet fever	2	..	1	3	2	1	..	..	..	..	..	..	9
Measles	..	..	..	..	..	..	..	..	..	..	..	..	..
Tuberculosis	..	..	..	..	..	..	..	..	..	1	..	..	1
Enteric fever	..	..	..	..	..	..	..	..	1	1	..	1	3
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
MANIOTOTO COUNTY.													
Scarlet fever	..	2	1	..	..	..	..	..	..	..	..	..	3
Measles	..	..	..	..	..	..	..	..	..	..	..	..	..
Tuberculosis	4	..	..	1	1	..	2	..	..	..	..	..	8
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	1	1
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
WALLACE COUNTY.													
Scarlet fever	..	..	..	1	2	..	..	..	..	..	..	..	3
Measles	..	..	..	..	..	..	..	..	..	..	..	..	..
Tuberculosis	..	..	..	..	..	..	..	..	..	..	..	..	..
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
WAIKOUAITI COUNTY.													
Scarlet fever	..	..	..	..	..	..	..	..	..	..	..	1	1
Measles	..	..	..	..	..	..	..	..	..	..	..	..	..
Tuberculosis	..	..	..	..	..	..	..	..	..	..	..	..	..
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	1	1
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
VINCENT COUNTY.													
Scarlet fever	..	..	3	1	..	..	..	..	..	..	..	..	4
Measles	..	..	..	..	..	..	..	..	..	..	..	..	..
Tuberculosis	..	..	..	..	..	..	..	..	..	..	..	..	..
Enteric fever	..	..	..	..	..	..	..	..	..	..	11	1	12
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
WAIHEMO COUNTY.													
Scarlet fever	..	..	3	2	..	..	..	1	2	1	..	..	9
Measles	..	..	..	..	..	9	..	..	..	..	..	..	9
Tuberculosis	..	..	1	..	..	..	..	..	..	1	..	..	2
Enteric fever	..	..	..	..	..	..	..	..	..	..	1	..	1
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
CLUTHA COUNTY.													
Scarlet fever	3	3	2	..	..	3	4	1	1	..	..	..	17
Measles	..	..	..	..	..	..	..	1	21	8	..	..	30
Tuberculosis	..	1	..	..	..	..	..	..	..	1	..	..	2
Enteric fever	..	1	..	..	..	..	..	..	..	..	..	..	1
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..

Table showing the Death-rates in Dunedin Registration District during the last Three Years, per Month and per Annum.

[As it is impossible to obtain accurate figures either regarding the population of the area for these years or of the actual increase per annum, I am unable to work out the percentages.]

	1901–2	1902–3	1903–4
April	50	62	65
May	40	58	60
June	52	51	65
July	80	62	75
August	80	60	63
September	85	68	77
October	72	61	96
November	78	67	55
December	48	57	54
January	60	85	68
February	45	50	63
March	55	70	59
Total	755	751	800

There is an apparent increase in the mortality of the year 1903–4, but when the probable increase of population is taken into account—which, if one may judge by the number of new houses built in and about Dunedin lately, must be considerable—the percentages will work out about the same, and show little or no increased death-rate.

The following figures may be of interest as showing the mortality in the Dunedin Registration District—(1) during the last quarter of the century, taken in periods of five years, and (2) the first two years of the present century, contrasting them with the mortality of the year 1903 :—

Five years from 1876 to 1880 (average)	596
,, 1881 ,, 1885 ,,	631
,, 1886 ,, 1890 ,,	607
,, 1891 ,, 1895 ,,	604
,, 1896 ,, 1900 ,,	661
Average for the twenty-five years, 1876 to 1900	639.4
Two years from 1901 to 1902 (average)	724
One year, 1903	815

It would therefore appear that we had the highest mortality in the past year, from January to December, that we have had for more than a quarter of a century, and this is not to be accounted for by any unusual growth of population in the registration district, but is an actual increase.

Some years ago I did some calculations of this nature for my own amusement, which were never published ; but speaking from memory, they showed a gradually increasing average mortality in the registration district which was out of proportion to the natural increase of its population.

As this subject is one which must be of interest to the inhabitants of this part of the colony, I shall try to work it out for my next annual report, and to find out some reason for it.

Disposal of Drainage Matters.

During the year several places have made progress in this respect. In North Invercargill, a system of sewers is taking the place of the old and dirty open ditches throughout the whole suburb. In Gore, the long-talked-of sewerage system is now rapidly going on to completion. In Winton, a considerable part of the town is served with drains. In Wyndham, the drains, which were at various parts open to the side of the streets, are now shut off from the open air by efficient street-gullies where the street-gutters enter them. In Riverton, the drain down the main street, now completed, is working well, and the septic installation at the hospital is a great success. In Otautau, the drain completed during the year has proved a great success, being now in full working-order. In Arrowtown, the main drain which runs along the main street, undertaken during the year, has improved the state of the town.

Nightsoil Collection.

In some places this is now, or is soon likely to be, undertaken by the municipalities—a matter I am not losing an opportunity of urging ; and in several towns I have surveyed and approved of places on which nightsoil and general refuse may be deposited. Among these are Kaitangata, Arrowtown, Riverton, and North-east Valley ; while Winton and some others are considering the question. I should also not omit to mention that Dunedin City and its suburbs, under the Drainage Board, is making satisfactory progress with its scheme of drainage.

I have several times impressed on Invercargill and its suburbs the necessity of undertaking a general system of drainage, that at present existing being rather chaotic ; the state of the Puni Creek, which runs through part of the town, receiving drainage from it and from two of the suburban boroughs, being, especially during summer, disgraceful and a menace to health. This has been under consideration for a number of years, but the authorities appear loth to undertake its improvement.

Factories, Workshops, etc.

I have been keeping an eye open for defects in the sanitary provisions in these; and in some workshops, acting generally along with the local Inspector of Factories, I have caused improvements to be carried out.

During my visits to country places I have had occasion to find fault with the closets in hotels for being either defective or dirtily kept, but on mentioning the matter to the lessees the improvements I suggested were willingly carried out. One defect in these privies was the want of separate locked accommodation for their better-class customers and for lady visitors. Perhaps the attention of Licensing Committees might be called to this, as it seems highly undesirable that one common privy should be used by men and women alike.

The condition of the seamen's quarters in ships has again been receiving attention from time to time; but we find that the shipping companies are doing their best to keep them clean, while the men themselves seem to be careless in that respect.

Hospitals for Infectious Diseases.

This has been receiving attention both before and after their care was transferred to Hospital Boards, but little progress has, I am sorry to say, been made. In Dunedin, some steps are, I think, being taken, but the Hospital Board keep me in the dark as to what they are doing. In Invercargill, I examined a site for a hospital at Wallacetown, and approved of it; but have heard of no further proceedings being taken.

Meantime, Dunedin, Invercargill, Lawrence, and Riverton have temporary accommodation for a limited number of cases, which would serve for such diseases as scarlet or typhoid fevers, but not for the more dangerous diseases as small-pox and plague.

Proceedings under the Adulterations Acts.

No proceedings under these Acts have been undertaken in my district, as, although in several cases samples have been taken and examined, the results of the examinations have not been definite enough to warrant prosecutions. Among the articles examined were jams, cocoa, whisky, bread, pepper, cream of tartar, and bed-flock.

Proceedings were taken against several parties, as follows: In Dunedin, against a hotelkeeper for carrying decomposing articles of food, &c., in a cart used to bring milk from his farm: found guilty and condemned with a nominal penalty and expenses. In Invercargill, against a salesman for exposing for sale fish in a decomposing state: pleaded guilty, ordered to pay expenses of prosecution and for the destruction of the fish. In Invercargill, for using water from a dirty and polluted surface well in connection with his business as a butcher: compromised on the understanding that he would provide a better water-supply and shut up the well. In Alexandra South, against a man for polluting the water-race, of which he was part proprietor, supplying the town: condemned in a small penalty with all expenses.

In many other cases I contented myself with causing articles such as rotten fruit, meat, or diseased pigs and suchlike, to be destroyed at the owners' charges, with threats that more stringent proceedings would be taken another time if the parties were found transgressing again.

Food-supplies.

During the year, in Dunedin, and while visiting various places in my district, I have been paying special attention to food-supplies. The butchers' and bakers' shops and the auction-marts have been frequently inspected, faults pointed out, and improvements made in many instances. In several butchers' shops, for instance, sleeping-quarters have been discovered in direct communication with places in which meat was stored or made up into small goods. These have been ordered to be disused. In some bakers' shops, the room in which the bread was baked and the flour stored was found to be dirtily kept and badly drained, sometimes with privies close to the bakehouse. In one auction-room, fowls were being kept, either continuously or for several days together, in a not too cleanly condition; and a horse was stabled during the day in a partitioned-off space in close proximity to articles of provisions.

As a rule, the butchers' and bakers' shops in the country were found to be clean and well kept, and in the towns a great improvement is already noticeable. Over fish shops, too, a strict supervision has been exercised, and these are now kept much cleaner than formerly. In many of these last, however, it is impossible to have things so clean as I should like to see them, since in many of the shops let for selling fish the premises are old, owing to the objection of house-proprietors to let the good shops for such a purpose. In the matter of fish and butchers' shops, it would be a very desirable thing to insist on them being specially constructed for the purpose, by having them constructed, as to the walls, of glass or tiles, with the floors of concrete, so that the whole interior could be thoroughly washed and kept perfectly clean. In these cases, too, there should be cool-chambers, in which ice should be stored, so that meat, fish, &c., might be kept cool during the time they were in the shops.

In grocers' shops the storage of hams, bacon, &c., requires looking after, as the places these are kept in—cellars or dusty roof-spaces—leave much room for improvement.

During the past year I have seen, generally along with City Inspector Donaldson, thirty-nine rolls of bacon, six hams, two carcases of pigs, lots of fruit in store-rooms four times, and a large shipment of bananas. These were quietly condemned and sent to the gasworks to be burnt, with the concurrence of the proprietors of the sale-rooms.

In one case, where some demur to my interference was made, I allowed the fruit (oranges in great part decomposing) to be distributed to the buyers, afterwards following them to their destination, and causing the buyers to destroy them at their own expense, the auctioneers having furnished me with a list of the buyers. By this method I gave the buyers of the decomposing fruit a lesson, which was required, not to deal in bad fruit.

Inspector Cameron also made a raid on a sale-room in Invercargill, seized and caused to be destroyed, after consulting me, a lot of bad fish, prosecuting the salesman, who pleaded guilty, paying costs.

The manager of the Industrial School, Caversham, brought me several pieces of bread which had been supplied him under contract. I examined it, finding it of poor quality and badly baked; and, I believe, he has now terminated the contract.

The Collector of Customs, Dunedin, brought me a sample of cream of tartar, which he had seized on account of the price being suspiciously low. I forwarded it to Professor Black for analysis, who pronounced it of inferior quality and unfit to be used for baking purposes.

In consequence of the retirement of Inspector Gunn, Mr. Gladstone, who was clerk in the office, and whom I had been training in the practical work of the Department, and occasionally employing as an extra inspector when work was abundant, was put in his place. He has now been about six weeks at the new duty, and has shown zeal and ability in the conduct of his duties. To replace Mr. Gladstone as clerk in the office Mr. Birch was appointed, who is also proving himself an efficient member of the staff. Inspector Cameron is carrying on his work vigorously, as usual.

In concluding, I think I may claim that our Department is doing a great amount of useful work which, as shown by the increasingly numerous applications by the public generally, is becoming more and more recognised by the people at large.

I may also state that the local authorities are showing their appreciation of the assistance our Department are able to give them in carrying out their duties, and that the work which devolves on them is being better done than in the past, when they had practically no central Department to fall back upon, and were therefore, perhaps, more amenable to local influences.

FRANK OGSTON, M.D.,
District Health Officer for the Otago-Southland District.

REPORT OF MEDICAL SUPERINTENDENT, TE WAIKATO SANATORIUM.

To this, the first Sanatorium to be established in New Zealand for the open-air treatment of consumption, the first patients were admitted in December, 1902. By the 1st April, 1903, there had been admitted twelve cases (all with one exception being men), of whom two had been cured, one had been discharged greatly benefited, one had died, and there were eight remaining under treatment. They were housed in four tents pending the completion of more permanent shelters, which, together with the necessary additions to the original house, were at this time being erected by the Public Works Department.

During the last year these additions have been completed, and consist of two wings facing west and south. The west wing contains a large ward, a small ward built like an open-air shelter and holding two beds, and a verandah enclosed by walls and doors containing a large proportion of glass. The south wing contains a kitchen and offices, a dining-room for the nurses, servants' bedrooms, and store-rooms. Also a shed 100 ft. long with a glass roof, designed for the rapid drying of clothes in wet weather. The open-air shelters, eighteen in number, in which the majority of the patients sleep, are placed about the grounds surrounding the main building, and include one large shelter holding four beds, two smaller each with two beds, and fifteen shelters containing one bed each, one of these shelters being revolving, so that it can be turned away from the wind. The shelters can be freely opened on all sides, except on the south-west, which faces the prevailing wind. Two or three tents are also in use, but they are not found to be very satisfactory in bad weather. A large dining-shelter measuring 27 ft. by 30 ft., open on all sides, and provided with canvas screens and movable wooden shutters, also a bath-room for the men's colony, and two store-rooms have been erected. All the shelters are connected with the main building by electric bells, so that assistance can be summoned at any time.

The main building, shelters, and grounds are now lighted by electricity instead of the unsatisfactory oil-lamps formerly in use.

A cottage for the resident Medical Superintendent, and two smaller cottages for members of the staff, have been built about a quarter of a mile from the Sanatorium.

The water-supply has been greatly improved by the construction of a small reservoir on the top of a hill 40 ft. higher than the Sanatorium buildings, and the water is pumped up from a stream 200 ft. below, the power being supplied by a 7-horse power oil-engine, which also drives the dynamo. This insures a plentiful supply of water at a constant pressure. In the original house purchased by the Government, the water was pumped from the gully into tanks by means of a ram, and this, constantly getting out of order, yielded a very intermittent supply, and necessitated a great deal of labour in carrying water, besides the risk of a shortage in case of fire.

An electric fire-alarm apparatus has been placed in all the rooms of the main building.

A set of meteorological instruments has been provided, and observations are taken daily and forwarded to the Meteorological Office in Wellington at the end of each month.

The drainage from the Sanatorium is conducted into a septic-tank system, installed during the past year, and this is found on the whole to work very satisfactorily.

The milk-supply is derived from a herd of fifteen cows, and in order to keep the quantity and quality of this most essential article of diet up to the required standard, it will be necessary to constantly cull out the cows as their milk fails and replace them by others.

A fair amount of work has been accomplished on the farm and in the kitchen-garden in cultivating new ground, sowing grass, fencing, &c., and it is hoped that in the course of a year or two the Sanatorium will be self-supporting as regards farm and garden produce.

The average number of patients has increased from 8 at the beginning of April, 1903, to 31 at the end of March, 1904. Fifty-three new patients have been admitted during the past year. Of these 27 were male and 26 were female. Eight patients were under treatment at the beginning of the year. Of the total number 9 patients have been cured, 19 have been greatly benefited, 2 have died, and 31 remain under treatment. Of those who died it should be noted that they were hopeless cases from the first, and that one lived only a fortnight after admission.

Owing to the increased number of patients it has been necessary to make some additions to the nursing and domestic staffs. This being a Sanatorium the nursing staff must necessarily be larger than in a hospital containing the same number of cases, because the personal element enters more into the question.

In regard to the treatment of the patients, the first and most essential factor is the respiration of pure air at all times and seasons, and to this end they are encouraged to spend as much of their time as possible out of doors; their dining-rooms are thoroughly ventilated, one of these being specially constructed so that they take their meals practically in the open air, but sheltered from the wind and rain. The shelters in which they sleep are so arranged that the air within is as fresh as the air outside. Any dust which may collect is removed by means of damp cloths, and great care is taken to avoid re-infection through the inhalation of dried sputa containing tubercle bacilli. Expectoration is forbidden, save into the flasks provided, which the patients always carry with them wherever they may be. These flasks, which are made with watertight lids, contain a small quantity of formalin solution, and are disinfected daily by being steamed for two hours in a Koch's steriliser, and are then washed and dried. As a substitute for handkerchiefs, pieces of butter-cloth are provided, which are burned after they have been used. Articles such as mattresses, pillows, and blankets, which cannot be disinfected by boiling, are sterilised in a Thresh's steam apparatus.

Patients may be roughly classified into those whose condition admits of their taking more or less exercise, and those who require absolute rest. The form of exercise which is found to be most suitable is walking, and especially walking uphill. Rest in bed, or upon a lounge-chair, is prescribed in most cases for a day or two after arrival, and then walking, at first on level ground and then uphill, the distance being increased as the patient gains in strength. Seats are placed about the grounds at intervals so that the patients may rest when fatigued. The pace does not exceed two, or at most three, miles an hour, and commencing breathlessness is a signal for immediate rest. Games are not permitted, with one exception—croquet, which does not seem to do any harm.

The patients' temperatures are taken by the nurses twice daily. Whenever a patient's temperature exceeds 98·4° Fahr. in the morning, or 100·4° Fahr. in the evening, rest is prescribed until the temperature has been normal for some days. Cases of hæmorrhage, rapid softening of the lungs, or pleurisy, are kept absolutely at rest in bed. All patients rest in their shelters for one hour both before and after meals. They are weighed regularly every week, and in nearly all cases show an increase in weight for the first few weeks after admission. A thorough examination of the patients' chests is made frequently, and their sputa are examined bacteriologically on admission, and thereafter once a month, to ascertain the presence, diminution, or absence of the tubercle bacillus. A preparation of malt and cod-liver-oil, and other tonics, are freely administered, but the routine administration of drugs is reduced to a minimum.

No provision is made for heating the shelters artificially, but hot-water bottles and blankets are supplied when more warmth is needed. For heating the dining-rooms open fires are used, but on account of the dust which is inseparable therefrom, electric radiators would be preferable.

On the completion of the new buildings, the Sanatorium was formally opened by the Hon. Sir Joseph Ward, Minister of Public Health, on the 11th December, 1903, in the presence of a large and representative gathering.

Owing to its isolated situation on the Maungakawa Range, some six miles and three-quarters from Cambridge, and the hilly and badly constructed road which gave access to the Sanatorium at its inception, great difficulties have had to be overcome in the transportation of building-material and stores; and although during the past twelve months very considerable improvement has been effected by the Roads Department in regrading, metalling, or gravelling portions of the road, yet owing to the nature of the soil on the hillside—a slippery, tenacious clay—a great deal still remains to be accomplished in order to make the road passable and safe in winter, the heavy wagon-loads of building-material, together with the frequent rains, having, at the time of writing (July) reduced portions of the road to the condition of a quagmire.

A certain number of beds have been reserved for patients able to contribute something towards their maintenance; but the majority of those admitted have not paid anything at all, and although in several instances they were undoubtedly possessed of sufficient means, they evaded payment by

pleading poverty. The only way to deal with such cases would seem to be by making them apply for admission through the Charitable Aid Board of the district from which they come, which should be responsible for their maintenance at the Sanatorium.

In reviewing the results obtained during the past year, it must be borne in mind that it was inevitable that many unsuitable cases should be admitted at first, since owing to the very limited accommodation available at the beginning of the year, and the large number of applications, many cases which, if they could have gained admission some months before, might have been cured, while awaiting their turn became incurable. Notwithstanding this, the percentage of cases in which the disease was arrested, or in which very marked improvement took place, compares favourably with the results obtained in the various British and Continental sanatoria. When, however, Dr. Mason's scheme is carried out, whereby annexes for the open-air treatment of consumption are provided at hospitals in various parts of the colony, the pressure of applicants for admission to this institution will be greatly lessened, and it will then be possible to exercise more selection in regard to suitable cases; for it cannot be too forcibly pointed out and too widely known, that the function of this institution is the treatment of incipient and curable cases, and that it is not a hospital where incurable patients may linger to the exclusion of those who, if they could gain admission earlier, might reasonably hope for complete recovery.

The admission, unavoidable as it was, of a number of far-advanced cases needing stimulants, drugs, and special foods, has increased the expenses of maintenance correspondingly, since early cases do not, as a rule, require these costly aids to recovery. Many other expenses such as those incurred for the erection of new buildings and their necessary equipment, will be non-recurrent, and, as already mentioned, it is probable that the Sanatorium will be more self-supporting in the near future, when the farm gets into better working-order.

C. H. R. Pentreath, M.B., Bach. Surg., Univ. Camb.,
Medical Superintendent.

REPORT OF DR. POMARE, HEALTH OFFICER TO THE MAORIS.

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

In looking over the history of aboriginal races, nowhere upon the horizon of history can we see where a superior race has dealt so fairly towards its Native people as here upon these shores. Surely with such beneficent laws to educate our children, and to teach us the way of health, some grand result must be achieved. Petted on every side, treated as equal subjects of the same King, the fire of patriotism has burnt deep into the hearts of the Maori people. The last three years have been pregnant with issues of the most vital importance to this people whom doom has looked in the face.

From the time the public-health laws were still in the bosom of their maternal parent, the Government, keen observers and thinkers wondered and speculated as to the probable effect they would have upon this people, who had but just stepped out of neolithic darkness into the blazing, dazzling light of civilisation. Fifty years of courtship has there been, and at last the Maori is wooed from the crude stone to the polished steel. The mountain trails have long emerged into the metal roads. The iron horse of the palefaces goes thundering o'er his hunting-grounds. The dusky warrior has emerged from his raupo whare, and now stands on the threshold of a modern residence. The tattooed beauty of pristine day has now the delicate rougeal touch of modern fashion upon her cheek.

Progress has truly been great, but, alas! not in the multiplication of numbers. However, rapid changes are taking place: *tempora mutantur nos et mutamur in illis.* The following meagre statistics will show how the Maori stands to-day: to-morrow may find him more advanced than he is at present.

Maori Statistics.

When we come to deal with the statistics of the Maori population we find them to be most unsatisfactory, as in a great many instances the statistical returns were nothing but surmises. Nevertheless, no one for a moment can doubt the steady decrease that has set in within the last fifty years. The returns were made by conscientious men, but frequently a good deal of the returns was mere guesswork. This was due to two reasons: First, because of the troublous times then existing; and secondly, the unreliable sources of information. So in calculating we have to deal with generalisations rather than with correct figures. The question naturally arises as to whether the Maoris are increasing or decreasing. And bright as are the hopes held out to us by the last census of their increase, yet the Maoris have been gradually but surely decreasing. A casual glance at the attached figures, though at times mere estimates, will show that the death-wail of the Maori is only too true. Who has not noticed the gradual decay, the deserted villages? What Maori living will not tell you of the numerous inhabitants that have been?

The census has only been correctly taken since 1878, and even then several of the tribes were not included, and that is why you will find that the returns decrease and increase in an astonishingly contradictory way. The matter of census-taking can now be adjusted with correct returns by getting the Maori Councils to do it, which I suggest should be done. Many Maoris have two or three names, and sometimes four, each of which can be given for the different places where he may happen to reside, and the pakeha, knowing no better, puts the names into his return. This can be all obviated by the employment of the Maori Councils, and a regular system instituted by which a Maori may legally hold but one name.

ESTIMATES AND CENSUS OF THE MAORI POPULATION UP TO 1901.

Year.	Population.	Year.	Population.	Year.	Population.
1858	56,049	1874	45,470	1891	41,993
1861	55,336	1878	43,595	1896	39,854
1867	38,540	1881	44,097	1901	43,143
1871	37,502	1886	41969		

Increases and Decreases.

Year.	Increase.	Decrease.
1874–78	..	1,875
1878–81	502	..
1881–86	..	2,128
1886–91	24	..
1891–96	..	2,139
1896–1901	3,289	..

Thus you will see that since the year 1858 the death-roll has been 12,906, or an average decrease of over 280 per year. Since the year 1874 the numbers have been fairly uniform until 1896, when we find a sudden drop, showing the decrease between the years 1858 and 1896 to be 16,195, at which average it would not have taken very long for the Native race to become extinct. As most of these early numbers were only estimates, I have grave doubts in regard to the number of deaths which are supposed to have occurred at that time. Wars and disease have been accounted as the chief causes, but mainly disease. With the introduction of civilisation came destructive diseases which have proved fatal and will prove fatal till the Natives have acquired immunity like the pakeha. The last census gives the assuring increase of 3,289, which I hope will now be maintained, and will be the commencement of better days.

Aged Maoris.

There is no doubt that the aged Maori, unless of very high rank, fares badly at the hands of his *mokopunas*. The question of making the aged Maoris comfortable has been a sore puzzle to us. Were he a European the solution of the problem would be easy: we should say, "Build him an Old Man's Home." But the Maori, poor as he is, and ofttimes going as he does for weeks and months on the most meagre diet, would rather live in his poor tumbledown whare than leave the faces of his grandchildren, even though they are neglectful. If fortunate, a poor old Maori receives the old-age pension; if not, he lives on sufferance. The Maoris are well treated in respect to the old-age pension, but in some instances, as amongst the whites, the pension has been abused. I am glad, however, to state that the Maoris are now more careful in regard to this matter. In a great many instances I have insisted upon the old people having a part of their pension spent in improving their whares, and in all instances the old chaps have been very willing to comply. I found it was more often the younger people who raised objections to the improving of the old people's whares. I am certain that if the old Maori was regularly fed and properly housed he would live much longer than he does. In fact, it often seems a miracle to me how these old fellows last, living as they do under such adverse circumstances. The main difficulty in dealing with this problem is the care of these people. Sometimes their grandchildren and great-grandchildren are very attentive, but very often these poor old *korouas* have to shift the best way they can.

This matter ought to be looked into, and perhaps a small home for the aged Maoris might be erected, where some of these poor, aged, uncared-for, and really destitute Maoris could be well looked after and properly fed. I understand the experiment has been tried in the Hawaiian Islands with good success, and I do not see what is to prevent us from doing the same here. I am sure it would do much good, and thus mitigate a great deal of the existing evils.

Sterility and Infant Mortality.

It has been said that the Maori women are sterile, and that is one of the reasons why the Maori is decreasing. While I do not deny this statement in its entirety, still I think this state of sterility is more or less limited to the aristocratic Maori. When you look through the list of our noted men, you find that most of them are heirless, but not so with the plebeian. They are productive enough, only more than half of the children die before they reach mature years. Why the aristocratic Maori is unproductive is probably due to the two following reasons: First, consanguineous marriages; second, the partial adoption of pakeha habits and costumes, promoting diseases affecting the generative organs. There is no doubt that consanguineous marriages, which are more or less limited to persons of high rank, result in the extinction of aristocratic lines. The second reason is evident enough, for Maori women are martyrs to female complaints which are due to carelessness, neglect, and exposure. If we could save half of the children who die annually, there would be a marked increase in the Maori population. The main causes for the infant mortality are—first and greatest, ignorance concerning the bringing-up of babies; second, unsuitable food; third, bad clothing; fourth, bad ventilation; fifth, improper nursing and non-attendance of qualified physicians when sick; sixth, tohungaism and superstition; seventh, prejudice.

Under the first great cause may be included all the rest. Whilst one condemns the many evil practices of the Maori, yet they have one excuse—ignorance. The Maori not only suffers from sins of commission, but also for those of omission. What we should do first is to educate the mothers how to bring up their children. I believe that if an eighth of the money that is spent on educating the children

was devoted to that end, there would be a radical change not only in the home-life of the Maori, but also in the rate of the infant mortality. Strike the mothers and you strike the entire rising generation. Educate the mothers to recognise the efficacy of the bath-tub, cleanly warm clothes, plain and wholesome food, and you will regenerate the Maori quicker than by teaching the youths and maidens embroidery, Latin, and Euclid, and then sending them home to live in the same groove as their ignorant parents do.

Second: There is no doubt that over half of the infant complaints are along the ailmentary canal, and that generally depends on the food they eat. There is one redeeming feature in the Maori character, and that is, they are passionately fond of their children, and for that reason children are generally brought up on the breast, and well they are, for I found that as long as the mothers were suckling the children they were all right; but it is when they were weaned that the trouble began. It is at that period that they are given, at reasonable and unreasonable hours, whatever food the adults are eating. The undeveloped state of their digestive organs is too weak to assimilate it; hence the reason of so many poor rickety children that are too early handicapped to bear the strain of life. If more cows were kept by the Maoris, and the milk used for the babies, I am certain it would make a great difference in the infant mortality. The Maoris have a nursery rhyme, "Tangi ana tama ki te kai mana nei," and so when the child cries the causes of its weeping are laid aside, and food of some description is invariably given to it. Thus improper food and the constant and irregular eating of it soon render the poor digestive organs unfit for work. The child becomes sick, it frets, it is taken to some vile *tohunga* to be treated by dipping in some cold stream on a frosty morning, or scratched about the body with glass or flint, a decoction of some herbs rubbed into it by dirty hands, and thus the child is cruelly murdered, either by freezing to death or by blood-poisoning. The blood of Maori children verily cries from the grave to avenge their deaths by the passing of an Act for ever prohibiting the practices of any *tohunga* in New Zealand. In order to reduce the infant mortality, we must have missionaries of the gospel of health to go amongst the Maori people to teach the simple ways of life. We have sent out our scores to foreign fields to administer to the wants of aliens; we feel proud of the fact, and yet at our own doors there are hundreds of poor innocent children annually sacrificed through ignorance and superstition, and no helping hand is extended to them. The Macedonian cry of Maori infants, "Come over and help us," has been unheeded for over half a century. It is time there were a few home missionaries of the gospel of health working for the salvation of a people which pakehas tell us in their drawing-rooms is the finest aboriginal race in the world. The Maori has been taught long ago to wash his soul; it is time he was taught to keep his body clean and his home wholesome.

The third factor in the list may be verified at any time by seeing how a great many children are dressed in the pa. I have seen Tamati running about in the bitterest wintry weather with nothing but a cotton shirt on, and I have seen him hanging on to his mother's arm with one hand, in the middle of summer, munching some sweetmeat along the street, sweltering under a load of woollen garments, boots, stockings, and an overcoat. Overclad one day, half-naked the next, is there a wonder that Tamati dies?

Fourth: Bad ventilation has also a great deal to do with the children's condition, and this may be evidenced at any time during the winter months by the coughs that may be heard at night-time. When the children are sick then ignorance reigns supreme. Hedged in on one side by superstition and on the other by tohungaism, and on all sides by prejudice, it may be only as a last resource that the child is taken to a qualified man to be treated, but alas! often too late to do any good. Tohungaism, superstition, and prejudice can only be overcome by education, and these, though obstinately giving way before the irresistible powers of civilisation, can only be stopped by the prohibition of the cause of the trouble, the *tohungas*.

Maori Education.

When I touch on the subject of education, I am well aware that I am treading on volcanic grounds, for this is a question that has been puzzling and occupying the minds of our greatest statesmen and thinkers of the present time. My only excuse for dealing with this question is on account of the fact that education has been and must be a great factor in the advancement of the Maori's social condition. I believe in education; in fact, our work is one of educating the people to see more clearly the advantages of attending to Hygeia's laws. The education of the Maori is of great importance in the regeneration of the race. I am well aware that those who have charge of the educating of the Maori are doing the very best they can for them under the circumstances, but I feel that it is capable of improvement in some directions. The more enlightened a community is on general topics, the more readily will they see the benefits accruing from a strict observance of public-health laws. The matter of personal hygiene should be attended to in every school; it should be included in the curriculum. Latin and geometry may add culture to our modern lasses, but in my humble opinion more time should be devoted to the art of cooking a good wholesome meal. Have this done, and the girls will be of more use to society, even if they do drift back to the home of the Maoris. A good cook is never out of place. It is all very well to teach the girls how to make pretty frills and embroidery to adorn their persons, but I think it would be infinitely better if that time was spent in teaching them how to cut out a plain bodice, or how to look after babies. It is not so much the fine culture that we want as it is the useful and practical knowledge that is needed for the common and everyday things of life. The hygiene of the home, personal dress, the science of cookery, the nursing of the sick, the upbringing of babies: these are the essentials that ought to be taught in every Maori school in the colony. I think it would be a very great advantage to the Maori race in general if throughout the colony cooking classes were established for the senior students and mothers after school-hours, or at any hour, by the wives of our Native-school teachers. Cooking is a lost art among the Maoris, and if a man is made of what he eats, as scientists tell us, then it must follow that if the food is unwholesomely prepared, or if there is ignorance in the

culinary department of the household, the poor individuals must suffer. Besides this, I am positive that the eating of the same food cooked in the same way for weeks and months without a change must be deleterious.

I have often been asked, "Why do so many of our young men who have been educated go back to the Maoris?" I invariably reply that they are sent back to the Maoris, for is it not the grand object to educate the youths and maidens to go back to their people? And when they do go back there is a general hubbub, "Oh! he has gone back to the Maoris!" as if there was any other place he was intended to go to. We educate our youths up to the matriculation standard, a good standard for clerks. The day of quill-driving is, however, done, and that of shorthand and typewriting has dawned. We are educating our boys for the useful sphere of yesterday, and not that of to-day. Let us modernise and add a commercial training to our catalogues. Shorthand is useful to anybody wherever he may be.

There are two causes why the so-called educated Maori slips backward—first, A lack of opportunity for pursuing higher studies or entering into some service; second, the influences at home. In the first case most of the boys cannot afford to pursue higher studies, for they are of poor parents, and if they do pass the matriculation standard, who is going to employ incompetent Maori clerks? And if they do employ them, who could live on a £1 or 15s. a week, finding his own board, lodging, washing, clothing, and other incidentals? It cannot be done. So they drift back to where the whare is ever warm and the *kai* free. Who would not drift back to where the conditions of life are easier? "Hei aha ma wai." What matters, for certainly the more civilised one becomes the harder is the struggle for existence. It ought not to be, but it is. I can hear somebody say, "How is it our pakeha boys can live on £1 a week?" True; they live at home, and are helped along by their parents, while the poor Maori has nowhere to lay his head except on a bed bought out of his weekly wages. Why do so many drift back to the proverbial blanket? That is easily understood. Tamati leaves college with a bright-red tie, a stiff collar, patent-leather shoes, a classical look, a book under his arm, theories and high ideals. He gets off his second-class carriage, struts along the platform, and imagines he owns the whole earth with a little fence around it. He arrives at the home of his ancestors. He is very particular about his personal appearance and adornment for the first week, hardly mixing with his own. He is a man of culture. He can exclaim "Et tu, Brute," and other pet Latin phrases. Ah! Tamati is a clever boy. He has to find somebody who can speak English. Of course he lives in the pa, and thus cannot associate with the first-grade pakeha, but, having to get his Latin phrases off his chest, he finds condolence and spmpathy from the second-grade pakeha. And as there is a little warm room across the creek at the White Hart, he gradually finds himself in the company of his second-grade pakeha sympathizers, wending his way to their haven of rest. Oh, no! Tamati does not drink any intoxicating liquors, only plain raspberry-and-lemonade. This goes on for some time, but one night we find Tamati entering the lists of those who have gone back to the Maoris. The Maori youths of to-day are like a mob of sheep. They are driven into the race, but there is no draftsman to open the gates which lead to higher education, to the trades, to the Government offices, and to the agricultural colleges. We educate them up to a point and then leave them to drift, just when we ought to hold on to them and make useful members of society out of them.

Many a Tamati has crossed the creek just because the doors of usefulness were closed to him. The grand scheme which the Government has started for imparting technical knowledge is, I hope, going to prove a great blessing. We are advocating the pulling-down of old Maori whares, and the building of neat European cottages. Teach Tamati and his brother the use of the hammer and nail, so that when he goes home he can assist in the erection of a domicile that will keep him in health.

I believe there is still something like five millions of acres of Maori land left; and daily we hear voices clamouring for the utilisation of these vast areas in order to bring the colony some revenue and prosperity. Some say that the Maori cannot farm his own land. This may be so, and, if so, whose fault is it? You have taught us how to read and write; you have taught us Greek and Latin; you have taught our girls how to couch endearing terms to their lovers: teach us also how to cultivate our lands, in order that we may stand side by side with the pakeha, for work is our only means of salvation. Open the doors of your agricultural colleges to our Maori youths, so that when they do drift backwards they will have the best knowledge of how to manage their farms, and thus stop the ever-clamouring voices of their pakeha neighbours.

Work.

Work is the present gospel for the Maoris. Work, constant and systematic, is the only avenue by which the Maori can obtain his salvation. In olden days the Maori was not naturally lazy; that may be evidenced by the wonderful carvings, large cultivations, and colossal pas he has left to posterity, which may still be seen along our entire coast-line. In olden days the Maori was always in fine physical condition. Since the dawn of security the Maoris have become less inclined to do steady constant work. The number of constantly employed Maoris in this colony is very few. I have often been asked why the Natives are not found working at some fixed employment. I think this can be answered by looking into the social life of the Maori. It is not because he is lazy, for he can work just as well as anybody else; but it is because of Maori customs. Tamati goes to work, but is no sooner settled down when a distant relation ten times removed dies, and to the tangi Tamati must go, or else he is looked upon as a very unfeeling individual indeed. Tamati, to save his pride, throws up his employment; and the frequency of these occurrences soon disgusts his employer, and the result is Tamati loses constant employment. Maoris are employed on sheep-stations as shearers. This suits them in a way—quick labour and big profits.

While in this connection I may mention the fact that, though the Government passed regulations with regard to the accommodation of shearers on sheep-stations, there are still some that for the Native part of the shearers are altogether unsatisfactory. As the Natives are often employed for two or three months, and have to live in these places, it would be well to have surprise visits paid them by Inspectors during the shearing season. I have known several Natives who lost their lives through exposure and bad camping facilities on these stations. The better accommodation of shearers ought to be and must be insisted upon.

Then, again, another reason why the Maori is not constantly employed is owing to communism. The individualisation of Maori lands ought to be hastened with all possible speed. As long as we have communism so long shall we find non-employed Natives, and so long shall we have idleness. Where there is communism, individuality is lost. The individualisation of Maori lands will mean the employment of Maoris; but as long as he can depend on his communistic brother for a meal, so long will you have him lazy, and so long will Maori land be of no value to the colony. It stands to reason that if a man has his plot of land, and his little home on it, and his family in that home, he must work or else starve. Give the young Maori generation their lands individualised, and I venture to state that those lands in ten years will more than double their present value. There are hundreds of intelligent Maori youths in this country who are patiently waiting to see communism broken up, and their lands portioned out to them in order that they may work on them; and the sooner each man thinks for himself the better it will be for the fair land we live in.

Tohungaism.

In my annual reports to the Department I have urged that Parliament should pass stringent laws preventing the practice of *tohungas*. This, however, has not yet been done. The Councils have tried their best for the last two or three years to put down this evil of tohungaism; but, owing to defective laws, the *tohungas* have defied them. While I have urged that the Government should come to the rescue by prohibiting the practice of any kind of *tohunga* whatsoever, some of the Councils have compromised by demanding licenses, which are issued after careful investigation. This may be workable in some districts where the Chairman and his Council have no faith in tohungaism; but where it happens that they are all tohungaites, then any *tohunga* can obtain a license by paying his fee. Thus you will see that the evil still goes on in some districts. I cannot be emphatic enough in condemning these *tohungas*, for I have seen the result of their work. In one pa alone seventeen of what might have been the hope and pride of their tribe were, I consider, cruelly murdered by the wanton practices of a *tohunga* in whom many Natives have faith, even to an individual who holds the highest position to which a Maori can aspire. I do not think a single one of the seventeen children who were sacrificed need have died, for they were only ill with measles. As one who sees the incalculable harm done to the Maori population by *tohungas*, I beg the Government to at once pass a measure for ever abolishing this demoralising practice of witchcraft. One can hardly realise that in this the climax of civilisations, where it is one's boast that New Zealand leads the world in all things—that in it witchcraft could possibly exist. The Maori has passed his term of probation, now is the time to be earnest, and therefore I implore the Government to arrest this great evil. I am certain that annually tens, fifties, and hundreds of children are sacrificed all because no law has been made to prohibit for ever the evil practices of half-witted and degenerate *tohungas*. I say that the curse of the Maori race are the *tohungas*. Get rid of them, and we shall save twenty per cent. of the children who die annually. It is all very well to cast reflections and say, Why do Maoris have faith in these *tohungas?* Perhaps the answer can be found in the existence in the pakeha midst of a Madam Spontani, a Madam Jordan, Dr. Dowie, or some other half-crazy individual who makes pretensions to the unseen things of another world. It would be well, therefore, that all quacks, both Maori and pakeha, practising without being registered should be prohibited. This matter of pakeha quackery is almost as bad as tohungaism, as it gives the Natives a wrong impression of proper medical methods, and less confidence in duly qualified men.

Tuhoeland.

Number of Natives vaccinated by the Health Department	630
Number of villages visited	14

Though I had made a visit to this benighted district before, it was not till last month that I was enabled to make an extended trip through the entire district. When last on the borders of Tuhoeland I addressed a meting of Ureweras at Ruatoki, pointing out to them the evils of the old and the benefits of the new system of living. The great chief Kereru and others all promised co-operation in the matter of public health; but it was ever my intention to go among this people, and visit them at their own kaingas. This opportunity was presented when, in company with His Excellency the Governor and the Hon. James Carroll, I for the first time trod on the shores of Waikaremoana (the Ocean of Rippling Waters), the sea of the Tuhoelanders. I certainly did not expect to see many improvements, and I was not disappointed. *Nil desperandum.* The axe has truly been laid at the foot of the tree, and who knows but what in the dim future the rough gigantic totara of this wild forest may yet adorn some cultured hall of society. Here and there we see evidences of the trend of modern thought and modern progress standing out like some giant of the forest appearing far above its fellows. We did not and must not expect too much from the descendants of Tuhoe, for in our work we must also remember the history of these stern mountaineers, who were the very last to give way to the inroads of civilisation. They were stubborn warriors indeed, followers of the prophet Te Kooti. Their intelligence shadowed by the superstition of ages, the wild teachings of a false prophet, still wedded to the many ancient customs of his race, bound by the crafty web of tohungaism and superstition, and suspicious of the pakeha: this was the people that we had to deal with, and in so doing we had to be cautious, gentle,

and long-suffering. With all his faults Tuhoe has the heart of a Maori, for is not "his whare and his oven ever open to the stranger"? I said, evidences of progress were discernible: that is true, for gradually but surely the tide of civilisation has crept up the valleys of Tuhoeland. Did not the great chief himself say, "The schools, the means of education, were the sails that would waft him and his children afar to the Hawaiki of health, prosperity, and progress"? What if the children are ill-clad, dirty, and badly fed: they attend the schools, and that is Tuhoe's foot on the first rung of the ladder of civilisation.

The visit of His Excellency the Governor to this benighted people is, I think, going to prove of great benefit to them, as it has shown them that the great "White Crane" has their interests at heart. Long days afterwards I have heard them recount the admonitions given them by this great chief, this "Kotuku Rerengatahi," the bird of one flight, who, unlike any other, came amongst them leaving behind him words that would ever abide as the landmarks between the old and the new ways of living.

A general glance at Tuhoe will reveal the fact that during the last two years eighty-four new houses have been erected, sixty-eight being wooden cottages and sixteen Maori whares, while twenty-eight have been destroyed. We must not imagine, however, because sixty-eight cottages have been built that they are perfect, but still it is a step in the right direction. These houses are very often made of palings, have no floors or chimneys; they are draughty and very cold in winter. I have feared much for many Natives on account of these whares, but still they are slowly learning. Instructions have been given them not to consider their houses complete until they are floored, lined, and chimneys added.

The cooking-houses or *kautas* are very poorly constructed in this district. Very often they are miserable hovels thoroughly exposed to the elements, where the poor women often sit drenched to the skin cooking some "parareka" for their lords—in fact, sowing the seeds of disease. While in the cooking-house it will be well to look into the domestic fare of this people. Undoubtedly cooking is a lost art among the Maoris in this district. The poverty of some no doubt renders the condition of living a hardship, so potato is the main article of consumption, together with steeped corn. I do not know the origin of this unwholesome practice of eating putrid corn and potato, but there is no doubt in my mind that it has been responsible for many deaths. I have been informed that when food was scarce, potato and rotten corn formed the only variety in the Tuhoelanders' bill of fare, with perhaps an occasional preserved pigeon, or pork which has become rank with age. Just imagine what chance there is for an individual who is sick, and yet you find many fine old people amongst the Ureweras who practically have never had a day's illness in their lives. I cannot account for this, unless it is the amount of exertion and bodily exercise that they get going to and from their mountain fastnesses. What the Ureweras want, as I have before pointed out, is some intelligent woman to go amongst them teaching them how to cook, how to nurse the sick and administer simple remedies, and how to bring up children. If there is a tribe in New Zealand which needs this most, it is certainly the tribe of Tuhoe. The addition of Mr. Best as Sanitary Inspector for this district is, I think, going to be the means of doing a great deal towards the end which we have in view.

Résumé.—Number of old Maori whares destroyed, 28; number of closets built, 3; number of new houses erected, 84.

Hawke's Bay.

Number of Maoris vaccinated by the Health Department	1,274
Number of villages visited	44

Hawke's Bay stands pre-eminently as one of the most progressive Maori districts. It is true that many of the old-time houses may still be seen, but the general condition is good, and the trend progressive. As Ihaia Hutana, Chairman of the Maori Council, aptly puts it, "Many of the words of instruction are carried out, and though everything is not perfect, yet it is the commencement of a new era." Sickness has not been so bad within the last year except at Mohaka, where something like twenty children died from measles. I am certain this high rate of mortality would not have occurred had we been notified of its existence in time. We did not hear of it till two months after it was over. I understand a *tohunga* had been at work here. A wave of marked improvement has certainly set in, and the raupo whares are gradually being superseded by the weatherboard houses. It is now a common thing to see five- and six-roomed houses owned by the families of dusky warriors. It is very gratifying to note this progress, and I cannot but compliment Mr. Ihaia Hutana and his Council for the very valuable assistance they have rendered the Department in carrying out the suggestions given them. The matter of closets is still a hard one to deal with, but even this difficulty is gradually being overcome, as you will note that twenty-three houses of convenience have been built during the last year. I have tried to reason with the Natives rather than force them into doing the things we wanted done. The matter of ventilation has also received a great deal of our attention, and, as you know, there are a great many difficulties in the way of getting this done. However, most of the meetinghouses have been ventilated and floored. At Omahu I was put to no inconsiderable trouble in trying to get ventilators put into their new meetinghouses. I even went as far as to offer them the ventilators, but the prejudice in the minds of this particular section of the tribe was so great, that they did not want a house with a *ngunu* (humpback), so that I compromised by making them put in very large windows at the back. A floor was also put on at our instigation. At one time the feeling was so bitter at our intervention that I considered it a wise measure to call in the police to show them that we were in earnest. This, I may say, has been the only time we have sought the aid of the Police Force. The effect was magical.

The addition of a Sanitary Inspector for this district would materially help to keep the good work going that has been started. Drinking, though still prevalent in some parts, is a great advance on what it has been. There is therefore a great hope for Tamatea.

Résumé.—Number of old whares destroyed, 20; number of closets built, 23; number of new houses erected, 43.

ROTORUA DISTRICT.

Number of Maoris vaccinated by the Health Department	697
Number of villages visited	10

I have very great pleasure in reporting the steady advance made by this people within the last year. The Natives of the Rotorua District, as you are well aware, are not of a wealthy class. Their lands are poor, consequently the means of existence are harder to obtain; but herein lies the very hope of their salvation, for in order to live they must work.

I have noticed that lately the Maoris in this district have taken to gardening and roadmaking for the pakeha, a notable evidence of their progress, for nowhere else in the whole of the colony will you find Natives working on the public roads. The number of Natives so doing may be counted on one's fingers. You may get Natives to shear sheep or dag them, but they refuse to go on the roads. It was quite a common thing, not so long ago, to see lazy, drunken, and capable Maori youths lounging about the hotels at Rotorua; but now the early morning bather beholds swarms of them wending their way towards the Sanatorium grounds to do their good day's work, which, I am told, is not in any way inferior to that of the pakeha.

It is very gratifying to note that in this township, where the Natives heretofore were annually stricken down with typhoid, there are now very few taken by that disease; and also that, whereas the Natives of even two years ago lived in miserable low raupo whares, they now have their comfortably floored and ventilated houses.

I quite admit that the new houses are not as picturesque as the old, yet I would rather have my Maoris live, than that they should satisfy the curiosity of the passer-by and die. It has been my desire to keep as much of the picturesqueness of the Maori architecture as possible, so long as it is in accordance with the Public Health Act; but it would be utterly impossible to do this without the additions of floors, and windows as ventilators. It will do very well to have, as I understand is the intention of the Tourist Department, a model Maori village built according to the real Maori pattern. Let it be a model. The health of the Arawa is of far more importance than the satisfaction and the exclamations of the globe-trotter.

The matter of closets has been a specially hard one to deal with in this locality. A number of Natives have shown their willingness to put up these necessary additions to their homes, but buildings are so cramped for room that it is quite an impossibility to build them for all residents. I therefore suggested that two should be erected at Whakarewarewa: one for the women, and one for the men, and as many Natives as could build their private closets were urged to do so.

Raureti Mokonuiarangi, the Chairman of the Arawa Council, and recently appointed to the Sanitary Inspectorship of the district, and who has rendered the Department such valuable assistance since his appointment, reports that the general health of the Natives of this district has been exceptionally good within the last year. In 1902 the number of deaths in this district was twenty-four, in 1903 there were sixty-seven deaths. This was mainly due to measles and dysentery. In nearly all of the sixty-seven deaths for 1903 the deceased were children. It is interesting to note that whereas the number of children born in 1902 was fifty-three, the number born in 1903 was seventy-four, an increase, after death deductions, of thirty-six.

Drinking and gambling are practically nil in this district, except at Te Puke, and even there it is hoped that since the recent legislation drunkenness will disappear.

The Arawa canoe bids farewell once again to Hawaikian shores, her paddlers have dipped their oars deep into the ocean of advice and determination, and her prow is headed to the land of health and perpetuity.

Résumé.—Number of old whares destroyed, 18; number of closets built, 10; number of new houses erected, 15.

EAST COAST.

Number of Maoris vaccinated by the Health Department	600
Number of villages visited	40

As the sun rises in the east and sets in the west, so it seems that the sun of advancement and progress has been mostly shining on the East Coast, for the least time has been spent here, but with the greatest results. This is accounted for by two reasons: first, by the fact that the chief's mana is to some extent still respected; second, my worthy colleague, Mr. Ngata, has personally attended to the wants of his people, and has seen to the carrying-out of the suggestions made by this Department. The only thing that I regret in this district is the fact that where the most notable changes have taken place the critical eye of the pakeha has not been able to see it because of its unapproachable position. When I write that scores of houses have been burnt, whole villages renovated, kaingas fenced in, poakas and dogs fenced out, water-supplies concreted and piped, huge drains cut, and many European cottages erected, it sounds like some exaggerated fairy tale. Yet, this is so. Horouta to-day probably leads the van. Here we see the Maori left almost to his own resources and ingenuity; here we see him with something attempted and something done. Here we see the Maori warding off the calumnies that have been hurled against his capabilities as a farmer, for are there not seventeen sheep-runs owned, worked, and entirely controlled by Maoris? Where lands were once worthless, they are now producing from 1s. 6d. to 5s. per acre; and as in the farming line so it will be in public health. The people have been stirred and awakened, and are now working out their salvation with fear and trembling. Over 110 houses have been recently built in this district, and many more are being built. The desire to improve their dwellings has become so popular, that all the young men save every penny for the improvement of their kainga. Gangs of young men all over the East Coast have gone into the bush, and with their own hands have sawn timber for building purposes. Some of the old cronies have even gone out themselves with

a small tomahawk, and hired themselves to the pakeha settlers to clear away the manuka on their lands for a small consideration. All this, that their kaingas may pass inspection.

The matter of ventilating and flooring meetinghouses has steadily progressed, till now there are very few houses left without windows or floors. While in this district I recommended the Council to do many things; among them was the disinfection of their meetinghouses. I have observed that during the *huis* and *tangis* these meetinghouses are always crowded, and, spittoons not being in evidence, it was a common sight to see consumptive old cronies expectorating their millions of bacteria under the mats. As consumption could easily be caught in this way, a thorough disinfection of the houses at suitable periods was recommended, consequently formalin and sulphur were supplied. I think the regular disinfection of meetinghouses would mean the lessening of consumption amongst the Maoris.

I am glad to note that drinking and drunkenness is much less than it formerly was. It is still, however, prevalent. During my last visit the leading chiefs met and decided that the two following years should be *he tau maroke* (dry years), and they called it "*He kau hoe ki uta*" (a swimming-ashore), for they made a vow to take out prohibition orders against any of their young men found drunk in the district. This is a good evidence of their sincere desire to put down the curse of drunkenness.

The matter of cemeteries was touched upon in this district, several of the cemeteries being too near to the pas; and in one place I was told it was quite offensive during the summer-time, so I advised the Natives to stop burying their dead in these places, and to select sites away from their kaingas and water-supplies, for in one or two instances I have found the burying-ground just above the *puna*, and I have no doubt that contamination of the water often took place. I may mention that the Maori Council Act is not potent enough in dealing with the Maori cemeteries. By-laws should be passed in all the Councils authorising the Village Committees to deal with the question of cemeteries.

Résumé.—Number of old whares destroyed, 40; number of new houses erected, 110.

Ngatiwhatua or Kaipara District.

This district has been visited amongst the rest. In this district there is great room for improvement in the matter of dwellings, but still you will see a great many European cottages built. Drinking of alcoholic liquors is not excessive. General condition is greatly in advance of previous years. There have been twelve new houses built and seven destroyed, showing that the Natives are awakening. I have noticed that several of the Natives in this district have commenced to milk cows—another sign of progress. "Kia ora e Ngatiwhatua."

Taupo.

Number of Maoris vaccinated by the Health Department	150
Number of villages visited	10

I spent over a week amongst the tribes of Tuwharetoa, lecturing to them on sanitary matters, inspecting their pas, and vaccinating whoever was willing. Since my last visit, five old houses which were condemned have been destroyed, and forty new houses built—a marked improvement on what has been. While in this district the matter of a medical attendant was approached, and it was thought advisable to ask the doctor at Rotorua to make periodical visits to Taupo and Tokaanu, which I hope will soon be consummated.

Waikato.

Waikato has been the most difficult and peculiar district to deal with. As yet I have not been able to make a house-to-house inspection of all the pas, but those I have visited have been, vulgarly put, hard nuts to crack. Somehow the King's influence does not seem to harmonize with the Council's.

Number of pas visited, 14.

Whangarei.

I made a tour of this district, and found the Natives very much the same as in other districts of the north. Thirty-two new weatherboard houses have been erected, also 6 new raupo whares, 13 new kitchens, 18 new closets, and 10 new paling houses, whilst 17 old houses have been destroyed. This is all evidence of progress. A great many Natives, however, have been rather sceptical, which was due to the Mahuta influence. The appointment of R. Waikerepuru as a Sanitary Inspector for the district will mean a good deal to the Natives.

Taranaki.

The Te Atiawas were once amongst the most brave, the most industrious, and enterprising of the race; history tells us this. But look at them to-day. Of all the tribes now living, they are the most backward and demoralised. I have had more difficulty with them than with any other people. I have had very little done in this district. There are two main causes which keep them back—first, Te Whiti-ism; second, prejudice against the pakeha. The first cause will only end when Te Whiti dies, and it will be useless to do anything radical till then, as by persecution many will fly to his banner. As soon as Te Whiti dies we must turn on the full machinery of the law. The second cause will never end till the land laws are adjusted on the West Coast. The making of the Natives of the West Coast mere rent-receivers is one of the direct causes of all the evils now existing in this district. It has taken all individual responsibility out of them. They are absolutely lazy because they have not sufficient lands to work. The doing-away with Maori landlord rights and making them irresponsible has encouraged extravagance, idleness, and debauchery, till Taranaki has become a by-word amongst the tribes. The Natives do not care about their homes and their persons, they do not care to improve, for there is no incentive. Their heritage has been taken away from them, and now in the abandon of despair they say "He aha te pai?" (What is the good? The Public Trustee has eaten the heart of the melon, and we are given the rind.) They are bitter against everything European, because their lands were confiscated, and the remainder they cannot occupy without paying rent for it. They drink and take liquor

to their homes and tangis just to be against the law. The drink question is the worst in the country. The King-country is nothing to it. Hardly a tangi passes but that large quantities are consumed by men, women, and children. The sights one sees are most painful, debasing, and past all description. They say matters are improving. I suppose they are, but at Parihaka these things still go on unchecked.

Number of pas visited, 14.

The Far North.

During the past year two epidemics broke out in the far North, one of typhoid at Te Kao—where several children lost their lives—due to bad water-supplies; and the other—a very peculiar malady—at Hokianga. It seemed to take on the form of measles at first, and then ended up like scarlatina. Over 120 Natives, besides a number of Europeans, were affected. There were eleven deaths, three of whom were Europeans.

Dr. Brown, who attended several of the cases, gives the following description of the trouble:—Initial symptoms: Malaise, pain and redness in the eyes. First day: Headache, and pain in abdomen, vomiting, and diarrhœa. Second day: Pain in abdomen, vomiting, and diarrhœa. Third day: Erythematous rash, papules, macules, and then complete desquamation. Nearly all cases had severe bronchial and lung complications, throat croupy, very often blood passed in stools, temperature irregular as far as was ascertained.

The sanitary matters of the North are progressing favourably on the whole. The appointment of inspectors for the Wairoa, Hokianga, Whangarei, and the northernmost districts will bring decided changes within the next year. Already much has been accomplished, and more will follow.

Number of villages visited, 37.

Wanganui District.

Loyal in the times of war and loyal in the times of peace have these people of Major Kemp been. Marked improvements have taken place in this district. During the past year thirty-seven new houses have been built, nineteen closets erected, whilst seventeen houses were destroyed. Drains have been cut, and pipes for sanitary purposes laid down.

An epidemic of influenza occurred at Waitotara, with one death, otherwise the general condition has been good.

Number of villages visited, 24.

Small-pox.

Recognising the fact that if the dread scourge of small-pox were to get amongst the Natives it would work sad havoc because of their communistic system of living, we immediately set to work to advise the Native Councils of the desirability of urging all the Maoris in their several districts to be vaccinated. A circular was hurriedly written on the subject of small-pox and widely distributed. A voice of warning and admonition rang through the colony, backed up by the actual cases of small-pox in Christchurch, and, as a result, 5,772 were vaccinated. The Public Vaccinators, as you will see by the attached list, did 2,870. There was no difficulty whatever in getting the Natives in some districts vaccinated, while in others, where there was less enlightment, some of the Natives were very obstinate. I must say, however, that in all places where they were obdurate I found no difficulty in vaccinating them after the matter had been thoroughly explained. I have to thank the Chairmen of the different Councils for their hearty response and co-operation. The results were exceedingly good on the whole, in spite of all difficulties. I have often refused to vaccinate the Natives because of their unhygienic condition. It was a problem, because some Natives were offended at their being refused; however, I would rather offend them than have some die from blood-poisoning. In all my cases I had very excellent results. The peculiarity which I mentioned in my last report of Natives taking the vaccine more severely than a half-caste or a three-quarter-caste has been repeatedly observed, not only by myself, but also by my colleagues. I made it a rule, as far as possible, only to vaccinate those Natives who were far away from the Public Vaccinators, or who refused to be vaccinated: but for that reason, I could easily have doubled my present number.

We are still vaccinating whenever and wherever possible. The near future, I hope, will see the Natives a little safer than they are to-day.

Maoris Vaccinated.

Province.	Number Vaccinated.
Auckland	1,039
Hawke's Bay	1,274
Wellington	917
Nelson and Westland	9
Canterbury	168
Otago	246
Chatham Islands	142
East Coast	600
Urewera	630
Taupo	50
Rotorua	697
Total	5,772

LEPROSY.

The matter of segregation has not yet been attempted. Incomplete isolation must still go on. It will be a blessing when these poor unfortunates are taken by the State and isolated on some island. During the past year the woman leper of Taupo has died; the Waikato one has been reported cured, and is now wandering at large; the Wanganui one is still there, a pitiful object to be seen; while another at Tauranga, a boy of eight years, has been discovered, and isolated as far as possible.

The history of the last case is as follows: Name of patient, ———. Age, eight years. According to the Maoris, patient had leprosy when born. The body was covered with maculated areas when a baby. Examination showed the first and second fingers of the right hand to be much distorted, giving the characteristic "leper's claw"; second finger had vascular ulcer, with cicatrices here and there of former sores; hand somewhat scaly; anæsthesia to the wrist. A few bulbous eruptions on the extensor surface of arms. There was no anæsthesia of left hand; no distortion of phalanges so far. The body presented maculated patches, one streak of two or three inches going across the back from the left sterno-cleido-mastoid down to the right buttock. Indolent ulcer on right knee, with several scars. Feet large and thick, rough skin, and anæsthesia in right foot from ankle to about 2 in. above the knee. No anæsthesia in left leg. The face showed the typical leonine appearance; partial facial paralysis; several small nodules on face; thin eyebrows; eyelashes have commenced to fall out; left eyelid drooping—conjunctivitis. I have ordered Ira, his guardian, to move the patient's present whare to about 200 yards from its present site, and not to allow any one to sleep, eat, or live with him. This has been carried out.

In conclusion, I beg leave to say that never before has the Maori made such an effort to improve, and never before has so much been accomplished in so short a time: 279 pas have been visited, 210 Natives have been examined and prescribed for, 139 houses have been destroyed without a single penny being expended in compensation, 380 new houses have been erected. This, in a measure, shows the practical efforts which have been made to improve, and needs no comment. 5,075 Maoris have been vaccinated.

The pressing needs of the present time, however, are as follows: (1) Native girls to be admitted to the local hospitals to be trained as nurses; (2) good, sensible pakeha women to go amongst the Maoris (*a*) to lecture, (*b*) to show them simple treatments, (*c*) to instruct how to look after the babies, (*d*) how to cook for the sick; (3) to have the doctors appointed as Medical Officers to the Maoris give lectures and demonstrations three or four times a year on hygiene and essential subjects; (4) to have our Maori boys who have graduated appointed as local Officers of Health; (5) pakeha sanitary inspectors to be appointed in addition to the Maori inspectors; (6) where Natives are unable to carry out sanitary measures, the Government to do so; (7) to have the erection of the hostelry at Taranaki and the one at Dargaville hastened; (8) to have a separate hospital erected for the Natives, where those suffering from consumption could be treated; (9) to have an island decided upon at once for the segregation of the unfortunate lepers; (10) to have a home built for the poor and needy old Maoris; (11) to have small cottage hospitals erected in suitable places; (12) to hasten individualisation of Native lands; (13) to open avenues of usefulness to Maori boys after leaving school; (14) lastly, but not least, to pass an Act prohibiting the practices of quacks and *tohungas*. I venture to state that if these suggestions are carried out instead of our tinkering with the question, there would be such a change in the Maori as would open the eyes of the world. We toil on, and we live in hope that the near future will see some of our dreams realised, the sons of Tu not lost, but found blended in the Anglo-Saxon-Maori of Greater Britain.

MAUI POMARE, M.D.,
Health Officer to the Maoris.

REPORTS OF PUBLIC ANALYSTS.

AUCKLAND.

The Chief Health Officer, Wellington. Auckland, 8th June, 1904.

I HAVE the honour to submit a report of the work done at my laboratory under the Food Adulteration Prevention Acts during the year ending the 31st March, 1904.

The particulars of the materials found on analysis are given on the attached sheet for the first thirty-one samples. The following is the report I submitted to the Police Inspector in reference to the various liquors submitted :—

Beers.—These were all light, sound, wholesome ales. The alcoholic strength varied between 10·13 proof spirit per cent. by volume in sample 14 to 14·90 per cent. in Nos. 9 and 12. The total solids varied between 3·46 per cent. and 6·9 per cent. The acidity in all these samples was low, while sulphuric acid was present in little more than traces, the highest amount being 0·035 per cent., as sulphates, most probably due to the effects of malting or water. The presence of chloride of sodium—common salt—in these samples is very marked in some and much less in others—in fact, these ales can be almost grouped by this ingredient, the lowest found being 28 gr. per gallon, and the highest being 75 gr. per gallon, the latter being a little more than 9 gr. per pint. Now, chloride of sodium is present in some waters to a moderately large amount, and it enters into composition of other brewing-materials, as well as being added in small quantities as an antiseptic. I do not therefore consider this amount injurious. I have examined for mineral poisons with negative results.

Whisky.—The whole of these samples are well-matured spirits. In every instance they are above the strength allowed by the Adulteration Amendment Act, ranging from 9·12 over proof in No. 8 to 19·4 under proof in No. 38 ; but they proved so uniform generally, that out of the thirty-two samples twenty-four ranged between 89 and 96 proof. All these samples contained tannin in traces, were slightly acid, and most of them yielded small quantities of caramel. I could detect no trace of methyl alcohol in any of those submitted.

Brandy.—These also are nearly all well-matured spirits ; they are also very uniform in strength, and in every instance stronger than the minimum allowed by the Act, the highest strength being 96·13 in sample 25, and the lowest 83·07 proof in No. 34. Tannin is present as traces in all the samples, and all were slightly acid. Caramel is present in these brandies, and small quantities of sugar in some. I could detect no trace of methyl alcohol in any of these samples.

Rum.—These samples differ materially from the foregoing liquor in being considerably more irregular, and containing amongst them a number of less-matured spirits. As regards the strength, this varies from 41 degrees over proof in No. 44 to 21 degrees under proof in No. 64, the latter being only 4 degrees above the minimum required by the Act : generally speaking, however, the samples range from 89 degrees proof to over proof, there being eight of the latter. I have found no evidence of methylic alcohol in these rums ; but eight of them are certainly not matured—in fact, most of those specified deserve to be characterized as "raw grain-spirits," the numbers being 4, 19, 56, 58, 88, 112, 118, 123, and 32. Other than these, the rums submitted are of a fair average quality, being matured spirits flavoured with sugar and caramel, and all being slightly acid.

Spirituous Liquors.—I would like to call your attention to a risk of the importation of cheap grain- and beet-refuse spirits from continental sources which, without being matured in wood, are at once bottled, marked with some well-got-up label of "Cognac," &c., and shipped to the colony by steamer, arriving here a few weeks after distillation. I have had such an article before me, and, although it may not come into use in well-conducted hotels, it is distributed through the country with every probability of doing serious harm. Unfortunately our Acts do not enable an article of this class to be prohibited either from landing or being retailed ; but legislation is certainly needed to in some form or other guard the people from a danger which is exceedingly likely to increase.

These remarks made to the Inspector of Police for this district fully explain my views with regard to the importation of unmatured spirits, and I would respectfully but earnestly impress upon you the necessity for some means of remedying the danger.

J. A. POND, F.C.S., Colonial Analyst,
Member of the Society of Public Analysts, England.

Return of Analyses at the Analytical Laboratory, Auckland, for the Year ended 31st March, 1904.

Department or Person from whom Sample received.	Date received.	Nature of Sample.	Adulteration suspected or for what analysed.	Found as Result of Analysis.
	1903.			
Police Department	May 8 ..	Beeswax	Foreign waxes, rosin	Paraffin, rosin.
"	" 8 ..	"	" "	" "
"	" 8 ..	"	" "	" "
"	" 8 ..	"	" "	" "
"	" 8 ..	"	" "	Rosin only.
"	June 19 ..	Twelve cakes of paints	Deleterious matter or poisons ..	Chromate of lead, ferrocyanide of potassium, aniline salt.
"	July 8 ..	Medicine	" " ..	Tincture or solution of ergot.
"	Aug. 15 ..	Vomit	Phosphorus	Negative result.
J. A. Pond	Oct. 13 ..	Baking-powder ..	Deleterious matter	Acid sulphate of potash.
Police Department	Feb. 18 ..	Medicine	"	Ergot and tincture of iron.

Department or Person from whom Sample received.	Date received.	Nature of Sample.	Adulteration suspected or for what analysed.	Found as Result of Analysis.						
				Alcohol as Proof Spirit. Per Cent. by Measure.	Solids, per Cent.	Na. Cl. Grains per Gallon.	Ash, per Cent.	Acidity as $H_4C_2O_2$.	SO_3, per Cent.	Mineral Poisons.
	1903.									
Police Department	Aug. 4 ..	Beer	Alcohol, solids, Na. Cl., Ash, $H_4C_2O_2$, SO_3, mineral poisons	12·70	4·0	20·47	0·213	0·024	0·04	Nil.
"	" 4 ..	"	Ditto	14·19	4·36	28·66	0·211	0·048	0·035	"
"	" 4 ..	"	"	14·04	4·10	21	0·262	0·060	0·02	"
"	" 4 ..	"	"	14·66	3·74	21·03	0·225	0·036	0·035	"
"	" 4 ..	"	"	13·88	3·46	21	0·227	0·036	0·035	"
"	" 5 ..	"	"	14·42	3·28	28·6	0·274	0·048	0·02	"
"	" 5 ..	"	"	14·50	4	27·1	0·238	0·036	0·02	"
"	" 5 ..	"	"	11·89	6·88	36·79	0·314	0·024	0·02	"
"	" 5 ..	"	"	14·96	3·70	25·2	0·230	0·048	0·02	"
"	" 5 ..	"	"	13·73	3·84	18·5	0·234	0·060	0·02	"
"	" 5 ..	"	"	14·19	3·98	27·1	0·246	0·048	0·02	"
"	" 5 ..	"	"	10·13	7·38	18·5	0·242	0·024	0·02	"
"	" 5 ..	"	"	10·54	6·6	23·8	0·3	0·048	0·023	"
"	" 5 ..	"	"	12·57	3·84	20·4	0·230	0·036	0·02	"
"	" 5 ..	"	"	14·04	4·30	27·1	0·264	0·060	0·02	"
"	" 5 ..	"	"	14·96	3·68	23·8	0·276	0·048	0·02	"
"	" 10 ..	"	"	13·57	3·70	21	0·272	0·060	0·02	"
"	" 10 ..	"	"	12·57	4·06	20·4	0·248	0·036	0·02	"
"	" 10 ..	"	"	12·30	3·68	14	0·226	0·012	0·02	"
"	" 10 ..	"	"	11·49	6·04	32·8	0·312	0·036	0·04	"
"	" 10 ..	"	"	14·35	3·46	14·2	0·200	0·036	0·02	"
"	" 10 ..	"	"	14·66	3·94	18·5	0·242	0·030	0·02	"
"	" 10 ..	"	"	12·57	3·80	14	0·216	0·018	0·02	"
"	" 7 ..	"	"	11·62	6·90	35·8	0·328	0·036	0·02	"
"	" 24 ..	"	"	11·76	4	14	0·216	0·036	0·02	"
"	" 24 ..	"	"	12·57	3·88	36·8	0·252	0·036	0·02	"
"	Sept. 7 ..	"	"	13·57	3·28	28·6	0·266	0·012	0·02	"
"	" 7 ..	"	"	12·16	3·96	20·5	0·238	0·024	0·03	"
"	" 7 ..	"	"	12·30	3·80	14	0·238	0·018	0·03	"
"	Oct. 17 ..	"	"	10·67	..	27·1	0·368	0·035	0·02	"
"	" 17 ..	"	"	10·67	..	32·9	0·402	0·04	0·02	"

Return of Analyses at the Analytical Laboratory, Auckland, for the Year ended 31st March, 1904—*continued*.

Department or Person from whom Sample received.	Date received.	Nature of Sample.	Adulteration suspected, or for what analysed.	Found as Result of Analysis.					
				Alcohol as Proof Spirit (Per Cent., by Measure).	Methyl Alcohol.	Residue.	SO_3.	Tannin.	Acidity.
Police Department	Aug. 4	Whisky	Proof spirit (per cent. by measure), methyl alcohol, SO_3, tannin, acidity	109·12	Nil	H. caramel	Trace	Traces	Faintly acid.
"	" 4	"	Ditto	80·95	"	"	Nil	"	"
"	" 4	"	"	90·98	"	"	"	"	"
"	" 4	"	"	97·36	"	"	"	"	"
"	" 4	"	"	90·30	"	Trace	Trace	"	"
"	" 7	"	"	89·68	"	Faint caramel	"	"	"
"	" 5	"	"	92·73	"	Ditto	"	"	"
"	" 10	"	"	92·06	"	"	"	"	"
"	" 5	"	"	94·39	"	"	"	"	"
"	" 5	"	"	87·20	"	"	"	"	"
"	" 5	"	"	80·96	"	"	Nil	"	"
"	" 5	"	"	91·81	"	"	Trace	"	"
"	" 5	"	"	92·40	"	"	Nil	"	"
"	" 5	"	"	93·31	"	"	"	"	"
"	" 10	"	"	90·73	"	"	"	"	"
"	" 5	"	"	83·54	"	"	"	"	"
"	" 5	"	"	90·12	"	"	"	"	"
"	" 5	"	Ethyl, alcohol, methyl, residue, SO_3, tannin, acidity	89·95	"	Trace caramel	"	"	"
"	" 10	"	Ditto	93·81	"	Small caramel	"	"	"
"	" 10	"	"	92·81	"	Ditto	"	"	"
"	" 10	"	"	91·06	"	"	"	"	"
"	" 10	"	"	88·44	"	"	"	"	"
"	" 24	"	"	90·89	"	Trace	Trace	"	"
"	" 24	"	"	94·06	"	"	"	"	"
"	" 26	"	"	87·29	"	Small	"	"	"
"	Sept. 7	"	"	93·31	"	"	Nil	"	Slightly acid; flavour harsh.
"	" 7	"	"	94·80	"	Trace	"	"	Slightly acid.
"	" 7	"	"	93·81	"	Small	"	"	"
"	Oct. 17	"	"	93·81	"	"	"	"	"
"	Aug. 10	"	"	96·29	"	Trace	"	"	"
"	" 10	"	"	96·12	"	Small	"	"	"
"	Oct. 17	"	"	91·98	"	"	"	"	"
"	Aug. 4	Brandy	"	92·40	"	Small caramel	"	"	"
"	" 4	"	"	90·64	"	"	"	"	"
"	" 4	"	"	90·12	"	"	"	"	"
"	" 4	"	"	93·06	"	"	"	"	"
"	" 4	"	"	95·13	"	"	"	"	"
"	" 7	"	"	83·07	"	"	Trace	"	"
"	" 5	"	"	91·56	"	Trace	Nil	"	"
"	" 5	"	"	93·64	"	"	"	"	"
"	" 5	"	"	93·98	"	Small	"	"	"
"	" 5	"	"	86·56	"	Very slight; generally saccharine	"	"	"
"	" 5	"	"	90·48	"	Ditto	"	"	"
"	" 5	"	"	94·64	"	"	"	"	Slightly acid; flavour raw.
	" 5	"	"	87·82	"	"	"	Heavy traces	Slightly acid.
	" 5	"	"	94·80	"	"	"	"	"

Police Department	Aug. 5 ..	Brandy	Ethyl, alcohol, methyl, residue, SO_3, tannin, acidity	85·06	Nil ..	Very slight; generally saccharine	Nil ..	Heavy traces	Slightly acid.
"	" 5 ..	"	Ditto	87·82	" ..	Ditto ..	" ..	Traces ..	"
"	" 5 ..	"	"	92·98	" ..	" ..	" ..	" ..	"
"	" 10 ..	"	"	93·23	" ..	" ..	" ..	" ..	"
"	" 10 ..	"	"	92·89	" ..	" ..	" ..	" ..	Slightly acid flavour raw.
"	" 10 ..	"	"	92·40	" ..	" ..	" ..	" ..	Slightly acid.
"	" 10 ..	"	"	92·48	" ..	" ..	" ..	" ..	"
"	" 10 ..	"	"	84·21	" ..	" ..	" ..	" ..	"
"	" 10 ..	"	"	88·62	" ..	" ..	" ..	" ..	"
"	Aug. 24 ..	"	"	92·89	" ..	" ..	" ..	" ..	"
"	" 24 ..	"	"	92·89	" ..	" ..	" ..	Heavy traces	"
"	Sept. 17 ..	"	"	93·48	" ..	" ..	" ..	Traces ..	"
"	" 17 ..	"	"	82·97	" ..	" ..	" ..	" ..	"
"	" 17 ..	"	"	88·97	" ..	" ..	" ..	" ..	"
"	Aug. 26 ..	"	"	93·14	" ..	" ..	" ..	" ..	"
"	Oct. 17 ..	"	"	92·73	" ..	" ..	" ..	Heavy traces	"
"	" 17 ..	"	"	92·64	" ..	" ..	" ..	Traces ..	"
"	Aug. 10 ..	"	"	Broken when received.					
"	" 4 ..	Rum	"	91·39	" ..	Small; generally caramel	" ..	Faint traces	Slightly acid; flavour harsh and raw.
"	" 4 ..	"	"	114·41	" ..	Ditto ..	" ..	" ..	Slightly acid.
"	4 ..	"	"	99·78	" ..	" ..	" ..	" ..	"
"	" 4 ..	"	"	96·21	" ..	" ..	" ..	" ..	"
"	" 4 ..	"	"	97·93	" ..	" ..	" ..	" ..	"
"	" 7 ..	"	"	95·88	" ..	" ..	" ..	" ..	"
"	" 7 ..	"	"	80·53	" ..	" ..	" ..	" ..	"
"	" 5 ..	"	"	93·39	" ..	" ..	" ..	" ..	Slightly acid; flavour harsh.
"	" 5 ..	"	"	91·39	" ..	" ..	" ..	" ..	Ditto.
"	" 5 ..	"	"	105·67	" ..	" ..	" ..	" ..	Slightly acid.
"	" 5 ..	"	"	92·73	" ..	" ..	" ..	" ..	"
"	" 5 ..	"	"	141·05	" ..	" ..	" ..	" ..	"
"	" 5 ..	"	"	91·81	" ..	" ..	" ..	" ..	"
"	" 5 ..	"	"	83·07	" ..	" ..	" ..	" ..	Slightly acid; flavour harsh.
"	" 10 ..	"	"	91·73	" ..	" ..	" ..	" ..	Slightly acid.
"	" 5 ..	"	"	78·93	" ..	" ..	" ..	" ..	"
"	" 5 ..	"	"	84·21	" ..	" ..	" ..	" ..	"
"	" 5 ..	"	"	89·68	" ..	" ..	" ..	" ..	Slightly acid; flavour harsh.
"	" 10 ..	"	"	87·91	" ..	" ..	" ..	" ..	Slightly acid.
"	" 10 ..	"	"	92·31	" ..	" ..	" ..	" ..	"
"	" 10 ..	"	"	109·03	" ..	" ..	" ..	" ..	"
"	" 10 ..	"	"	108·62	" ..	" ..	" ..	" ..	"
"	" 10 ..	"	"	98·09	" ..	" ..	" ..	" ..	"
"	" 10 ..	"	"	91·81	" ..	" ..	" ..	" ..	"
"	" 24 ..	"	"	100·08	" ..	" ..	" ..	" ..	"
"	" 24 ..	"	"	99·24	" ..	" ..	" ..	" ..	"
"	Sept. 7 ..	"	"	111·79	" ..	" ..	" ..	" ..	"
"	" 7 ..	"	"	102·05	" ..	" ..	" ..	" ..	"
"	" 7 ..	"	"	92·89	" ..	" ..	" ..	" ..	Slightly acid; flavour harsh.
"	Oct. 17 ..	"	"	93·48	" ..	" ..	" ..	" ..	Ditto.
"	" 17 ..	"	"	89·33	" ..	" ..	" ..	" ..	"

J. A. Pond, Analyst.

WELLINGTON.

The Chief Health Officer, Department of Public Health, Wellington. Colonial Laboratory, Wellington, 16th May, 1904.

I HAVE the honour to forward herewith returns of analyses made in this laboratory for the Department of Public Health during the year ended the 31st March, 1904. These returns show a total of ninety-five analyses of a varied character.

J. S. McLAURIN, D.Sc., F.C.S.,
Analyst to the Department of Public Health.

RETURN of ANALYSES at the ANALYTICAL LABORATORY, WELLINGTON, for the Year ended 31st March, 1904.

Department or Person from whom Sample received.	Date received.	Nature of Sample.	Adulteration suspected or for what analysed.	Result of Analysis.
	1903.			
Mr. McK.	April 6	Water	General analysis	Water of fair quality.
Dr. F.	" 6	"	"	"
Inspector of Weights and Measures	" 7	Condensed milk	Glucose	None found.
Chief Health Officer	" 7	Tin piping	Action of beer	Very slight.
Inspector of Weights and Measures	" 21	Brandy	Water or methylated spirits	Above the standard in water, and contains no methylated spirits.
"	" 21	Whisky	"	" " "
Miss J.	" 24	Alleged cancer-cure.		
Mr. J. L. L.	" 24	Acetic acid	Percentage of acetic acid	55·34 per cent.
"	" 24	"	"	52·84 "
Dr. J. P.	" 27	Urine	General analysis.	
Inspector of Weights and Measures	May 2	Milk	"	Below the standard in "solids not fat."
"	" 2	"	"	" "
"	" 2	"	"	" "
"	" 2	"	"	" "
"	" 2	"	"	" "
"	" 2	"	"	Above the standard.
Inspector Dolby	" 11	Water	"	Bad water.
"	" 14	"	"	Water of fair quality.
Dr. C.	" 28	Urine	"	
Inspector Schauer	June 4	Water	"	Water of inferior quality.
Dr. Makgill	" 15	Septic-tank effluent	"	
Dr. C.	" 24	Urine	Sugar	0·83 per cent. found.
Inspector Dolby	" 25	Well-water	General analysis	No indication of pollution.
Mr. A. A.	July 5	Milk	"	Milk of very abnormal composition.
G. Borough Council	" 10	Water	"	Water of fair quality.
Mr. T.	" 30	Milk, water, bread (2)	Poison suspected	None found.
Dr. Ogsten	" 31	Cocoa	"	Contains very little real cocoa.
Mr. J.	Aug. 15	Milk	Poison suspected	None found.
Dr. C.	" 17	Urine	Sugar	0·3 per cent. found.
C. E. D.	" 28	Water	Solids and hardness	A hard water.
Mr. C. L.	" 31	"	General analysis	Water not fit for human consumption.
Inspector Kendall	Sept. 18	"	"	Water of fair quality.
Dr. Y.	" 23	Urine	Urea	1·51 per cent. found.
Dr. P.	Oct. 20	"	Uric acid	Below normal.
Mr. F. J. W.	" 21	Fluid from bladder	General analysis.	
Dr. C.	" 22	Urine	Sugar	0·4 per cent. found.
Dr. S.	" 26	"	"	0·25 "
Inspector Kendall	" 29	Water	General analysis	Water of fair quality.
O. M.	" 29	"	"	Waters of excellent quality.
J. A.	" 29	"	"	Impure water, unfit for human consumption.

Dr. C. E. T.	Oct. 30	Rice	Poison suspected		Arsenic found.
Dr. H.	Nov. 3	Fluid from tumour	General analysis.		
Inspector J. Perry	" 3	Water	"		Water somewhat impure.
"	" 4	Septic-tank effluents	"		
Inspector of Weights and Measures, Napier	" 14	Butters	Foreign fats		Butters not adulterated.
Dr. G. A. H.	" 16	Urine	General analysis.		
Dr. M.	Nov. 20	"Felixir"	Amyl alcohol		Amyl alcohol present, but sample too small to determine amount.
Mr. W.	" 25	Water	General analysis		Water of inferior quality.
Town Clerk, D.	Dec. 1	"	"		Water of good quality.
Dr. C.	" 4	Urine	Sugar		0·4 per cent. found.
"	" 5	Pathological fluid	Urea		0·24 "
Borough Council, G.	" 5	Waters	General analysis		Waters of fair quality.
Dr. Mason	" 11	Stomach of calf	Poison suspected		None found.
Dr. A.	" 10	Urine	General analysis.		
Inspector Schauer	" 18	Water	"		
Dr. C.	" 21	Urine	"		
"	" 21	"	"		
Dr. McG.	" 23	Water	Lead suspected		Zinc found.
	1904.				
Dr. H.	Jan. 8	Pathological fluid	Uric-acid crystals		None found.
Dr. J. W.	" 9	Urine	Urea		1·76 per cent. found.
Dr. J.	" 15	"	Sugar		0·4 "
Inspector F. C. Wilson	" 20	Waters	General analysis.		
Dr. Y.	" 27	Urine	Sugar		3·03 per cent. found.
Dr. Frengley	Feb. 11	Well-water	General analysis		Water of inferior quality.
Dr. Anderson	" 12	Bread and flour	Alum		Small amounts in bread and in Nos. 1 and 3 flours; none in Nos. 2 and 4.
Dr. M.	" 13	Water	General analysis.		
Mrs. S. W.	" 19	Buttermilk	Poison		None found.
Dr. Makgill	Mar. 1	Lime-juice	Tartaric and sulphuric acid		Sample adulterated with water and citric acid.
Inspector A. H. Kendall	" 5	Waters	General analysis		No. 1, bad water; No. 2, rain-water, fair quality.
"	" 5	Flour	Poison		None found.
Dr. B.	" 11	Vomit, &c.	"		Traces of arsenic or antimony found.
"	" 11	"	"		"
W. E. B.	" 18	Water	General analysis		Water of good quality.
Inspector O'Brien	" 16	"	"		Water unsuitable for potable purposes.
Dr. H.	" 21	Urine for arsenic	Poison		Arsenic found.

J. S. McLaurin, Analyst.

Colonial Laboratory, 16th May, 1904.

The Chief Health Officer, Department of Public Health, Wellington.

In compliance with section 14 of "The Manure Adulteration Act, 1892," I have the honour to report that for the quarters ended the 30th June, 1903, the 30th September, 1903, the 31st December, 1903, and the 31st March, 1904, no analyses have been made under this Act.

J. S. McLaurin, D.Sc., F.C.S.,
Colonial Analyst.

Colonial Laboratory, Wellington, 16th May, 1904.

The Chief Health Officer, Department of Public Health, Wellington.

In compliance with section 38 of "The Adulteration Prevention Act, 1880," I have the honour to report that for the year ended the 31st March, 1904, the following analyses have been made:—

Nature of Sample.	Number of Sample.
Milk	6
Condensed milk	1
Bread and flour	5
Butter	3
Cocoa	1
Lime-juice	1
Spirits	3
Total	20

Of the milks five were below the standard. One sample of bread and two of flour contained small amounts of alum. The cocoa was heavily adulterated, and the lime-juice was adulterated with water and citric acid. Thus, of the twenty samples analysed, ten were adulterated and ten undulterated.

J. S. McLaurin,
Colonial Analyst.

CANTERBURY.

Return of Analyses at the Analytical Laboratory, Christchurch, for the Year ended 31st March, 1904.

Department or Person from whom Sample received.	Date received.	Nature of Sample.	Adulteration suspected, or for what analysed.	Result of Analysis.
Customs ..	1903 ..	Ground white tartar	Amount of duty ..	Recommended it to be classed as "cream of tartar," as the analysis showed it to be bitartrate of potash, and not a crude product.
Health ..	April 14 ..	Water from intake, Akaroa	Purity	The analysis showed that the waters were free from organic impurities.
„ ..	„ 14 ..	Water from reservoir, Akaroa	„	Ditto.
„ ..	„ 14 ..	Water from Rangiora, Scott's	„	The waters were organically pure, but they contained rather much clay.
„ ..	„ 14 ..	Water from Rangiora	„	Ditto.
Police ..	„ 18 ..	Spurious beeswax ..	Genuineness ..	The samples were found to be a mixture of two parts paraffin and one of resin. (S—— was sentenced to six months' for selling it.)
„ ..	„ 18 ..	„ ..	„ ..	Ditto.
Health ..	„ 25 ..	Water from Akaroa	Purity	Water proved to be very good.
„ ..	„ 25 ..	„ ..	„	„
Customs ..	„ 23 ..	Acetic acid ..	Tariff purposes ..	56·1 per cent. acetic acid.
„ ..	„ 23 ..	„ ..	„ ..	57·7 „
Health ..	„ 29 ..	Sewage before treatment by septic tank	To find out septic action	Analysis showed septic action slight; clearing chiefly due to settling.
„ ..	„ 29 ..	Sewage after treatment by septic tank	Ditto	Ditto.
„ ..	„ 28 ..	Water from O——'s premises	Purity	Indicated probable occasional contamination with sewage.
„ ..	„ 30 ..	Ditto	„	Ditto.
„ ..	„ 30 ..	Water from Mr. M——'s premises	„	To obtain standard for the two above.
Police ..	May 4 ..	Liquid from Detective Herbert	Arsenic	No trace of arsenic.
„ ..	„ 5 ..	Stomach and other portions of human body	For poisons ..	Free from any poisons.
„ ..	„ 8 ..	Stomach and portions of body	„ ..	Found sufficient arsenic to cause death. (Man committed suicide.)
Customs ..	„ 6 ..	Acetic acid ..	Tariff purposes ..	58·9 per cent. acetic acid.
„ ..	„ 13 ..	Brandy	To see if tampered with	Was not adulterated with salt water.
„ ..	„ 13 ..	Liquid heading ..	Tariff purposes ..	Found to contain no alcohol.

RETURN of ANALYSES at the ANALYTICAL LABORATORY, CHRISTCHURCH—*continued.*

Department or Person from whom Sample received.	Date received.	Nature of Sample.	Adulteration suspected, or for what analysed.	Result of Analysis.
	1903.			
Police ..	May 14 ..	Medicine from B——	Mineral poison ..	No mineral poison present.
„ ..	„ 14 ..	Stomach and parts of human body	Poison	Found no poison.
„ ..	„ 14 ..	B——'s Lung Preserver	Mineral poison	No mineral poison present.
„ ..	„ 14 ..	Bottle of fluid without label	„ ..	„
Customs ..	„ 26 ..	Acetic acid ..	For tariff purposes..	37·66 per cent. acetic acid.
„ ..	„ 26 ..	„ ..	„ ..	96 „
„ ..	„ 26 ..	Aq. ment. acid ..	„ ..	75·8 per cent. proof spirit.
„ ..	„ 26 ..	Barytes ..	„ ..	Sulphate of barium, classed as chemical n.o.e.
„ ..	„ 26 ..	Mineral sperm-oil ..	„ ..	Classed as mineral oil suitable for burning.
„ ..	„ 29 ..	Acetic acid ..	„ ..	57·4 per cent. acetic acid.
„ ..	„ 29 ..	„ ..	„ ..	52·3 „
„ ..	„ 29 ..	„ ..	„ ..	51·6 „
Health ..	June 1 ..	Water (Mr. P——'s)	Purity	Free ammonia and chlorine too high. Condemned.
Customs ..	„ 6 ..	Victoria blue ..	Tariff	Reported to be aniline dye.
„ ..	„ 6 ..	Vinegar	„	3·5 per cent. acetic acid.
„ ..	„ 6 ..	Inf. gentian co. conc.	„	46·27 per cent. proof spirit.
„ ..	„ 6 ..	Vinegar	„	3·5 per cent. acetic acid.
„ ..	„ 6 ..	Cascara sagr. ..	„	Proof spirit. Nil.
„ ..	„ 6 ..	Inf. buchu. con. ex.	„	44·6 per cent. proof spirit.
„ ..	„ 6 ..	Inf. senega. con. ..	„	49·4 „
Police ..	„ 9 ..	Human stomach ..	Poisons	Found to be free from any poison.
„ ..	„ 11 ..	Portions of human body	„	„
Health ..	„ 12 ..	Water, R—— Hotel	Purity	Water reported good.
„ ..	„ 12 ..	Bread (Dr. Finch)..	Bitter taste ..	Reported to have been made with bad yeast.
Customs ..	„ 18 ..	Acetic acid ..	Purposes of Tariff..	37·11 per cent. acetic acid.
„ ..	„ 23 ..	Vinegar	„ ..	28·0 „
„ ..	„ 23 ..	Acetic acid ..	„ ..	48 „
„ ..	„ 23 ..	Vinegar	„ ..	4·8 „
Health ..	July 6 ..	Sewage, Christchurch Drainage Board	Amount of impurities	The analyses of these three samples showed that they were three times as dilute as sewage ordinarily treated by the septic tanks.
„ ..	„ 6 ..	Ditto	Ditto	
„ ..	„ 6 ..	„	„	
Customs ..	„ 9 ..	Rice-flour ..	Tariff	Reported as sago-starch.
„ ..	„ 9 ..	Acetic acid ..	„	56·6 per cent. acetic acid.
Police ..	„ 25 ..	Alleged beeswax ..	Adulteration	Proved to be a mixture of two parts paraffin and one of resin. (M—— sentenced to six months imprisonment for false pretences.)
„ ..	„ 25 ..	„ ..	„	
„ ..	„ 25 ..	„ ..	„	
„ ..	„ 25 ..	„ ..	„	
„ ..	„ 25 ..	„ ..	„	
Customs ..	„ 28 ..	Arrowroot-flour ..	Tariff	Reported as sago-starch.
„ ..	„ 28 ..	Mineral oil ..	„	A mixture of fish and hydrocarbon oils, but the greater proportion is fish-oil.
„ ..	„ 30 ..	Concentrated essence of vinegar	„	51·1 per cent. acetic acid.
„ ..	„ 30 ..	Acetic acid ..	„	60·3 „
„ ..	Aug. 3 ..	„ ..	„	28·3 „
„ ..	„ 3 ..	Gloss for linen ..	„	Found to be silicates of magnesia and aluminal fatty matter, and soda. Free from starch or borax.
„ ..	„ 3 ..	Detergal ..	„	A mixture of soda-ash and sodium silicate.
„ ..	„ 13 ..	„ ..	„	Ditto.
Health ..	„ 13 ..	Linotype-metal ..	Composition, and its relation to the health of those working in the room	Found to be an alloy of lead, zinc, and antimony.
„ ..	„ 13 ..	Antimony ..	Ditto	Found to contain a little arsenic.
„ ..	„ 13 ..	Dust	„	Contained large amount of linotype-metal, and a sufficient amount of arsenic to be chemically detected.
„ ..	„ 13 ..	Air	„	Contained as much CO_2 as outside air.
„ ..	„ 13 ..	Fumes from melting-pots	„	Free from any metal other than a mere trace.
Customs ..	„ 24 ..	Fluid ex. cascara sagrada	Tariff	53·27 per cent. proof spirit.
„ ..	„ 24 ..	Acetic acid ..	„	57·66 per cent. acetic acid.
Health ..	„ 26 ..	Air	Amount of CO_2 ..	About half as much CO_2 as the air from T—— room contained.
„ ..	„ 26 ..	Dust	Amount of poisonous metal	Contained less linotype-metal than the dust from the T——.
Police ..	Sept. 14 ..	Human stomach and portions of body	Poison	Found no trace of poison.

RETURN of ANALYSES at the ANALYTICAL LABORATORY, CHRISTCHURCH—*continued*.

Department or Person from whom Sample received.	Date received	Nature of Sample.	Adulteration suspected, or for what analysed.	Result of Analysis.
	1903.			
Health ..	Sept. 15 ..	Invert sugar ..	Arsenic	Found no trace of arsenic.
„ ..	„ 15 ..	Malt	„	„
„ ..	„ 15 ..	Dust from malt-kiln	„	„
Customs ..	„ 15 ..	Alpha tanning material	Tariff	Tannic acid, sugar, and other organic matters from plants. Suggested classing as n.o.e.
„ ..	„ 15 ..	Acetic acid ..	„	57·5 per cent. acetic acid.
„ ..	„ 15 ..	China sang. for colouring soup	„	35 per cent. total sugars.
„ ..	„ 15 ..	Essence for colouring soup	„	17 „
„ ..	„ 15 ..	Oakwood bark-extract	„	Similar to 82.
„ ..	„ 15 ..	Hemlock tanning-extract	„	„
„ ..	„ 15 ..	Caramel	„	18 per cent. total sugar.
„ ..	„ 15 ..	Asphalt in powder..	„	Mineral pitch n.o.e.
„ ..	„ 15 ..	Acetic acid ..	„	58·9 per cent acetic acid.
Health ..	„ 29 ..	Water from branch of Opihi	Purity	Bad colour, due to vegetable growth containing iron; otherwise good.
„ ..	„ 29 ..	Water from Timaru reservoir	„	Ditto.
„ ..	„ 29 ..	Ditto, after passing iron pipe	„	
Police ..	„ 29 ..	Sample liquid ..	Identification ..	Reported to be pennyroyal.
„ ..	„ 29 ..	„ ..	„ ..	Reported as most probably oil of savin
Health (collected by Police)	Oct. 1 ..	Bread, Christchurch	Adulteration ..	Small proportion of potato-starch; free from other adulteration.
Ditto ..	„ 1 ..	„	„ ..	Ditto.
„ ..	„ 1 ..	„	„ ..	„
„ ..	„ 1 ..	„	„ ..	„
„ ..	„ 1 ..	Fancy bread, Timaru	„ ..	No mineral adulteration or preservative.
„ ..	„ 1 ..	„ „	„ ..	„ „
„ ..	„ 1 ..	„ „	„ ..	„ „
„ ..	„ 1 ..	„ „	„ ..	„ „
„ ..	„ 1 ..	„ „	„ ..	„ „
„ ..	„ 1 ..	„ „	„ ..	„ „
„ ..	„ 1 ..	„ „	„ ..	„ „
„ ..	„ 1 ..	Fancy bread, Oamaru	„ ..	„ „
„ ..	„ 1 ..	„ „	„ ..	„ „
„ ..	„ 1 ..	„ „	„ ..	„ „
„ ..	„ 1 ..	„ „	„ ..	„ „
„ ..	„ 1 ..	Bread, Ashburton ..	„ ..	Contained small portion of potato-starch.
„ ..	„ 1 ..	„ „ ..	„ ..	Ditto.
„ ..	„ 1 ..	„ „ ..	„ ..	„
„ ..	„ 1 ..	„ „ ..	„ ..	„
„ ..	„ 1 ..	„ „ ..	„ ..	150 grains alum to 4lb. loaf; also small quantity of potato-starch.
„ ..	„ 1 ..	„ „ ..	„ ..	200 grains alum to 4lb. loaf.
Police ..	„ 2 ..	Metallic substance..	Poison	Crude alloy of antimony, lead, and small quantities of other metals.
Customs ..	„ 2 ..	Acetic Acid ..	Tariff	58 per cent. acetic acid.
„ ..	„ 2 ..	Acetic acid (glacial?)	„ ..	95·6 per cent. acetic acid, 58° Fahr. melting-point.
Health ..	„ 23 ..	Water, Geraldine ..	Purity and for further reference	Waters very good.
„ ..	„ 23 ..	„ „ ..	Ditto	„
Customs ..	„ 22 ..	H——'s liq. relm. extract infus.	Tariff	46·4 per cent. proof spirit.
„ ..	„ 22 ..	H——'s liq. bich. extract infus.	„	56 „
„ ..	„ 22 ..	H——'s auritium pro syrup	„	53·3 „
„ ..	„ 22 ..	H——'s succu. tarax	„	25·8 „
„ ..	„ 22 ..	H——'s tinct. nox. vomica	„	106 „
„ ..	„ 22 ..	H——'s liq. senega pro infus.	„	53·3 „
.. ..	„ 22 ..	H——'s gentian ..	„	57·8 „
.. ..	„ 22 ..	Infu. gent. conc. ..	„	25·5 „
.. ..	„ 22 ..	Concentrated vinegar	„	59 per cent. acetic acid.
.. ..	„ 22 ..	„ „	„	59 „
.. ..	„ 29 ..	Vinegar	„	4 „
„ ..	„ 29 ..	Acetic acid ..	„	96·6 „ 57·2° Fahr. melting-point.
.. ..	Nov. 14 ..	Vinegar	„	4·7 per cent. acetic acid.
„ ..	„ 14 ..	Acetic acid ..	„	52 „
„ ..	„ 14 ..	„	„	56 „
„ ..	„ 14 ..	Cascara sagrada ..	„	Proof spirit. Nil.

RETURN of ANALYSES at the ANALYTICAL LABORATORY, CHRISTCHURCH—*continued*.

Department or Person from whom Sample received.	Date received.	Nature of Sample.	Adulteration suspected, or for what analysed.	Result of Analysis.
	1903,			
Customs ..	Nov. 14 ..	Acetic acid ..	Tariff	60 per cent. acetic acid.
,, ..	,, 14 ..	,,	,, ...	59 ,,
,, ..	,, 14 ..	Mineral sperm-oil ..	,, ...	Petroleum oil, classed kerosene.
,, ..	,, 14 ..	Wyandotte's Dairyman's Cleaner	,, ...	Soda-ash.
,, ..	,, 14 ..	Chrome tanning-extract	,, ...	Principally a solution of chrome-sulphate.
Police ..	,, 23 ..	Human stomach ..	Poison	Found to be free from poison.
,, ..	,, 23 ..	Small bottle of liquid	Identification ..	Strong acetic acid.
Customs ..	,, 24 ..	Acetic acid ..	Tariff	52 per cent. acetic acid.
,, ..	,, 24 ..	Chrome tan-liquid ..	,, ...	Chloride of chromium.
,, ..	Dec. 1 ..	Colouring ..	,, ...	34 per cent. saccharine.
,, ..	,, 1 ..	Bisulphate of lime	,, ...	Bisulphate of lime.
,, ..	,, 1 ..	Liq. Senega ..	,, ...	42·5 per cent. proof spirit.
,, ..	,, 1 ..	Acetic acid ..	,, ...	53 per cent. acetic acid.
,, ..	,, 1 ..	Drug	,, ...	47·7 per cent. proof spirit.
,, ..	,, 1 ..	Acetic acid ..	,, ...	57 per cent. acetic acid.
,, ..	,, 1 ..	C—— Soap ..	,, ...	Recommended it to be classed as common yellow soap.
	1904			
,, ..	Jan. 6 ..	,, ..	,, ...	Probably between 5 and 10 per cent. resin; about twenty volumes standard salt solution required to precipitate it. (Special report.)
,, ..	,, 6 ..	Plasmon jelly ..	Suitability as lifeboat provision	Water and volatile matter, 73·9 per cent.; plasmon, 19·6 per cent.; gelatine, 73·9 per cent.
Police ..	,, 13 ..	Spirit	Poisons	Free from poisons.
,, ..	,, 13 ..	,,	,, ...	,,
,, ..	,, 13 ..	Wine	,, ...	,,
,, ..	,, 13 ..	,, ...	,, ...	,,
,, ..	,, 13 ..	Spirit	,, ...	,,
,, ..	,, 13 ..	,, ...	,, ...	,,
,, ..	,, 13 ..	Contents of Sparlket apparatus	,, ...	Free from poisons that would account for death.
,, ..	,, 13 ..	Kersebaer liquor ..	,, ...	Ditto.
,, ..	,, 13 ..	Medicines (bottle) ..	,, ...	,,
,, ..	,, 13 ..	,, ,, ..	,, ...	,,
,, ..	,, 13 ..	,, ,, ..	,, ...	,,
,, ..	,, 13 ..	,, (box) ..	,, ...	,,
,, ..	,, 13 ..	,, ,, ..	,, ...	,,
,, ..	,, 12 ..	Whisky	,, ...	,,
,, ..	,, 13 ..	Vomit	,, ...	,,
,, ..	,, 13 ..	Cup of spirit-flask ..	,, ...	Found copper, zinc, and ammonia chlorides; metallic mercury due to perchloride of mercury having been put in the cup.
,, ..	,, 15 ..	Stomach (human) ..	,, ...	Found traces of mercury.
,, ..	,, 15 ..	Organs (human) ..	,, ...	,,
,, ..	,, 15 ..	Urine (human) ..	,, ...	,,
,, ..	,, 16 ..	Perchloride of mercury	,, ...	15 per cent. perchloride of mercury, 16 per cent. ammonia-chloride.
,, ..	,, 18 ..	Contents of blue phial	,, ...	16 per cent. perchloride of mercury, 17 per cent. ammonia-chloride.
,, ..	,, 20 ..	Suit of clothes (stains)	,, ...	Traces of mercury (salt) in stains.
,, ..	,, 15 ..	Tin from stable ..	,, ...	Salts of nickel, iron, and organic matter
Customs ..	,, 11 ..	Acetic acid ..	Tariff	54 per cent. acetic acid.
,, ..	,, 11 ..	Caramel	,, ...	36 per cent. total sugars.
,, ..	,, 27 ..	Burnt sugar ..	,, ...	24 per cent. cane-sugar.
,, ..	,, 27 ..	Saccharoline ..	,, ...	79 per cent. invert sugar.
,, ..	,, 27 ..	Acetic acid ..	,, ...	60 per cent. acetic acid.
,, ..	,, 27 ..	Imp. Senega conc.	,, ...	25 per cent. proof spirit.
,, ..	,, 27 ..	Imp. Calumba conc.	,, ...	29 ,,
,, ..	,, 27 ..	Imp. conc. seg. liq. conc.	,, ...	30 ,,
,, ..	,, 27 ..	Ditto	,, ...	31 ,,
,, ..	,, 27 ..	Imp. gentian co. conc.	,, ...	32 ,,
,, ..	,, 27 ..	Imp. buchu conc. ..	,, ...	30 ,,
,, ..	Feb 1 ..	Acetic acid ..	,, ...	99 per cent. acetic acid, 58° Fahr. melting-point.
,, ..	,, 1 ..	,, ..	,, ...	59 per cent. acetic acid.
,, ..	,, 1 ..	,, ..	,, ...	97 ,, 53° Fahr. melting-point.
,, ..	,, 1 ..	,,	,, ...	57 per cent. acetic acid.
,, ..	,, 5 ..	Plasmon-powder ..	For lifeboat provisions	*Water, 11·4 per cent.; albuminoids, 72 per cent.; non-nitrogenous matter, 8·4 per cent.; salts, &c., 8·20 per cent.
,, ..	,, 5 ..	Beef plasmon ..	Ditto	*Water, 64·5 per cent.; albuminoids, 25 per cent.; non-nitrogenous matter, 6·7 per cent.; salts, &c., 3·5 per cent.

* The two above were together suitable for replacing the plasmon-jelly mentioned in Order in Council.

RETURN of ANALYSES at the ANALYTICAL LABORATORY, CHRISTCHURCH.—*continued.*

Department or Person from whom Sample received.	Date received.	Nature of Sample.	Adulteration suspected, or for what analysed.	Result of Analysis.
	1904.			
Police ..	Feb. 19 ..	Human stomach ..	Poisons	Found to be blackened with bismuth.
„ ..	„ 19 ..	Human liver ..	„	Minute trace of a bitter substance, probably strychnine.
„ ..	„ 19 ..	Bottle containing medicine	„	$\frac{1}{50}$gr. strychnine to each tablespoonful of contents. It also contained bismuth-carb., suspended in a solution of soda-carb. and mucilage.
„ ..	„ 19 ..	Ditto.	„	Ditto.
„ ..	„ 19 ..	„	„	Solution of small amounts of potassium-bromide and chloral-hydrate (antidote for strychnine).
„ ..	„ 19 ..	„	Strychnine ..	Free from strychnine.
„ ..	„ 22 ..	T——'s pills ..	„ ..	„
„ ..	„ 22 ..	B——'s tabloids	„ ..	„
Customs ..	„ 26 ..	Acetic acid ..	Tariff	58 per cent. acetic acid.
„ ..	„ 26 ..	Elastic-pulp plaster	„	Found to be a mixture of cement, wood-pulp, and plaster-of-paris.
„ ..	„ 26 ..	Spirits of wine ..	„	168 proof spirit.
„ ..	„ 26 ..	Hand-stuffing grease	„	Found to be soft-soap.
„ ..	„ 26 ..	Cascara sagr. (fluid extract)	„	Proof spirit. Nil.
„ ..	„ 26 ..	Tritipalm ..	„	36 per cent. proof spirit.
„ ..	March 16 ..	Chloride of chronium	„	Found to be as stated. Recommended it to be classed in one category together with Nos. 424 and 426.
„ ..	„ 16 ..	Acetic acid ..	„	29 per cent. acetic acid.
„ ..	„ 16 ..	Malt-marrow ..	„	Contains 9 per cent. extract, 9·9 per cent. proof spirit, 0·12 per cent. ash. Differs from the general run of malt liquors only by containing about double the amount of extract.
„ ..	„ 16 ..	„ ..	„	Ditto.
„ ..	„ 21 ..	Top of a cork from a beer-barrel	To see if there was any sign or evidence of a stamp on it.	Cork showed marks of having been strongly abraded. Particles of earth and fibres of paper were fastened down with mucilage. Parts of the cork were marked with blue ink. I am of opinion that a stamp had been put on the barrel over the cork, and cancelled with blue ink, and that it had got rubbed off by accident.
Health ..	„ 24 ..	Water	To see if suitable for drinking	The analysis showed that the waters were all from one source, and that they were perfectly suitable for drinking and for domestic purposes.
„ ..	„ 24 ..	„	To compare with No. 1	
„ ..	„ 24 ..	„	Ditto	

A. A. BICKERTON, Analyst.

Brittan Street, Linwood, Christchurch, N.Z., 22nd March, 1904.

The Collector of Customs, Christchurch, N.Z.

I HAVE the honour to report as follows on the piece of cork received from you on the 21st March :—

Upon examining it under the microscope I find that the cork shows distinct marks of having been strongly abraded. Particles of earthy matter, together with fibres of paper, were firmly fastened down with mucilage on the parts of the cork where the marks of abrasion terminated. Round the borders of the cork were stuck several particles of paper, one in particular having a mark of blue aniline ink. Another part of the cork was marked with the same ink. This indicates that the paper was put on the cork previous to the marking with the ink. A chemical test shows that the paper on the cork, and the paper on which the stamps supplied by the Customs are printed, are both glazed with a similar glaze. The cork also retains in parts a fine film of gum, which shows that a gummed paper has been put on.

On the whole I am of opinion that a stamp has been placed on the barrel over the cork and cancelled with blue dye or ink, and that the stamp has been rubbed off by accident.

A. A. BICKERTON,
Colonial Analyst.

Brittan Street, Linwood, Christchurch, N.Z., 17th November, 1903.

The Collector of Customs, Christchurch, N.Z.

IN reply to the Secretary's question as to whether the tanning-extracts Nos. 393 and 398 are chemicals, I beg to state that leather is tanned by the chemical action of tannic acid on the gelatine in the leather. Oakwood-bark extract and other tanning extracts are the impure tannic acids used. Therefore, in my opinion, as Nos. 393 and 398 are similar extracts to the oakwood-bark extract, they are impure chemicals; but on referring to the tariff-list, I found that there were a number of other substances which might with equal justice be classed as chemicals, but which are admitted free—*e.g.*, bichromate of potash, catechu, oak-bark tanning-extract, &c., and therefore it seemed to me that tanning-extracts Nos. 393 and 398 might also be placed under the more inclusive category "n.o.e."

A. A. BICKERTON,
Colonial Analyst.

"GROUND WHITE TARTAR."—CUSTOMS NO. 357.

Christchurch, N.Z., 3rd April, 1903.

THIS sample is not argol, as argol is a crude bitartrate of potash, from which tartar and cream of tartar are obtained; nor is it a crude dyeing-material, if the meaning of the word "crude" be taken as defined in "Webster's International Dictionary"—viz., "In its natural state; not altered, refined, or prepared for use by any artificial process." The above sample having been both refined and ground, it is evidently not in its natural or "crude" state. Of course it is open to your Department to give a broader interpretation to the word "crude," and allow it to include "imperfect, impure, or unfinished" products, as is sometimes done. In this case the sample would be classed as "crude," because it will not of itself produce finished dye-work.

Personally I do not advise that this extended meaning should be applied to the word for tariff purposes, as it would in practice lead to such fine distinctions as to render it almost impossible to determine in which class a number of chemicals should be placed; whereas the use of the words "impure" or "unfinished" when intended would settle all doubt on the matter.

The word "tartar" is often used in an inclusive sense as follows: Tartar—Argol (crude tartar), cream of tartar (refined tartar).

When, in the absence of any definition to the contrary, the degree of refinement need not be considered, the sample submitted can be classed as "cream of tartar," and in my opinion would be fairly classed as such.

A. A. BICKERTON,
Colonial Analyst.

Brittan Street, Linwood, Christchurch, N.Z., 31st December, 1903.

The Collector of Customs, Christchurch.

IN reply to memo. C. 1903-1725, No. 518-58, of the 21st December, I beg to state that the sample of soap submitted therewith, and called "C—— Soap," differs from the New Zealand common yellow soap in that it contains the fatty acids from some palm-nut oil—probably those from cocoanut-oil. It is free from any trace of scent or from any substance that would give it an additional quality—*e.g.*, disinfectant, &c. The cocoanut-oil renders the soap very serviceable for use in waters containing salts.

As it is a cheap yellow soap, and useful for ordinary purposes, and as the Tariff Act does not specify that tallow is the only fat allowed in making common yellow soap, it seems to me that it (otherwise "C——Soap") ought to be classed as "common yellow soap."

A. A. BICKERTON,
Colonia Analyst.

SIR,— Christchurch, N.Z., 17th July, 1904.

In reference to the report on the analysis of the Christchurch sewage, which I submitted to you on the 16th instant, I beg to state that the analyses show that the sewage is a dilute one, and could be discharged directly into the estuary without harm, provided that there be about fifty times as much organically pure water running into the estuary from the rivers. Under this condition the final amount of objectionable sewage-matter in the water of the estuary would not be more than the standard allowed by the River Pollution Commissioners.

The analysis of "C" shows that after the treatment the sewage goes through on the farm, the resulting effluent would need to be diluted only about ten times to be within this standard, and consequently, that the present treatment is effective.

In reference to your question as to whether the sewage is too dilute for successful treatment by the septic-tank and contact-beds methods, I beg to state that I have not been able to find any satisfactory record of analyses that will show the highest amount of dilution that the sewage will stand and at the same time still continue to be economically treated by the above methods. However, I may state in connection with the matter that of all the records of analyses of the common sewage of towns that I can find quoted, the most dilute contains 59 gr. per gallon of total solids, of which 9 gr. were organic. The Christchurch sewage is about twice as dilute as this.

I recently made for Dr. Finch, Health Officer, an analysis of sewage which I believe came from the Mount Magdala Home. This contained 19 gr. per gallon of organic matter, and was consequently nearly four times as bad as the Christchurch sewage. After treatment by the septic tank the same sewage contained 13 gr. per gallon of organic matter, and the albuminoid ammonia was only reduced from 14 to 12 parts per million. This seems to point to the fact that the septic-tank treatment would not effect any material improvement on the Christchurch sewage.

In regard to the further purification by the action of the mitrifying bacteria in the contact-beds, I may state that the presence of a quantity of nitrates in the clarified effluent "C" proves that the present beds are practically acting as contact-beds, and the difference in the amount of ammonia between "B" and "C" shows that the injurious matters are reduced to about one-fourth the amount in the effluent—viz., from 4·48 to 1·12 parts per million.

A. A. BICKERTON, Analyst.

E. Cuthbert, Esq., Engineer to the Drainage Board, Christchurch.

Notes.

The possible danger to be considered in discharging the Christchurch sewage directly into the estuary without previous treatment would be that it might precipitate on the flats, and cause a nuisance. This would probably be overcome by discharging it while the tide was running out.

There would be no such risk in discharging the effluent "C," as there is nothing in it that would precipitate.

The only superiority contact-beds might have over the present farm-beds would be in the drainage; they would not bring any new principle into play.

Judging from analyses, the effluents from sewage-farms are purer than the effluents of any other methods of treating sewage of which I have been able to obtain any records of analyses.

Brittan Street, Linwood, Christchurch, N.Z., 11th January, 1904.

The Collector of Customs, Christchurch, N.Z.

I HAVE the honour to report as follows on the analysis of a sample of plasmon-jelly received from you on the 6th instant:—

The jelly is composed of—

	Per Cent.
Water and volatile matter	73·9
Plasmon (milk-proteids dried)	19·6
Gelatine	7·6

When the tin containing the plasmon-jelly was pierced, a large quantity of gas was given off. This gas on analysis proved to be chiefly carbonic acid, together with bad-smelling gases of decomposition. I made a bacteriological examination of the contents of the tin, and found that this was chiefly due to lactic decomposition. The contents of the tin were not in the form of a jelly, but a liquid, in which the milk-protoids were suspended in pasty masses. This liquid is caused by the decomposition of the jelly.

I would like to state that the matter of canning mixed proteids of the nature of plasmon and gelatine in a moist condition so that they can be relied upon to keep, is a difficult one. They form an exceptionally good medium for the growth of bacteria, and therefore, unless they are rendered absolutely sterile before being sealed up, very poisonous ptomaines may be produced.

I presume from the fact that no water is mentioned among the quantities given in the Order in Council that the plasmon and gelatine were supposed to be canned dry. If water be added so as to form a jelly, then the extra weight should be allowed for; otherwise the food-value may be very much reduced. In the present instance it would be only about 25 per cent. of that specified in the Order.

In reference to the food-value of plasmon, may I be permitted to point out that plasmon, being the dried proteids of milk, chiefly casein, has a high food-value in place of meat as a substance for

flesh-forming; but the small quantities allowed by the Order in Council—viz., ¼ oz. jelly and 4 oz. biscuit—would not supply sufficient carbo-hydrates to replace the carbon and hydrogen given off by respiration, &c. Therefore I would respectfully suggest that the lifeboat should carry, in addition, 1¼ lb. of ordinary biscuit: this would also be a safeguard in case the plasmon biscuit got damp, as, more than likely, it would then go bad, and especially if the weather was warm.

A. A. BICKERTON,
Colonial Analyst.

Brittan Street, Linwood, Christchurch, N.Z., 16th September, 1903.

The Collector of Customs, Christchurch, N.Z.

REFERRING to inquiry contained in memo. from the Secretary of Customs, Wellington, C. 1903–1201, No. 304–57, of the 31st August, as to whether I am certain that sample labelled "No. 382, Rice-flour" is a sago-starch, I beg to state that the sample is pure sago-starch, and contains no gluten, cellulose, or matters other than starch.

The starch-cells are all perfectly intact, and they have not undergone any treatment except that which was necessary to separate them from the raw material in which they were embedded, and they are the characteristic truncate granules which are found only in starch from sago.

Sago comes into commerce practically in two forms—viz., raw and prepared sago. The "raw" is the starch as beaten out of the pith obtained from the sago-palm; the "prepared" is the same starch after it has been rubbed through colanders, and dried or heated on hot plates. Therefore, strictly speaking, there is no sago-flour, although if prepared sago were ground it might be called sago-flour; but, even so, it would still be a pure starch, and so not the same as flour obtained by grinding grains which contain materials in addition to starch.

Since reporting on No. 382, I received a sample labelled "No. 384, Arrowroot-flour, imported by Y—— B——, *ex* 'Monowai,' from China." This was in every way similar to No. 382, so I also reported it as sago-starch.

A. A. BICKERTON,
Colonial Analyst.

Brittan Street, Linwood, Christchurch, N.Z., 11th January, 1904.

The Collector of Customs, Christchurch, N.Z.

IN reply to the telegram from the Secretary of Customs, Wellington, received from you on the 6th instant, I have the honour to report as follows:—

Judging from the low melting-point of the fatty acids, and from other reactions of the "C—— Soap," the percentage of resin is low, probably between 5 and 10 per cent.; but the resin could not be estimated with any degree of accuracy, as the results obtained from even the most modern process (Twitchwell's) vary from 3 to 5 per cent. This is caused by the difficulty of separating it from impurities, and by the solubility of a quantity of resin-acids in the esters produced from the fatty acids of the palm-nut oil. For all practical purposes in this connection the resin may be regarded as fat, because in common with fats it is changed into soap by the action of soda.

I would like to point out that common yellow soaps vary very much in the amount of resin they contain—most having from 5 to 20 per cent. Some kinds of blue mottled soaps contain no resin at all.

I may state that, with a view to ascertain its suitability as a "marine soap" (soap suitable for use with salt water), I tested the purified soap in order to find out its solubility in salt water, with the result that a 20-per-cent. solution of the purified "C—— Soap" required about twenty volumes of a standard salt-solution to precipitate the soap; whereas a similar solution of ordinary soap was precipitated with about ten volumes of the standard salt-solution. A true marine soap made from pure palm-nut oil will stand about fifty volumes of the salt-solution before it precipitates.

A. A. BICKERTON,
Colonial Analyst.

OTAGO.

University Laboratory, Dunedin, 8th May, 1904.

Dr. Mason, Department of Public Health.

I HAVE the honour to enclose herewith my annual report for year ending 31st March last of analyses performed for the Departments of Public Health and Police.

So far as adulteration of food and drugs is concerned, I think the results are very favourable. There is no doubt that the Public Health Department is the means of preventing any practices of that kind. "Prevention is better than cure." The knowledge that prosecution and exposure would follow the detection of cases of tampering with articles of food is a powerful deterrent.

There has been done a great deal of useful work in insisting on the purity of water for household use. I should like, however, more work in connection with the Health Department and Agricultural Department.

JAMES G. BLACK,
Government Analyst.

Return of Analyses at the Analytical Laboratory, University Laboratory, Dunedin, for the Year ended 31st March, 1904.

Department or Person from whom Sample received.	Date received.	Nature of Sample.	Adulteration suspected, or for what analysed.	Result of Analysis.
	1903.			
Public Health Department ..	March 20 ..	Water	Impurities	After removal of dead earthworm, contained 29·8 gr. of solid residue per gallon, of which 13·5 gr. were organic matter. After filtering gave 4·7 gr. per gallon of organic matter. Very bad odour after standing three weeks. Utterly unfit for household use.
" ..	" 24 ..	"	..	Solid residue, 17·9 gr. per gallon, of which 3·1 gr. were organic matter. Very nitrogenous. Not enough received to determine nitrogen quantitatively.
" ..	" 24 ..	Whisky	Strength and impurities ..	78 per cent. of proof spirit. Clouded with suspended organic and inorganic matter. Had been diluted with undistilled, unfiltered, dirty water. It is a sample of bad, cheap whisky. Cannot say there is any poisonous matter present.
" ..	April 15 ..	Water	Impurities	Total solids, 7·3 gr.; common salt, 1·4 gr.; organic matter, 2·3 gr., per gallon.*
" ..	" 15 ..	"	"	Total solids, 7·5 gr.; common salt, 1·4 gr.; organic matter, 2·1 gr., per gallon.*
" ..	" 15 ..	"	"	Total solids, 16·6 gr.; common salt, 2·7 gr.; organic matter, 1·9 gr., per gallon.*
" ..	June 1 ..	"	"	4·7 gr. of organic matter per gallon, 0·087 part of albuminoid nitrogen per million parts. Unfit for household use.
Police Department	May 8 ..	Raspberry vinegar ..	Impurities and deleterious substances	All these samples consist mainly of solution of sugar with colouring and extract of raspberry and perhaps other fruit. They all contain indications of colouring-matter derived from aniline and rosaniline and other dyes foreign to fruit, but no poisonous substances were found after a very elaborate and exhaustive search. They all contain from 1⅓ to 3½ per cent. of alcohol.
"	" 8 ..	" ..	Ditto	
"	" 8 ..	" ..	"	
"	" 8 ..	" ..	"	
"	" 8 ..	" ..	"	
"	" 8 ..	" ..	"	
"	" 8 ..	Raspberry cordial ..	"	
"	" 8 ..	"Superior raspberry vinegar	"	
"	" 8 ..	Raspberry syrup ..	"	
"	" 8 ..	Raspberry ..	"	
Public Health Department ..	" 20 ..	Dunedin City water	Impurities, injurious to health ..	For results see below—table marked A.

* In Nos. 1 and 2 the organic matter is high but not of a deleterious nature. No. 3 is rather hard but not otherwise objectionable.

A.

(Results shown in Grains per Gallon.)

—	Inflow into Upper Reservoir.	University Tap.	Ross Creek.	Left Branch, Ross Creek.	House-tap (unfiltered) at University.	House-tap (filtered), University.
Organic nitrogen	0·033	0·061	0·031	0·067	0·083	0·054
Ammonia	0·006	0·009	0·007	0·008	0·009	0·009
Nitrogen of nitrates and nitrites ..	0·022	0·021	0·028	0·026	0·023	0·024
Total nitrogen	0·060	0·089	0·065	0·098	0·114	0·087
Temporary hardness	2·9	3·1	3·2	2·9	..	..
Permanent hardness	1·8	1·7	1·5	1·7	..	..
Total hardness	4·7	4·8	4·7	4·6	4·9	4·9
Silica	1·87	2·17	1·9	2·45	3·5	0·91
Alumina and oxide of iron	1·28	1·73	1·32	1·9	3	0·83
Lime	1·85	1·81	1·8	2	2·5	2·1
Magnesia	1·56	1·56	1·63	1·73	1·4	1·73
Chloride of sodium	1·7	1·5	1·56	1·5	1·6	1·4
Sulphuric acid combined	0·55	0·68	0·58	0·64	0·7	0·68
Organic matter	2	2·83	2·13	3·1	4·1	2·1
Total solid residue	11·37	13·14	11·47	14·33	17·8	11·3

RETURN of ANALYSES at the ANALYTICAL LABORATORY, UNIVERSITY LABORATORY, DUNEDIN, for the Year ended 31st March, 1904—*continued*.

Department or Person from whom Sample received.	Date received.	Nature of Sample.	Adulteration suspected, or for what analysed.	Result of Analysis.
Police Department	May 8 ..	Raspberry vinegar..	Impurities and deleterious substances	Mainly sugar-solution, colouring, and extract of raspberry, and indication of aniline and foreign dyes; a little alcohol, but no poisonous substances detected.
"	" 8 ..	"	Ditto	Ditto.
"	July 8 ..	Milk	Water, and deficiency of butter-fat	Butter-fat, 3·6 per cent.; solids other than fat, 10·1 per cent.
"	" 8 ..	"	"	" 3·9 " " 9·6 "
"	" 8 ..	"	"	" 4·1 " " 9·2 "
"	" 8 ..	"	"	" 3·2 " " 9·2 "
"	" 8 ..	"	"	" 4 " " 9·7 "
"	" 8 ..	"	"	" 3·8 " " 9·5 "
"	" 8 ..	"	"	" 3·7 " " 10·1 "
"	" 8 ..	"	"	" 3·3 " " 9·8 "
"	" 8 ..	"	"	" 3·3 " " 9·4 "
"	" 8 ..	"	"	" 4·2 " " 10 "
"	" 8 ..	"	"	" 3·7 " " 9·2 "
"	" 8 ..	"	"	" 3·9 " " 9·3 "
"	" 8 ..	"	"	" 3·7 " " 9·7 "
"	" 8 ..	"	"	" 3·6 " " 9·8 "
"	" 8 ..	"	"	" 3·8 " " 9·3 "
"	" 8 ..	"	"	" 4·0 " " 9·5 "
				(All these samples satisfy the requirements of the Adulteration Acts.)
Orokononui Home (Dr. Gault) ..	Nov. 10 ..	Drugs	Analysed for identification and constituents	Alcoholic solution of "quin-sulph." and free sulphuric acid.
"	" 10 ..	"	Ditto	Dialysed iron and cinchona-tincture.
"	" 10 ..	"	"	A little opium (alcoholic) and trace of belladonna or atropine.
"	" 10 ..	"	"	Chief constituents are quinine-sulph., syrup, and turpentine.
"	" 10 ..	"	"	Harmless; core coated with sugar.
"	" 10 ..	"	"	Capsules of quinine-sulphate.

			Cocoa-butter. Per cent.	Ash. Per cent.	Phosphoric-acid of Ash. Per cent.	Real Cocoa. Per cent.
Public Health Department ..	Oct. 20 ..	Chocolate-cream tablets	Analysed for percentage of cocoa-butter and cocoa	Brown exterior part	28·3	0·8	31·6	61
" ..	" 20 ..	Ditto	Ditto	"	31·5	1·5	37	65
" ..	" 20 ..	Cocoa-beans, West Indies	"	Kernel of beans	47·1	3	27·7	100
" ..	" 20 ..	Cocoa beans, East Indies	"	"	43	3·2	29	100
" ..	" 20 ..	Chocolate-drops ..	"	Whole drops as received	25·7	1·2	42·5	53
" ..	" 20 ..	"Common" chocolate-tablets	"	Whole as received	27	1·4	41·3	60
" ..	" 20 ..	Court chocolate ..	"	"	26·9	1·3	40	58
" ..	" 20 ..	Chocolate-cream tablets	"	Brown exterior part	35	1·1	41	53
" ..	" 20 ..	Chocolate (vanilla tablets)	"	Whole as received	23·5	1	41·6	42
" ..	" 20 ..	Crude chocolate ..	"	Crude as received	41·4	3·2	28·7	100
" ..	Sept. 25 ..	Chocolate husks and residues	"	As received	9·1	7	..	20
				(Much sugar in all. No. 58 mostly kernel residue, after extraction of the butter.)				
" ..	Oct. 25 ..	Water	Impurities	Total solid residue 10·87 gr. per gallon, of which organic matter is 3·34 gr.; organic nitrogen, 0·07 gr.; ammonia 0·008 gr.; chlorine, 1·9 gr. This water is unfit for household use.				
Public Health and Customs Departments	Dec. 11 ..	Cream of tartar or bitartrate of potash	Impurities or foreign matter other than bitartrate of potassium	Contains 79 per cent. of bitartrate of potassium, 17 per cent. of tartrate of calcium, 4 per cent. of sulphate of calcium. Unsuitable for use by bakers, pastrycooks, and for food-preparations, as mislead with usual soda, leaving the product alkaline and injurious to health.				
	1904.							
Public Health Department ..	Feb. 11 ..	White pepper ..	Impurities or foreign matter ..	A little excess of pepper dust and husk. A rather impure sample. Not adulterated.				
" ..	" 15 ..	Water	Impurities hurtful to health ..	7 gr. solids per gallon, of which 3·3 gr. is organic matter. Very nitrogenous. No poisonous matter.				

JAMES G. BLACK, Analyst.

REPORT OF PATHOLOGIST.

SIR,— Pathological Laboratory, Wellington, July, 1904.

I have the honour to report on the work of the laboratory during the past year.

The materials received for examination totalled 739, or an increase on the previous year of nearly 50 per cent.

The number of specimens of sputum submitted for examination as to the presence of tubercle bacilli was 308, of which 100 proved to be definitely tubercular.

For examination as to the presence of diphtheria bacilli 38 throat swabs were received, and of these cases 15 proved positive on bacteriological examination.

Of urethral discharge for gonorrhœa, 26 specimens were sent, in 10 of which the gonococcus was definitely demonstrated.

For typhoid, but 32 examinations were made by Widal's method, a definite reaction resulting in 16 cases.

For plague, 10 suspicious rats were examined *post mortem*, also specimens from 5 suspicious human cases.

For anthrax, there were 6 examinations; while for such material as foodstuffs, vomits, fæces, fluids, &c., 67 examinations were conducted, and 96 specimens of urine were tested and examined.

For leprosy there were 2 examinations, in 1 of which *Bacillus leprœ* was present.

Twenty-three samples of potable water were submitted for examination by the Department.

Of tissue for pathological examination there were 136 specimens submitted, chiefly for a decision after microscopical examination on the presence or absence of cancer and other malignant growths.

In connection with these examinations and investigations of the past year, 35 guinea-pigs were used for experimental purposes.

I have again pleasure in recording my thanks to Mr. G. H. Barker, F.R.M.S., my assistant, for the careful and attentive manner in which he has carried out his duties in connection with these examinations.

I have, &c.,

The Chief Health Officer. J. A. GILRUTH, M.R.C.V.S., Pathologist.

SPECIMENS EXAMINED.

Nature.	Source.	Suspected Condition.	Result of Examination.
Urine	Bladder	Casts	Negative.
Butter	Dairy factory	Unfit for use	Positive.
Meat	Butcher's shop	Phosphorescence	,,
Growth	Eyelid	Malignant	,,
Water	Tanks	Contaminated	Negative.
Fluid	Stomach or lungs	Cystic	,,
Nodules	Lungs	Tubercular	,,
Sputum	,,	,,	,,
Fluid	Pustule	Anthrax	,,
Tissue	Uterus	Endometritis	,,
Fluid	Lung	Hydatid	Positive.
,,	Pustule	Anthrax	Negative.
Sputum	Lungs	Tubercular	,,
,,	,,	,,	,,
Pus	Abscess	,,	Positive.
Swab	Throat	Diphtheria	,,
Growth	Breast	Malignant	,,
Blood	Effusion	Septic infection	Negative.
Urine	Bladder	Tubercular	Positive.
Pus	Pustules	Septic infection	,,
Tissue	Breast	Malignant	,,
Swab	Throat	Diphtheria	Negative.
Sputum	Lungs	Tubercular	,,
,,	,,	,,	,,
Cyst	,,	Hydatid	Positive.
Tissue	Kidney	Malignant condition	,,
,,	,,	,,	,,
Sputum	Lungs	Tubercular	Negative.
Pus	Abscess	,,	,,
Fæces	Rectum	Excess of *B. coli*	Positive.
Sputum	Lungs	Tubercular	,,
,,	,,	,,	Negative.
,,	,,	,,	,,
Blood	Uterus	Presence of streptococci	,,
Fluid	Spine	Tubercular	Positive.
Sputum	Lungs	,,	,,
Pus	Spine	Streptococcic infection	,,
Growth	Skin	Malignant	,,
Scraping	Uterus	,,	,,
Sputum	Lungs	Tubercular	Negative.
Scraping	Uterus	Malignant	,,
Urine	Bladder	Diminished urea	Positive.
,,	,,	Diminished secretion of urea	,,
,,	,,	Presence of sugar	,,
,,	,,	,, casts	Negative.
Sputum	Lungs	Tubercular	,,
,,	,,	,,	,,

SPECIMENS EXAMINED—*continued.*

Nature.	Source.	Suspected Condition.	Result of Examination.
Urine	Bladder	Nephritis	Negative.
Tumour	Breast	Malignant	Positive.
Tissue	,,	,,	Negative.
,,	,, (subcutaneous area)	,,	,,
,,	Axilla (gland)	,,	,,
Rat	Mount View Asylum	Plague	,,
Tumour	Back of head	Malignant	Positive.
Swab	Throat	Diphtheria	Negative.
Tumour	Subclavicular region	Malignant	Positive.
Urine	Bladder	Presence of albumen	Negative.
,,	,,	,, sugar	Positive.
Tumour	Under skin abdomen	Malignant	,,
Pus	,, ,, ,,	Tubercular	Negative.
,,	Vagina	Gonorrhœa	,,
Urine	Bladder	Tubercular	,,
,,	,,	,,	,,
Sputum	Lungs	,,	Positive.
Urine	Bladder	Sugar	Negative.
,,	Bladder	Diminished excretion of urea	Positive.
,,	,,	,,	,,
,,	,,	,,	,,
,,	,,	Presence of albumen	Negative.
Fluid	Not given	,, *B. coli*	Positive.
Sputum	Lungs	Tubercular	,,
,,	,,	,,	Negative.
Tumour	Neck	Malignant	,,
Sputum	Lungs	Tubercular	,,
,,	,,	Pneumonia	Positive.
,,	,,	Tubercular	,,
,,	,,	,,	Negative.
,,	,,	,,	,,
,,	,,	,,	Positive.
,,	,,	,,	,,
,,	,,	,,	,,
Tissue	Breast	Malignant	Negative.
Pus	Back of hand	Septic infection	Positive.
Blood	Ear	Typhoid	Negative.
Growth	Skin	Malignant	Positive.
Urine	Bladder	Tubercular	Negative.
Swab	Throat	Diphtheria	Positive.
Urine	Bladder	Presence of albumen	,,
Tissue	Mamma	Malignant	,,
Rat	Not given	Plague	Negative.
,,	,,	,,	,,
Sputum	Lungs	Tubercular	,,
,,	,,	,,	Positive.
Pus	Pleura	,,	Negative.
Tissue	Mamma	Malignant	,,
,,	,,	,,	Positive.
Swab	Throat	Diphtheria	Negative.
Fluid	Brain	Hydatid	,,
Water	Water-supply	Unpotability	Positive.
,,	,,	,,	,,
Swab	Throat	Diphtheria	Negative.
Mucous	Stomach		Mucoid materia
Sputum	Lungs	Tubercular	Negative.
,,	,,	,,	,,
,,	,,	Hydatids	,,
,,	,,	Tubercular	,,
Tissue	Breast	Malignant	Positive.
Scrapings	Endometrium	,,	,,
Fluid	Pleura	Tubercular	Negative.
Urine	Bladder	,,	,,
Tissue	Skin	Leprosy	,,
Sputum	Lungs	Tubercular	Positive.
Tumour	Neck	Malignant	Negative.
Sputum	Lungs	Tubercular	Positive.
,,	,,	,,	,,
,,	,,	,,	Negative.
,,	,,	,,	,,
,,	,,	,,	,,
,,	,,	,,	,,
Tissue	Tongue	Malignant	,,
,,	Cheek	,,	Positive.
Swab	Throat	Diphtheria	Negative.
Sputum	Lungs	Tubercular	,,
,,	,,	,,	Positive.
,,	,,	,,	,,
Swab	Throat	Diphtheria	,,
Urine	Bladder	Presence of albumen	Negative.
,,	,,	,, sugar	Positive.
,,	,,	Percentage of urea	1·91 per cent.
Sputum	Lungs	Tubercular	Positive.
Discharge	Cheek	,,	Negative.

SPECIMENS EXAMINED—*continued*.

Nature.	Source.	Suspected Condition.	Result of Examination.
Urine	Bladder	Presence of albumen ..	Negative.
„	„	„ sugar ..	„
„	„	Percentage of urea ..	1·08 per cent.
Sputum	Lungs	Tubercular	Negative.
„	„	„	„
„	„	„	Positive.
„	„	„	Negative.
„	„	„	„
Swab	Throat	Diphtheria	Positive.
Tissue	Conjunctiva	Malignant	„
Urine	Bladder	Presence of sugar	Negative.
„	„	„ albumen ..	„
„	„	Percentage of urea ..	1·35 per cent.
Sputum	Lungs	Tubercular	Positive.
„	„	„	„
„	„	„	Negative.
„	„	„	„
Discharge	Urethra	Gonorrhœa	„
Tumour	Below ear	Malignant	Positive.
Tissue	Gland	„	„
Water	Water-supply	Non-potability	„
Sputum	Lungs	Tubercular	Negative.
„	„	„	„
Urine	Bladder	Presence of albumen ..	„
„	„	„ sugar ..	Positive.
„	„	Percentage of urea ..	94 per cent.
Water	Water-supply	Contamination	Positive.
„	„	„ „	„
Sputum	Lungs	Tubercular	„
„	„	„	„
„	„	Hydatids	Negative.
Tumour	Eyelid	Malignant	„
Sputum	Lungs	Tubercular	Positive.
Fluid	Thorax	„	„
Pus	Urethra	Gonorrhœa	Negative.
Membrane	Throat	Diphtheria	„
Tissue	Uterus	Malignant	„
Sputum	Lungs	Tubercular	Positive.
„	„	„	Negative.
Swab	Throat	Diphtheria	Positive.
„	„	„	„
Sputum	Lungs	Tubercular	„
„	„	„	„
„	„	„	Negative.
Tissue	Breast	Malignant	„
Sputum	Lungs	Tubercular	„
„	„	„	„
„	„	„	„
Tissue	Tongue	Malignant	„
Urine	Bladder	Cystitis	Positive.
Tissue	Breast	Malignant	„
„	Gland (axillary)	„	„
„	Uterus	„	„
Sputum	Lungs	Tubercular	„
„	„	„	Negative.
Pus	Urethra	Gonorrhœa	Positive.
Tissue	Uterus	Injured	Negative.
„	Placenta	„	„
„	Fœtus	„	„
Sputum	Lungs	Tubercular	„
„	„	„	„
Tissue	Eye	Malignant	„
Sputum	Lungs	Tubercular	„
Tissue	Eye	Malignant	Positive.
„	Tongue	„	„
Sputum	Lungs	Tubercular	Negative.
„	„	„	„
„	„	„	Positive.
„	„	„	Negative.
Fluid	Pleura	Hydatid	„
Tissue	Vermiform appendix ..	Tubercular	Positive.
Urine	Bladder	„	Negative.
Tissue	Neck (malignant pustule) ..	Anthrax	Positive.
„	Tongue	Malignant	„
Urine	Bladder	Actmomycosis	Negative.
Blood	Ear	Typhoid	Positive.
Sputum	Lungs	Tubercular	Negative.
Urine	Bladder	„	„
Sputum	Lungs	„	„
Pus	Urethra	Gonorrhœa	„
Sputum	Lungs	Tubercular	„
„	„	„	„
„	„	„	„
Urine	Bladder	„	„

SPECIMENS EXAMINED—*continued.*

Nature.	Source.	Suspected Condition.	Result of Examination
Tissue	Breast	Malignant	Negative.
Sputum	Lungs	Tubercular	"
"	"	"	"
Urine	Bladder	"	"
Fluid	Knee-joint	Streptococcic infection	"
"	Ankle-joint	"	"
Growth	Cheek	Malignant	Positive.
"	Foot (sole)	"	"
Sputum	Lungs	Tubercular	"
"	"	"	Negative.
Water	Water-supply	Contaminated	Positive.
Blood	Ear	Typhoid	"
Tissue	Gland	Malignant	"
Sputum	Lungs	Tubercular	"
"	"	"	Negative.
"	"	"	"
"	"	"	"
Urine	Bladder	Cystitis	"
Fluid	Abdominal cyst	Hydatids	"
Growth	Palate (hard)	Malignant	"
"	Ramus lower jaw	"	Positive.
Urine	Bladder	Tubercular	"
Sputum	Lungs	"	"
Tissue	Tongue (base)	Malignant	Negative.
Urine	Bladder	Albumen	"
"	"	Sugar	"
"	"	Percentage of urea	1·21 per cent.
Tissue	Not given	Malignant	Negative.
Blood	Ear	Typhoid	Positive.
Urine	Bladder	Albumen	Negative.
"	"	Sugar	"
Sputum	Lungs	Tubercular	Positive.
"	"	"	"
"	"	"	"
Swab	Throat	Diphtheria	Negative.
Growth	Rectum	Malignant	Positive.
Urine	Bladder	Tubercular	Negative.
"	"	"	"
"	"	Albumen	"
Sputum	Lungs	Tubercular	Positive.
Tissue	Breast	Malignant	"
"	"	"	"
Sputum	Lungs	Tubercular	Negative.
Vomit	Stomach	Slough	Positive.
Sputum	Lungs	Tubercular	Negative.
Blood	Ear	Typhoid	"
"	"	"	"
Sputum	Lungs	Tubercular	"
Tissue	Endometrium	Malignant	"
Water	Water-supply	Contamination	Positive.
"	"	"	"
"	"	"	"
Urine	Bladder	Albumen	Negative.
Sputum	Lungs	Tubercular	"
Pus	Urethra	Gonorrhœa	Positive.
Tissue	Cervix uteri	Malignant	"
Blood	Ear	Typhoid	"
Sputum	Lungs	Tubercular	"
"	"	"	"
"	"	"	"
"	"	"	"
Urine	Bladder	"	Negative.
Tissue	Breast	Malignant	Positive.
"	Uterus	"	Negative.
"	"	"	"
"	"	"	"
Pus	Urethra	Gonorrhœa	Positive.
Blood	Ear	Increase of leucocytes	Negative.
Sputum	Lungs	Tubercular	Positive.
Tissue	Gland (lymphatic)	Malignant	"
Pus	Urethra	Gonorrhœa	Negative.
Urine	Bladder	Tubercular	"
Sputum	Lungs	"	"
"	"	"	Positive.
"	"	"	"
Swab	Throat	Diphtheria	Negative.
"	"	"	"
"	"	"	Positive.
Sputum	Lungs	Tubercular	Negative.
Tissue	Tongue	Malignant	Positive.
"	Gland	"	Negative.
Blood	Ear	Typhoid	Positive.
Pus	Urethra	Gonorrhœa	"

SPECIMENS EXAMINED—*continued.*

Nature.	Source.	Suspected Condition.	Result of Examination.
Growth	Neck	Malignant	Negative.
Sputum	Lungs	Tubercular	"
"	"	"	Positive.
"	"	"	"
"	"	"	"
"	"	"	"
"	"	"	"
"	"	"	"
Urine	Bladder	"	Negative.
Sputum	Lungs	"	"
"	"	"	"
"	"	"	"
Pus	Kidney	"	"
Tissue	Uterus	Malignant	"
Sputum	Lungs	Tubercular	"
"	"	"	"
Urine	Bladder	Albumenoid	"
"	"	"	"
Sputum	Lungs	Tubercular	"
"	"	"	"
Swab	Throat	Diphtheria	Positive.
"	"	"	"
Blood	Ear	Typhoid	"
Sputum	Lungs	Tubercular	"
"	"	"	"
"	"	"	Negative.
Fluid	Stomach	Hydatids	Positive.
Sputum	Lungs	Tubercular	Negative.
"	"	"	"
"	"	"	"
"	"	"	"
"	"	"	"
"	"	"	"
Blood	Ear	Typhoid	Positive.
"	"	"	Negative.
Sputum	Lungs	Tubercular	"
Tissue	Lower lip	Malignant	"
Sputum	Lungs	Tubercular	"
"	"	"	"
Blood	Ear	Typhoid	"
Pus	Urethra	Gonorrhœa	Positive.
Swab	Throat	Diphtheria	"
Water	Water-supply	Contaminated	"
Sputum	Lungs	Tubercular	Negative.
Growth	Not given	Malignant	"
Swab	Throat	Diphtheria	"
"	"	"	"
Fæces	Bowel	Hydatids	Positive.
Sputum	Lungs	Tubercular	"
Growth	Not given	Malignant	"
Tissue	Breast	"	"
Pus	Urethra	Gonorrhœa	"
"	"	"	Negative.
"	Prostatic sinus	"	"
Sputum	Lungs	Tubercular	"
"	"	"	Positive.
Water	Water-supply	Contaminated	"
Urine	Bladder	Tubercular	"
"	"	"	Negative.
Sputum	Lungs	"	"
"	"	"	Positive.
Fluid	Meninges	Meningitis	"
Dust	House	Tubercular	Negative.
Sputum	Lungs	"	Positive.
"	"	"	"
"	"	"	"
"	"	"	"
"	"	"	"
Fluid	Renal cyst	Blood	"
"	Inguinal gland	Plague	Negative.
"	Renal cyst	Blood	Positive.
Rat		Plague	Negative.
Sputum	Lungs	Tubercular	Positive.
"	"	"	"
Dust	Room	"	Negative.
"	"	"	"
Sputum	Lungs	"	Positive.
Tumour	Not given	Malignant	Negative.
Blood	Ear	Typhoid	"
Sputum	Lungs	Tubercular	"
"	"	"	"
"	"	"	"
"	"	"	"
"	"	"	"

SPECIMENS EXAMINED—*continued.*

Nature.	Source.	Suspected Condition.	Result of Examination.
Sputum	Lungs	Tubercular	Negative.
"	"	"	Positive.
Pus	Urethra	Gonorrhœa	Negative.
"	Neck	Tubercular	Positive.
"	Back	"	Negative.
Urine	Bladder	"	"
Growth	Not given	Malignant	"
Urine	Bladder	" disease	"
Water	Water-supply	Contaminated	Positive.
Sputum	Lungs	Tubercular	Negative.
Urine	Bladder	Gonorrhœa	"
Sputum	Lungs	Tubercular	"
"	"	"	Positive.
Fæces	Bowel	Hydatids	Negative.
Vinegar	Restaurant	Unfit for use	Positive.
Swab	Throat	Diphtheria	Negative.
Urine	Bladder	Tubercular	"
"	"	Albumenoid	"
"	"	Urea	1·08 per cent.
Water	Water-supply	Contaminated	Positive.
"	" "	"	"
Tissue	Lip	Malignant	"
Sputum	Lungs	Tubercular	"
"	"	"	Negative.
Fluid	Abdominal cyst	Hydatids	"
Blood	Ear	Typhoid	Positive.
"	"	"	"
Smear	Not given	Leprosy	Negative.
Sputum	Lungs	Tubercular	"
Vinegar		General condition	Good.
Sputum	Lungs	Tubercular	Negative.
Water	Water-supply	Contaminated	Positive.
Tissue	Tongue	Malignant	"
Swab	Throat	Diphtheria	Negative.
Bodies	Sac over sacrum	Malignant	"
Sputum	Lungs	Tubercular	"
"	"	"	Positive.
Swab	Throat	Diphtheria	Negative.
Sputum	Lungs	Tubercular	"
"	"	"	"
Rat		Plague	"
Growth	Forearm	Malignant	"
Sputum	Lungs	Tubercular	"
"	"	"	"
"	"	"	"
"	"	"	"
"	"	"	Positive.
"	"	"	"
Urine	Bladder	Gonorrhœa	Negative.
Growth	Thigh	Malignant	Positive.
Sputum	Lungs	Tubercular	Negative.
"	"	"	"
"	"	"	"
"	"	"	"
Tissue	Finger	Leprosy	"
Sputum	Lungs	Tubercular	Positive.
"	"	"	Negative.
"	"	"	"
Tissue	Fallopian tube	"	"
"	" "	Gonorrhœa	"
"	Thyroid	Malignant	"
Urine	Bladder	Albumenoid	"
"	"	Sugar	"
"		Bile	"
Sputum	Lungs	Tubercular	"
"	"	"	"
"	"	"	"
"	"	"	Positive.
Swab	Throat	Diphtheria	Negative.
Blood	Ear	Typhoid	Positive.
"	"	"	"
"	"	"	Negative.
Sputum	Lungs	Tubercular	"
Blood	Ear	Typhoid	"
Pus	Rectum	Tubercular	"
Sputum	Lungs	"	Positive.
"	"	"	Negative.
Cyst	Orbit	Malignant	Positive.
Growth	Rectum	"	Negative.
Pus	Ulcer, left chord	"	Positive.
Growth	Mamma	"	"
Sputum	Lungs	Tubercular	Negative.
Tissue	Ovary	Malignant	"
"	Broad ligament	"	"

SPECIMENS EXAMINED—*continued.*

Nature.	Source.	Suspected Condition.	Result of Examination.
Sputum	Lungs	Tubercular	Positive.
„	„	„	„
Growth	Bladder	Malignant	Negative.
„	Cervical canal	„	„
Blood	Ear	Typhoid	Positive.
Growth	Ovary	Malignant	„
„	Cervix	„	„
Sputum	Lungs	Tubercular	Negative.
Water	Water-supply	Contaminated	Positive.
„	„ „	„	„
Worms	Urethra	Nature of	Impossible to decide.
Membrane	Rectum	Malignant	Negative.
Pus	„	Tubercular	„
Sputum	Lungs	„	„
„	„	„	„
Urine	Bladder	Urea	1·08 per cent.
Sputum	Lungs	Tubercular	Negative.
„	„	„	„
„	„	„	Positive.
Tissue	Skin of neck	Malignant	„
Blood	Ear	Typhoid	„
Sputum	Lungs	Tubercular	„
„	„	„	Negative.
Pus	Pelvic abscess	„	„
Sputum	Lungs	„	Positive.
„	„	„	„
Fluid	„	Hydatid	„
Urine	Bladder	Albumenoid	Negative.
„	„	Sugar	Positive.
Growth	Epigastrium	Malignant	„
„	Orbit	„	„
Sputum	Lungs	Tubercular	„
Growth	Cervix	Malignant	„
Swab	Throat	Diphtheria	Negative.
Sputum	Lungs	Tubercular	Positive.
Dust	House	„	Negative.
Sputum	Lungs	„	„
„	„	„	Positive.
„	„	„	Negative.
Tissue	Testicle	„	„
„	Breast	Malignant	Positive.
„	Dorsum (foot)	„	„
„	„ „	„	„
Sputum	Lungs	Tubercular	Negative.
„	„	„	„
Pus	Carpus	„	„
Sputum	Lungs	„	„
„	„	„	Positive.
„	„	„	„
Pus	Vulva	Gonorrhœa	„
Fluid	Thorax	Pneumothorax	„
Sputum	Lungs	Tubercular	Negative.
Growth	Uterus	Malignant	„
Sputum	Lungs	Tubercular	„
Pus	Pustule (arm)	Septic infection	Positive.
„	Urethra	Gonorrhœa	„
Urine	Bladder	Tubercular	Negative.
Sputum	Lungs	„	„
„	„	„	„
Water	Filter	Inutility	Positive.
Blood	Ear	Typhoid	Negative.
„	„	„	„
Swab	Throat	Diphtheria	„
Sputum	Lungs	Tubercular	„
Membrane	Bowel	Malignant	„
Swab	Throat	Diphtheria	„
Media		Value as media	„
Swab	Eyelid	Septic infection	Positive.
Sputum	Lungs	Tubercular	„
„	„	„	Negative.
„	„	„	„
Mucoid fluid	Bowel	Mucus	Positive.
Blood	Not given	Anthrax	Negative.
Swab	Throat	Diphtheria	„
Pus	Nepatic swelling	Ankylostoma	Positive.
Growth	Cervix	Malignant	„
Sputum	Lungs	Tubercular	Negative.
Blood	Not given	Leucocythæmia	„
Water	Water-supply	Contaminated	Positive.
Sputum	Lungs	Tubercular	Negative.
Tissue	Breast	Malignant	Positive.
„	Axillary gland	„	Negative.
„	Ileo-cæcal valve	„	Positive.
„	Nares (posterior)	Tubercular	Negative.

SPECIMENS EXAMINED—*continued*.

Nature.	Source.	Suspected Condition.	Result of Examination.
Sputum	Lungs	Tubercular	Negative.
Blood	Not given	Anthrax	,,
Culture	,,	,,	,,
Tissue	Forearm	Malignant	Positive.
Growth	Uterus	,,	Negative.
Bone	Skull	Syphilitic	,,
Sputum	Lungs	Tubercular	,,
,,	,,	,,	,,
Growth	Vagina	Malignant	,,
Blood	Ear	Typhoid	Positive.
Smear	Not given	Leucocythæmia	,,
Pus	Spinous process, vetchaa	Osteitis	Negative.
Growth	Chest-wall	Malignant	,,
,,	Hand (back)	,,	Positive.
Sputum	Lungs	Tubercular	,,
,,	,,	,,	Negative.
Urine	Bladder	,,	,,
Sputum	Lungs	,,	,,
,,	,,	,,	,,
Pus	Uterine discharge	Gonorrhœa	Positive.
,,	,, ,,	,,	Negative.
Sputum	Lungs	Tubercular	,,
Fluid	Vomit	Gastric	,,
,,	,,	Salivary	Positive.
Urine	Bladder	Tubercular	Negative.
,,	,,	Cystitis	Positive.
,,	,,	New growth	Negative.
,,	,,	Tubercular	,,
,,	,,	,,	,,
Sputum	Lungs	,,	Positive.
,,	,,	,,	Negative.
Fluid	Thorax	Ankylostomiasis	,,
Tissue	Breast	Malignant	Positive.
,,	Brain	Tubercular	Negative.
Blood	Not given	Gas poisoning	,,
Sputum	Lungs	Tubercular	Positive.
Fluid	Thorax	Hydatid	Negative.
,,	,,	Tubercle	,,
,,	,,	Malignant	,,
Tissue	Neck of bladder	,,	Positive.
,,	Prostate	,,	,,
Pus	Tendon-sheath (finger)	Tubercular	,,
Sputum	Lungs	,,	,,
Tissue	Skin	Malignant	,,
Fluid	Not given	*B. coli*	Negative.
,,	,,	Tubercular	,,
Sputum	Lungs	,,	Positive.
,,	,,	,,	Negative.
,,	,,	,,	,,
Urine	Bladder	,,	,,
Tissue	Uterus	Malignant	,,
Sputum	Lungs	Tubercular	,,
,,	,,	,,	,,
Swab	Throat	Diphtheria	Positive.
Fæces	Rectum	Ankylostomiasis	Negative.
Urine	Bladder	Malignant disease	Positive.
Sputum	Lungs	Tubercular	,,
,,	,,	,,	,,
Urine	Bladder	,,	Negative.
Tissue	Not given	Malignant	,,
Sputum	Lungs	Tubercular	Positive.
,,	,,	,,	Negative.
Urine	Bladder	,,	,,
Sputum	Lungs	,,	,,
,,	,,	,,	,,
Urine	Bladder	,,	,,
Water	Water-supply	Contaminated	Positive.
Smears	Blood	Parasites	,,
,,	,,	Typhoid	Negative.
Swab	Throat	Diphtheria	,,
Sputum	Lungs	Tubercular	,,
,,	,,	,,	,,
,,	,,	,,	Positive.
,,	,,	,,	,,
,,	,,	,,	Negative.
,,	,,	,,	,,
,,	,,	,,	,,
Urine	Bladder	,,	,,
Growth	Hand	Malignant	,,
Swab	Throat	Diphtheria	,,
Sputum	Lungs	Tubercular	,,
,,	,,	,,	Positive.
,,	,,	,,	,,
Urine	Bladder	,,	Negative.

SPECIMENS EXAMINED—*continued.*

Nature.	Source.	Suspected Condition.	Result of Examination.
Blood	Not given	Leucocythæmia	Positive.
Water	Water-supply	Contaminated	,,
Smear	Spleen	Plague	,,
,,	Urethral discharge	Gonorrhœa	,,
Sputum	Lungs	Tubercular	Negative.
Tissue	Spleen	Plague	Positive.
Sputum	Lungs	Tubercular	Negative.
,,	,,	,,	Positive.
Swab	Throat	Diphtheria	Negative.
Tissue	Arm	Malignant	,,
Sputum	Lungs	Tubercular	,,
,,	,,	,,	Positive.
Swab	Throat	Diphtheria	Negative.
Rat		Plague	,,
,,		,,	,,
Sputum	Lungs	Tubercular	,,
,,	,,	,,	,,
,,	,,	,,	Positive.
,,	,,	,,	,,
,,	,,	,,	,,
Growth	Cervical vertebræ	Malignant	,,
Smear	Culture	Plague	Negative.
Tissue	Breast	Malignant	,,
Pus	Not stated	Tubercular	Negative.
Discharge	Vagina	Gonorrhœa	,,
Smear	Abscess	Septic infection	Positive.
Sputum	Lungs	Tubercular	,,
,,	,,	,,	,,
,,	,,	,,	Negative.
Urine	Bladder	,,	,,
Swab	Throat	Diphtheria	,,
Sputum	Lungs	Tubercular	Positive.
Blood	Ear	Typhoid	,,
Pus	Vagina	Gonorrhœa	Negative.
Culture	Dunedin	Anthrax	,,
Sputum	Lungs	Tubercular	,,
,,	,,	,,	,,
,,	,,	,,	,,
,,	,,	,,	,,
,,	,,	,,	Positive.
,,	,,	,,	,,
,,	,,	,,	,,
Growth	Breast	Malignant	Negative.
,,	Toe	,,	Positive.
Urine	Bladder	,, Disease	Negative.
Sputum	Lungs	Tubercular	Positive.
,,	,,	,,	,,
,,	,,	,,	Negative.
,,	,,	,,	,,
,,	,,	,,	,,
,,	,,	,,	,,
Urine	Bladder	,,	,,
,,	,,	,,	,,
Growth	Breast	Malignant	,,
Sputum	Lungs	Tubercular	,,
,,	,,	,,	,,
,,	,,	,,	Positive.
Tissue	Cervical gland	,,	,,
Blood	Not given	Leucocythæmia	Negative.
Urine	Bladder	Tubercular	,,
Pus	Urethral discharge	Gonorrhœa	,,
Sputum	Lungs	Tubercular	,,
,,	,,	,,	,,
,,	,,	,,	Positive.
Blood	Ear	Typhoid	,,
Urine	Bladder	Albumenoid	Negative.
Tissue	Ulcer (thigh)	Malignant	Positive.
Sputum	Lungs	Tubercular	,,
Pipette	Bubo-juice	Plague	Negative.
Blood	Ear	Typhoid	,,
Sputum	Lungs	Tubercular	,,
Urine	Bladder	,,	Positive.
Water	Water-supply	Contaminated	,,
,,	,, ,,	,,	,,
Urine	Bladder	Foreign bodies in	,,
Sputum	Lungs	Tubercular	Negative.
Growth	Sacral region	Malignant	,,
Pus	Abscess (thigh)	Gonorrhœa	,,
Sputum	Lungs	Tubercular	,,
,,	,,	,,	,,
,,	,,	,,	,,
,,	,,	,,	,,
,,	,,	,,	,,
,,	,,	,,	,,

SPECIMENS EXAMINED—*continued.*

Nature.	Source.	Suspected Condition.	Result of Examination.
Blood	Ear	Typhoid	Negative.
Growth	Nose	Malignant	"
Rat		Plague	"
Sputum	Lungs	Tubercular	Positive.
"	"	"	Negative.
"	"	"	"
"	"	"	"
"	"	"	"
"	"	"	Positive.
Swab	Throat	Diphtheria	Negative.
Rat	City	Plague	"
Sputum	Lungs	Tubercular	Positive.
"	"	"	Negative.
Membrane	Throat	Mycosis	Positive.
Growth	"	Malignant	Negative.
"	Axilla	"	Positive.
Pus	Not given	Tubercular	Negative.
Urine	Bladder	Albumenoid	Positive.
"	"	Phosphatic	Negative.
"	"	Sugar	"
Blood	Ear	Typhoid	"
"	"	"	"
Growth	Coccyx	Malignant	"
Sputum	Lungs	Tubercular	"
Tissue	Spleen	Plague	"
"	Gland (axillary)	"	"
"	" (mediastinal)	"	"
"	" (mesenteric)	"	"
"	" (cervical)	"	"
"	" (inguinal)	"	"
"	Lungs	"	"
"	Liver	"	"
Sputum	Lungs	Tubercular	"
"	"	"	Positive.
Fleas	Rat	Plague	Negative.
Fluid	Crebro-spinal	Pneumococci	"
Swab	Throat	Diphtheria	Positive.
"	"	"	"
Sputum	Lungs	Tubercular	Negative.
"	"	Hydatids	"
Pus	Antrum	Empyema	"
Urine	Bladder	Sugar	"
"	"	Albumenoid	"
"	"	Urea	1·21 per cent.
Cyst	Lungs	Hydatids	Positive.
Blood	Ear	Typhoid	Negative.
Urine	Bladder	Albumenoid	"
"	"	Sugar	Positive.
"	"	Urea	1·35 per cent.

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