1903.

NEW ZE-ALAND

DEPARTMENT OF PUBLIC HEALTH

(REPORT OF THE), BY THE CHIEF HEALTH OFFICER.

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

The Hon. the MINISTER OF PUBLIC HEALTH to His Excellency the GOVERNOR.

MY LORD,— Public Health Office, Wellington, 1st October, 1903.

I have the honour to submit to Your Excellency the report of the Public Health Department for the year 1902–3. I have, &c.,

J. G. WARD,
Minister of Public Health.

His Excellency the Governor of New Zealand.

The CHIEF HEALTH OFFICER to the Hon. the MINISTER OF PUBLIC HEALTH.

SIR,— Department of Public Health, Wellington, 1st October, 1903.

There is an old Indian proverb which says "We must come to June by way of March." Nothing is more true than this with respect to matters affecting public health. It is not difficult to lay down a standard of absolute good, but there are factors in the equation which practically prohibit such a standard being insisted upon.

First and foremost is the question of ways and means. Every expenditure making for healthful surroundings and the combating of preventible disease must like all others be carefully examined from what may be termed the economic aspect. The moral obligation which modern civilisation has cast upon a community to care for and support its weaker members is quite distinct from the duty which attaches to those in authority to conserve the general standard of health and physical fitness of a people. Whether it is wise to prolong by every aid which modern science affords the life of the absolutely and irrevocably unfit is a matter which pertains more to the domain of the moralist than the sanitarian. "Spare no expense, doctor," is one of the most common adjurations which a medical attendant receives in the course of his ministration to the sick; but the danger over, or the patient dead, he not infrequently finds it difficult to reawaken the wife or the husband to this apparently liberal frame of mind. As with individuals so with municipalities, in their times of safety they are apt to forget, nay, sometimes repudiate, obligations into which they readily entered when danger was imminent. Money expended upon sanitary works, hospitals, &c., may fairly be regarded in much the same light as insurance premiums, and, just as it is possible to conceive that the premium charged the individual may be so high as to economically entitle him to refuse to enter into the contract, so a municipality or a nation may decide to take the risk rather than pay the premiums required to insure their freedom from preventable diseases. There are, of course, many sanitary works which cannot be regarded in this light, because the very existence of the community depends upon the measures being taken. It matters not how rich a country may be in natural resources, such as coal or iron, for instance, if its people degenerate or die through the use of an impure water-supply or a faulty drainage system; but a local authority may rightly (from an economic point of view) decide not to erect, say, an

INFECTIOUS DISEASES HOSPITAL,

if it could be shown that it would cost more to establish and maintain such an institution than it would to treat such diseases outside.

Now, it is well known that at least 70 per cent. of the householders in this colony are unable through want of room to properly isolate a case of infectious disease; thus, even if it could be shown to be cheaper to treat the patient in his own home than in a hospital, it would in most instances be impossible. This is so apparently obvious that you would doubtless wonder why I trouble to state it but for your knowledge of the opposition which

the Department has experienced in persuading some local authorities to fulfil their just obligations.

While one must admit that local governance in some instances has failed most utterly, I am convinced that it would be a retrograde step to centralise all power. A community must learn to crawl ere it can be expected to run, and to insist that because it walks badly it should not be permitted to attempt in a natural way the tasks which await the youth of nations as of individuals is a temptation which the reformer must steadily resist. It grieves the spirit of the sanitarian to see health destroyed and life wasted just as it pains the passer-by to witness the efforts of a blind man to effect a passage through a crowd and be denied the pleasure of aiding him. When, however, the witness of these futile gropings is made responsible for the blind man's safety, the desire to interfere necessarily becomes greater, and in some instances justifiable. That a community or nation ought to be allowed to work out its own salvation is the essence of the school of thought which has found favour in New Zealand. It is one of the grand principles upon which all free nations have been founded, and is a necessary factor in their education and development. But, just as there are occasions when the parent must step in in order to save his offspring from danger, so there are times when the need of a central and all-powerful arbiter is apparent. It goes without saying that all such powers must be wielded with a skilful hand, and as sparingly as possible. It has been alleged that the Department has been autocratic and domineering with respect to hospital matters in Auckland, but a careful perusal of the facts will disclose the absolute truth of the statements made in Parliament by the late Mayor of Auckland, Mr. Kidd.

Local government must stand, and the voice of the people must be heard; but it argues no falling-away from that standard to suggest that there are far too many local authorities. Matters pertaining to sanitation, water-supply, hospitals, &c., should be controlled by boards representative of large areas. To allow a dozen local bodies to deal separately with drainage or water-supply when geographically their needs and danger are one and the same is not only a waste of money and energy, but a positive hindrance to progress. Already Wellington and Christchurch have begun the work of amalgamation, and great good has resulted. I am convinced that the Legislature would be acting wisely in insisting upon the amalgamation of all smaller local bodies in the vicinity of the larger centres. Until this is done questions of drainage and water-supply must stand aside. In Auckland we see, in their most undiluted forms, the evils and disadvantage of this divided authority. A year and a half has passed by since an apparent agreement was arrived at with respect to the treatment of infectious diseases, and yet the question is as far off settlement as ever.

The expenditure which this state of unpreparedness entails has been set out time and again. Once more permit me to appeal to the common-sense and business acumen of the people. I am sure there are few who will say that £14 is an exorbitant estimate of the cost of treatment of a scarlet-fever patient—outside of a hospital. This sum would represent medical attendance for six weeks, nursing, medicine, special and ordinary food, and all the little outlays incidental to an illness. Last year there were 3,763 cases of this disease in the colony: at £14 per case we arrive at the astounding total of £52,682. Nor does this mighty sum represent all: loss of wage-earning power, dislocation of business, and enforced isolation of contacts where the house is small has to be entered up to the credit of this disease. Twenty-five pounds may seem a large sum to debit a case of enteric fever with, but any one who has gone through an attack of that disease will readily agree that the estimate is not placed too high. Very many of the victims of this preventable disease are wage-earners, and it has to be borne in mind that almost always two or three months must elapse ere the patient is able to return to work. There were 518 cases last year. It is thus seen that a disease, which Wellington has almost eliminated by reason of its improved drainage system, cost the colony some £12,950. If, finally, we place the cost of a case of measles at the modest sum of £5, and remember that there were 7,988 cases last year, an easy calculation will show that the colony lost some £39,940 by what is usually termed a simple ailment. You will notice that nowhere have I referred to the communal loss through death, the mental suffering and subsequent depreciation as working animals of the patients, the watchers, and the waiters at the bedside of the sick. These three preventable diseases—and there are many others—cost us last year the appalling sum of £105,572. Well on to twenty-two times the working cost of the Department was wasted last year upon diseases which, had proper provision for their treatment been provided, would in a large measure have been prevented. Doubtless, even had suitable hospitals been available, much of this sickness and outlay could not have been prevented, but certainly the tax would have been greatly reduced.

To attempt to limit the spread of a disease so infectious as scarlet fever unless adequate means of isolation are available is as hopeless as the task urged upon Canute by his nobles. Compulsory notification, combined with strict isolation of the early cases, is the procedure we ought to be able to carry out, and this, I regret to say, has been impossible in any large centre with the exception of Christchurch, and there only after the epidemic was in full swing.

The Public Health Act of 1900 cast the onus of providing for the care and treatment of infectious diseases upon the shoulders of the local authorities. This, I consider, requires alteration, and an amendment with the object of relieving local bodies of this burden has been framed for the consideration of the present Parliament. Hospital Boards are the proper agents to undertake this work, and I am glad to say that with one exception these bodies have willingly lent their aid, though even they are hampered in the work. The whole question of hospital-administration requires reconsideration. Greater powers should unquestionably be given to the Inspector-General, and I am pleased to see that the trend of opinion is in that direction. That the Government, required as it is by statute to provide half of the total expenditure on hospitals, should have absolutely no say in the spending of the money is ridiculous, and tends to extravagance. At present the Department has to be consulted as to plans, site, and cost of all hospitals for infectious disease, but something more is necessary. It should not be competent for the local agent, without restraint or supervision, to dispose of the moneys jointly subscribed by the general Government and the districts directly in receipt of the benefits of the hospital. To centralise the administration of general hospitals or hospitals for infectious diseases, except in special instances, as is done in many countries, is not always in the best interest of the institutions or the people occupying them. No sooner does the general Government take over the management than all local interest and enthusiasm in the institution ceases, with, as a consequence, many of the little luxuries which while permissible as private donations may not be justifiable debits to the State. It is only fair to put on record the great sacrifice of time, energy, and money which is annually being made in the prosecution and fulfilment of what in some instances is only too thankless a task by members of these boards. The only desire of the Department is to help them in the work.

Small-pox.

In the report which I had the honour to submit for your consideration last year attention was drawn to the unprotected condition of our children with respect to this disease. It was pointed out that with the close and constant intercommunication between countries where the disease existed and our own colony it was improbable that we should continue to enjoy the immunity which we hitherto had. However careful the officers of the first line of defence might be, an accident was possible—a case might escape the cordon, and, before we knew, small-pox might have claimed its many unprotected victims. The picture which I painted has, unfortunately, been exhibited in Tasmania, and we ourselves narrowly escaped its reproduction in New Zealand. Protective measures, such as quarantine, inspection, and fumigation, however faithfully carried out, can never be regarded as an absolute safeguard. Vaccination alone deserves that title. A lengthened period of quarantine, or a very rigid system of inspection, may prevent a person suffering from the disease from entering the colony, or, if admitted, he may be detected and isolated; but a system of disinfection has yet to be devised which will be at once practicable and effective. After all, the danger to be feared from infected people is much less than that from infected clothes. We endeavour, as far as we can, to disinfect all the personal belongings of passengers from infected areas, but we must not blind our eyes to the fact that the success attained in this respect is but a modified one. To thoroughly disinfect the clothing of all-comers from infected countries is, however desirable at the present time, a mere theoretical excellence.

The Legislature has decided that the employment of the only consistently effective antidote to small-pox shall not be compulsory. With the wisdom of this I am not concerned. Legislation too far ahead of public opinion must, as was pointed out in my last report, be always unsatisfactory and difficult to carry out, and while any section of a community is logically convinced that the introduction of any particular enactment was wrong, it would be idle on the part of the Executive to bring it into force. From a very wide acquaintance with all classes in the colony, I have come to the conclusion, however, that much of the apparent antagonism towards vaccination is merely a matter of sentiment or want of knowledge. I am emboldened to affirm this, not only because of the opinions I have heard expressed, but because of the ready response there has been by the public to the

repeated invitations made to it to be vaccinated. Here and there may be found one or two who have looked into the question from a lay point of view, and have not been convinced; others there are who resist on the score of what they term "defence of individual rights." There have been at all times those who, as Bacon phrases it, "are so sensible of any restraint, as they will go near to think their girdles and garters to be bonds and shackles." Whatever the alleged reason may be, it cannot be gainsaid that the opponents of vaccination are comparatively few in number. That being so, it is, I submit, a matter for the grave and careful consideration of Parliament whether, in order to conserve the safety of the whole, these people should not be required to fall in with the majority. Short of making vaccination compulsory, it would be a wise proceeding on the part of the Legislature to place in the hands of the Governor in Council the power to declare an area in which a case of small-pox exists an infected area—and require all inside that zone to be vaccinated. In this way the danger would be very much lessened. Every unvaccinated person in a community must be regarded as a menace to the safety of the others. Were all protected against small-pox, quarantine and most of the other restrictions might at once be rescinded. The anti-vaccination camp is after all a small one, and its members are known. It is the legion composed of those who say "I don't disbelieve in vaccination, but there will be plenty of time when small-pox comes," which offers the greatest bar to complete and efficient vaccination, *summum semper vis inertia*. There is some truth in the assertion that they will have good warning of the advent of small-pox in the colony, yet recent events, both in New Zealand and Tasmania, have illustrated the justice and truth of the observations made upon the subject in my last report to you. It reads like a tale from a romance, or a prearrangement with fate. A man living in a country town far removed from our sea-coast, declares, "Surely I am safe, and if not, fair warning of the advent of the enemy is assured." This could not be gainsaid, yet the fact remains that this man was but one remove from the only person who has died from small-pox in these waters for many years. The connecting-link—the only thing interposed between this apparently safe position and absolute contact with a virulent case of small-pox—was the attendant. There is no safety outside of vaccination. Distance from the coast-line, isolation, or carefulness may remove some of the dangers, but there can be no guarantee unless the individual himself is protected. Every facility for vaccination and revaccination has been offered, and it is pleasing to record that a great number of people have availed themselves of the services of the departmental officers in this direction. The number of Public Vaccinators has been increased in almost every town, and special officers have been appointed to wait upon employees so that as little time might be wasted as possible. The old argument, the one upon which most of the opposition was based— namely, the danger of transmitting such diseases as syphilis and consumption—has been removed since the law has required all vaccinators to use only calf-lymph, and that supplied by the Government.

The detailed reports with regard to the "Gracchus" cases have already been submitted to you.

The accompanying diagrams, which are taken by permission from Dr. Elkington's report to the Launceston authorities, prove clearly, as all recent data do, the absolute truth of the earlier claims made for vaccination. "No one under twenty years of age that had been vaccinated in infancy contracted small-pox." Thus is shown the value of vaccination even when attenuated by time. It has truly been said that Jenner's claims to immortal memory rest as much upon the smooth cheeks and unscarred faces of the people as upon the averted deaths from small-pox.

Returned Invalid Soldiers.

The examination of our invalid troopers, the holding of Medical and Pension Boards, occupied a very great deal of time during last year. The various officers did a large amount of extra work of an exacting and difficult nature.

The question of the transport of colonial troops was the subject of a Royal Commission. The evidence tendered, among other things, showed that the accommodation usually set aside for the soldier while at sea could, with great advantage, be increased. Not the least useful of the lessons learnt during the late South African struggle pertained to the treatment of the sick and wounded, and the transport of soldiers to and from the seat of war. The fact that thousands of examinations were made will give some idea of the amount of extra work which fell to the officers of the Department. The arrival of the troopship

Note.—I have to express my indebtedness for some of the photographs reproduced last year to the publishers of *Public Health*, Messrs. Rebman and Co.

THE VALUE OF VACCINATION

AS ILLUSTRATED BY THE OUTBREAK IN TASMANIA.

These diagrams were prepared by Dr. J. S. C. Elkington, the present Medical Director in Launceston, and are published with his permission. They are almost self-explanatory. Each large square is, as will be seen, divided into 100 smaller squares of equal size; each of the smaller squares thus represents 1 per cent. of the whole. The percentages are in this way shown at a glance. The black squares represent death; the red, "confluent" or very serious cases; and the blue, "mild or very mild cases."

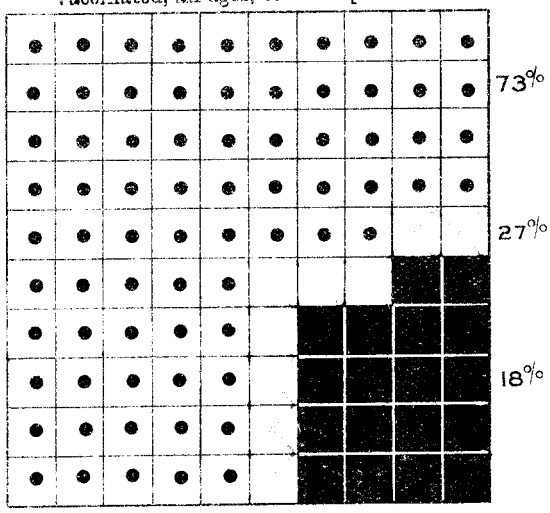
Block No. 1 shows how the disease expressed itself among those vaccinated, and Block No. 2 how it expressed itself among the unvaccinated in the total number of cases considered. Block No. 3 tells the same tale with regard to the vaccinated, only those admitted to hospital, however, being considered. Block No. 4 represents the percentages among the unvaccinated admitted to hospital.

There can be no doubt as to the accuracy of these figures. Dr. Barnard, who is in charge of the hospital, has carefully examined each patient, and full records of all the cases have been kept by him.

There are several facts which these diagrams disclose. If we take Block No. 1 we find that 73 per cent. of the total cases occurring among vaccinated people were of "the mild or very mild order"; as a matter of fact not one of these died. In some instances the disease expressed itself by nothing more than a few spots. There were 27 per cent. of confluent cases, 18 per cent. of which died. Now, if we turn to Block No. 2, we find that the positions are almost reversed. Instead of 73 per cent. of very mild cases, we have 83 per cent. of the confluent variety, and only 17 per cent. of these unvaccinated people had the disease in a mild form, while the death-rate was 33 per cent. Blocks Nos. 3 and 4 tell almost the same tale, only that the death-rate is lower.

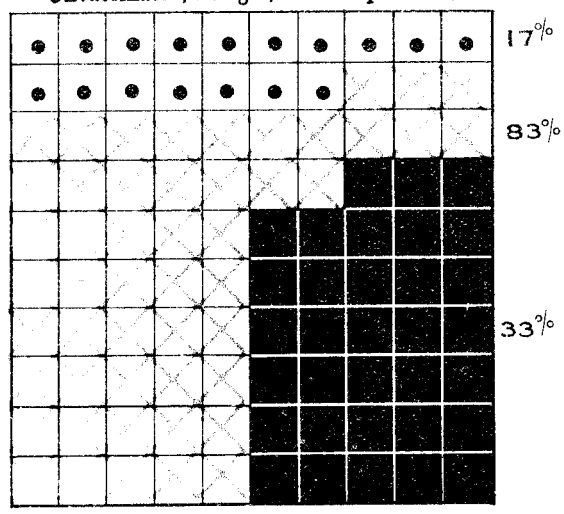
No. 1. Total cases.

Vaccinated, all ages, to 1st September.



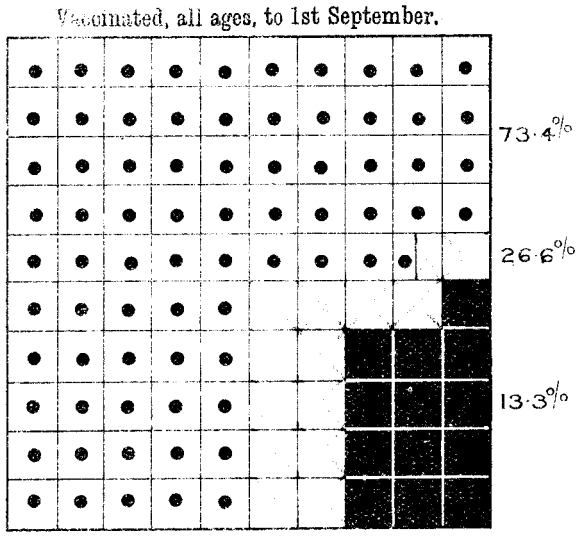
No. 2. Total cases.

Unvaccinated, all ages, to 1st September.



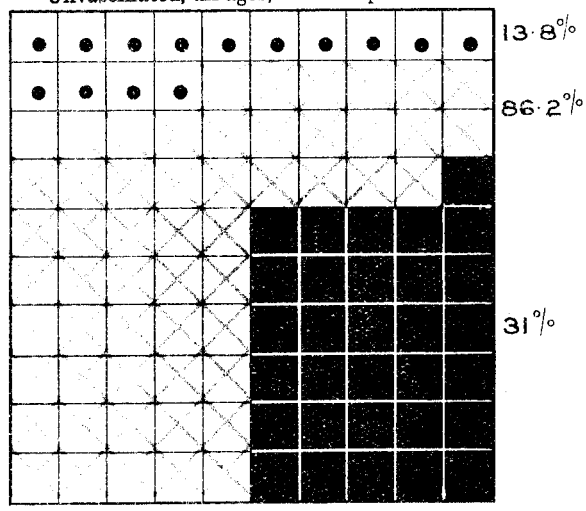
No. 3. Hospital admissions.

Vaccinated, all ages, to 1st September.



No. 4. Hospital admissions.

Unvaccinated, all ages, to 1st September.



REFERENCE. DEATHS. CONFLUENT. DISCRETE. Mild and very Mild.

One important point to be remembered is "that no person below twenty years of age who was vaccinated in infancy, and had the marks of that vaccination, developed smallpox."

Many of the opponents of vaccination point to deaths among vaccinated people as proof of the inefficiency of vaccination as a precaution against smallpox; they forget that vaccination loses its power as years go on, and that, in order to fully protect the individual against this terrible scourge, revaccination is necessary. It is pleasing to note, however, that even where vaccination in infancy has failed to absolutely protect in later life, it has in every instance so mitigated the attack that not one death has occurred under twenty years of age. The death-rate alone, Dr. Elkington points out, gives but a poor idea of consequence of a smallpox epidemic. Confluent attacks of the disease nearly always leave great scarring of the face, and not infrequently cause loss of sight.

Some demur has been made at the slight restrictions imposed upon communication with infected areas; but if the people in the colony were properly protected, as they can be by vaccination, no restrictions would be required.

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"Orient" with a case of small-pox on board, and the occurrence of measles and pneumonia of a very malignant type were the reasons for the holding of the inquiry. Some of the evidence tendered is most instructive, and worthy of consideration.

Food.

The purity or otherwise of the various footstuffs, beer, spirits, &c., has been the subject of much consideration, and a committee is in process of being set up to inquire into the whole question. The various manufacturers all over the colony have welcomed the inquiry, and many have made most generous offers of help. It is intended to include in the scope of the investigation the setting-up of standards with respect to the preservatives in common use. Already a large number of analyses have been made, and important data has been collected, which will be submitted for the consideration of the committee.

Sanitation among the Maoris.

The gospel of sanitation has been preached among our Native brothers, and in all parts of the colony there is evidence that the truths promulgated have been taken to heart. There is still much to be done, but a warm interest in the subject has been aroused, and already many chiefs have joined earnestly in the crusade. Drunkenness has in many parts entirely disappeared, and the reform mentioned in my last report has become more assured. The Maori is fast becoming one of the soberest of men. The recent appointment of several Native sanitary inspectors will, I am certain, be fraught with the greatest good. One most pleasing feature is that of their own free will an enormous number of Natives have been vaccinated. I have already had the honour of laying before you a report upon the sanitary and public-health requirements of our recently acquired possessions in the South Pacific.

Anthrax.

The occurrence of several cases of this disease in the Auckland Province emphasizes the necessity of the works now in hand for the sterilisation of imported bones being pushed on.

In this, as in all other measures taken for the general safety, the question of cost plays an important part. If, as is sometimes alleged, sterilisation after discharge means the addition of something like £1 per ton on what is an absolute necessity for those farming in certain parts of the colony, very careful consideration is undoubtedly required in order that this additional tax may not fall unfairly. That it should be admitted as a reason for a continuance of the present system I cannot acquiesce in. A few deaths and the loss of several hundred head of cattle would very soon balance the account, even putting the equation on the lowest basis.

The Stock Department is actively endeavouring to stamp out the disease wherever it appears, but the logical line of conduct is to endeavour, as the Government is now preparing to do, to prevent its further introduction into the colony.

Detailed reports as to the cases in man have been submitted to you. I am glad to say that so far only one death from the disease has occurred. The unfortunate man was one of three who skinned and ate portions of a bullock which they believed had killed itself. None of those who simply ate the flesh of the animal suffered. This, of course, is in consonance with what we know of the disease. Like leprosy, and in a measure plague, it is transmitted mainly by inoculation.

Consumption.

The public are gradually coming to view this preventable disease in its proper proportions. The unreasoning fear which assails a people when first a matter of this nature and moment is brought before them is giving way to an intelligent endeavour to grapple with the enemy. The fact that the disease which yearly claims over sixty thousand victims in England and Wales alone is spread almost entirely by means of the infected expectoration is now known by most, and, as a consequence, the strong efforts made to effect its destruction must soon tell. Householders are constantly asking for directions where a case occurs in their homes. Thorough disinfection is practised wherever a death from the disease takes place, and care in the tendance of the sick is counselled in every instance. Despite repeated warnings there is still, I regret to say, a steady influx of persons suffering from the disease from other countries. As was pointed out before, this would not occasion any need for anxiety were such immigrants financially in a position to provide for the nursing, care, and expense entailed, but not a few of these unfortunates very soon after their arrival seek the help of our public hospitals and sanatoria. This is neither equitable nor is it necessary.

A stricter insistence upon the provisions of the Undesirable Immigrants Restriction Act is required, and must be enforced.

The establishment of the sanatorium at Cambridge is, I am pleased to say, an accomplished fact, and already excellent results have been obtained. It is well, however, to continue to impress upon the public the fact that such institutions are for the cure of persons suffering from consumption, and not for the reception of those insusceptible of relief. For the incurable, indigent sufferers—and, unfortunately, they number many—further and different provisions must be made. The scheme which I suggested may yet, I trust, be adopted. It has several merits, not the least of which is that it would not entail much outlay, while it would insure a maximum amount of safety. Leaving out of the question the humanitarian aspect, it cannot be too firmly insisted upon that to house, care for, and look after the indigent incurable consumptive would be a profitable task for the State to undertake. At the present time there are some three hundred known cases of the disease, which, either by reason of want of funds or severity of symptoms, ought to be within the walls of an institution. Now, if ten small annexes were to be erected in connection with ten country hospitals in districts well known for their beneficial influences in cases of this disease, the whole difficulty would be overcome. The same staff that now manage these hospitals could look after the occupants of these proposed open-air hostels, or, at the most, with the aid of an additional nurse or two. The creation of an entirely new institution, with its consequent expense, would be avoided. The inmates of these open-air shelters would obtain many of the advantages associated with a sanatorium pure and simple, while the space of that institution would not require to be encroached upon by incurables to the exclusion of those whom assuredly such differentiated institutions greatly benefit, and for whom alone they should be set apart.

There have been many applications for admission to the sanatorium at Cambridge which have had to be refused, and until some scheme such as I have shadowed out is adopted there must always be many disappointed. A hospital for the treatment of consumption differs greatly from all other hospitals in many respects, but in one above all others—vacancies can occur only at long intervals. A broken leg may take a month, a case of pneumonia may take two, but the patient who enters a sanatorium can rarely hope to leave under many months—six, nine, twelve, or it may be eighteen. Thus it is that long terms must elapse between admissions, and consequent disappointments to the many who eagerly wait for an entrance to their Mecca. It is hard to make the waiters understand the reason for their non-admittance, but there it lies.

I had hopes that in some measure the institution at Cambridge would have been self-supporting, but until some provision is made in the way already indicated it will not be. The prolonged nature of the disease usually leaves its victim with an impoverished purse, as well as an inability to work, and by the time he seeks or obtains an entrance to a sanatorium his power to pay has long gone by. Whether a scheme of insurance such as obtains in Germany and France will ever find favour with the working-man here is difficult to decide, but until then the State must look for its credits in the restoration of the crippled worker and his consequent value to the commonweal. Under many disadvantages the Matron (Miss Rochfort) and Drs. Makgill and Roberts have done excellent work. The Cambridge Sanatorium promises to be one of the finest institutions of that class in the world. Its success as a curative agent is assured, but it means money, time, and a continuance of the same self-sacrifice on the part of those in immediate attendance upon the sick.

The detailed reports of the officers in charge of the various districts are appended.

Not the least pleasing feature of the past year is the interest shown by the individual in matters pertaining to sanitation and health. The departmental officers have come to be recognised as consultants on these matters, and their advice and counsel have been sought on all and every aspect of public health, from the choosing of a trade or profession to the selection of a home or the installation of a septic tank. The establishment of a healthy interest in matters that make for the increased vigour of the race is, after all, of the greatest moment. The State can do much, but it is to the individual we must look for reforms which will be permanent and for progress that will be sound.

I have, &c.,

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

APPENDICES.

APPENDICES

APPENDIX A.

REPORTS OF DISTRICT HEALTH OFFICERS, ETC.

AUCKLAND DISTRICT.

Department of Public Health, Auckland, June, 1903.

Dr. Mason, Chief Health Officer, Wellington.

I HAVE the honour of presenting to you my second annual report on the sanitary work done by the Health Department in the Auckland District. I have included all the work done since the 1st April, 1902, and therefore certain items contained in my last report, which included April and May, 1902, necessarily are mentioned again.

It cannot be with any great feeling of satisfaction that one reviews the results of the work done in the past year. The labour has been great, and the outcome microscopic; indeed, in some directions there is a very distinct retrograde movement.

As regards the remedy for this state of affairs, I can only repeat what I said in my report last year—that until the subdivision of the province into so many small local authorities is discontinued no great improvement will take place.

There is an erroneous impression that the creation of a Health Department has relieved them of all such responsibility. It is evident that a local body to be of any service must have a permanent executive staff, able at all times to attend to the needs of the district, and large enough to deal adequately with the work; and it should command the service of experts in engineering and sanitary matters. Save in the city, I do not think any local authority in the province has a sanitary inspector with any special knowledge of his work whose time is wholly devoted to sanitary matters. Their resources are too limited for such a thing. All the present trouble over the Infectious Diseases Hospital would have been avoided if instead of fifty-two small bodies we had two or three large ones to deal with.

There is a movement at present in favour of creating a Greater Auckland—the abolition of the present ward system, and the merging city and suburbs into one corporate body. It has against it all the spirit of parochialism. Popular opinion is at present on the whole in its favour. But whether there is a sufficiently strong element making for reform to carry the matter through remains to be seen. There are, of course, a number of enlightened persons who favour proper sanitation and better civic government, but they do not seem to have as much vigour and influence as the magnitude of the work requires. The Press certainly support measures for sanitary improvement when the question happens to come before the public, but I venture to think that neither paper takes sufficient advantage of the opportunity they alone possess for keeping these questions prominent. A Greater Auckland is but one step towards placing local government on a sound footing.

Vital Statistics.

I beg to emphasize again the need for more accurate information as to the birth and death rates in the different districts. Beyond the Registrar-General's monthly returns for the principal centres there are no available statistics. It would be of great assistance if the returns were sent to the Health Office by the Registrars of the different districts, so that it would be possible to detect and inquire into any unusual mortality.

Birth-rate.

The Registrar-General's return for 1902 gives a mean for the four principal centres of 26·23 births per 1,000—Auckland being highest with 29·64, a considerable increase over that of last year (27·83).

Death-rate.

The returns for 1902 show a mean death-rate for the whole colony of 10·5 per 1,000 of population, and for the four principal centres (including their suburbs) of 12·74, considerably higher than last year (11·50). Comparing Auckland and suburbs with the average of the four centres for the last four years we get the following result:—

	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

There was, then, a somewhat alarming increase in the death-rate last year, more especially in Auckland City, where it reaches closely the average for England and Wales. This increase was not confined to infantile mortality—always a prominent feature of the Auckland death-rate—as the following figures (giving deaths exclusive of infants under one year) show:—

	Auckland and Suburbs.	Average of the Four Centres.
1898	8·97	8·94
1899	8·40	8·68
1900	8·26	8·27
1901	8·65	8·96
1902	11·10	9·56

In the previous four years Auckland's death-rate (excluding infants) compared favourably with that of the other centres.

Infant Mortality.

As I pointed out last year, this is unusually high in Auckland, and in 1902 the deaths under one year to every 100 births reached 14·07, which is almost identical with the proportion in England and Wales in the decade 1887–97. Considering that this return includes the rates in large centres, such as London and Liverpool, with their poverty and overcrowding, it is by no means a flattering comparison for so small a town as Auckland.

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

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

Since the birth-rate is higher in Auckland, the following table, giving the deaths under one year to every 100 births is the fairest proof of the high infant mortality in Auckland:—

	Auckland and Suburbs.	City alone.	Mean in other Three Centres.
1898	15·10	17·14	10·90
1899	14·17	14·47	11·78
1900	12·78	14·49	8·70
1901	9·88	11·57	9·65
1902	14·07	14·07	11·23
Means for five years	13·20	14·35	10·45

Taking the year April, 1902, to March, 1903, 38 per cent. of the total deaths under five years in the four centres occurred in Auckland; while in the hot months — November, December January, and February—the proportion rose to 53 per cent. of the total.

Causes of Death.

Zymotic Death-rate.

In 1902 the deaths in the Auckland District from this cause nearly equalled in number those occurring in the other three centres together. The figures for the last five years are,—

	Deaths in Auckland and Suburbs.	Total of Four Centres.	Proportion of Deaths in Auckland, per Cent.
1898	117	304	37
1899	110	360	30
1900	93	214	42
1901	70	209	33
1902	165	356	46
Means for five years ...	111	285	39

In 1902 the principal causes of this high zymotic mortality were:—

Diarrhœa.—Sixty-seven deaths occurred in Auckland, out of a total of 125 in the four centres (53·6 per cent). Of these, 57 were among children under five years of age. Auckland always shows a high proportion of deaths from this cause, there being during the last five years 47 per cent. of the total in the four centres. This year the number is even higher than usual, owing, doubtless, to the outbreak of dysentery during the winter. This factor is, of course, especially responsible for the high infant mortality in Auckland. Including with diarrhœa all acute inflammatory states of the digestive tract, such as are notified as gastritis and enteritis, we find 92 deaths took place in Auckland among children under five years of age to 109 occurring in the other three centres together.

Measles.—Measles caused 40 deaths in Auckland out of a total of 92 in the four centres. Wellington and Auckland shared alike heavily, Christchurch and Dunedin almost escaping.

Whooping-cough caused 18 deaths in Auckland—the total being 38 deaths for the four cities—Wellington and Auckland again sharing equally almost the whole number.

Diphtheria was responsible for 12 deaths in Auckland out of a total of 19; Auckland's share, therefore, being 63 per cent. of the total deaths from this disease.

Typhoid.—Auckland was responsible for 10 deaths out of the 17 occurring in the four centres, or 59 per cent. of the total.

Scarlet Fever.—Auckland shows but 1 death out of a total of 11.

Influenza.—Auckland 10 out of a total of 29.

Plague.—The three deaths from this disease all occurred in Auckland.

It is evident from the above that as regards the "dirt" diseases—typhoid, diphtheria, and diarrhœa—Auckland bore an unenviable share in 1902. As regards the death-rate from other diseases, Auckland appears rather favourably.

Tubercular Diseases of all kinds caused in Auckland 53 deaths of a total of 252, being the lowest of the four centres.

Cancer.—44 out of 165; not an unreasonable proportion.

In deaths from diseases of the nervous system and of the circulatory system Auckland has about its fair share, but as regards the urinary system a somewhat higher proportion for some reason.

Of diseases of the digestive tract Auckland shows 89 out of a total of 250, this high proportion being due to the inflammatory conditions, such as enteritis, noted above.

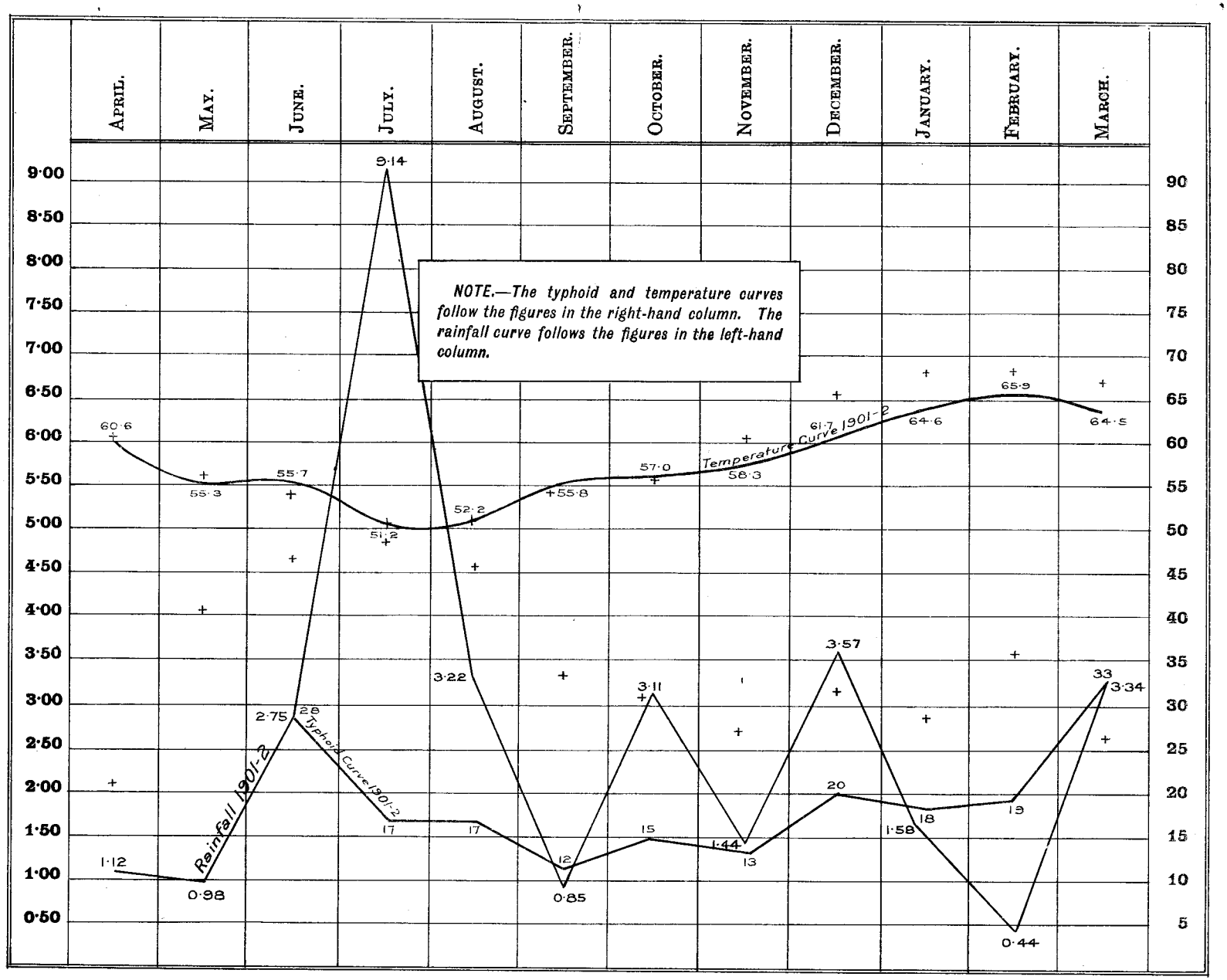
In diseases of the respiratory tract Auckland again stands highest, with 109 deaths out of a total of 337. This is chiefly due to the numbers dying from pneumonia—59 out of a total of 176, or 33·3 per cent. There, again, infants under five take a higher place than in the other centres, being 24 in Auckland to an average of 14 in other parts. This is somewhat interesting when we consider that pneumonia is so frequently a result of insanitary conditions, and seems to be further proof of the prevalence of dirt diseases in this town.

The attached table is of some interest, giving the monthly analysis of the death-rate for the year April, 1902, to March, 1903. In the column for zymotic diseases we see that Auckland had 43·9 per cent. of the total deaths from this cause, the highest return being in April and May, and again in November, December, and January. In the infant-mortality column we find Auckland had 38·1 per cent. of the total for the four centres, the highest months being November, December, January, and February. Deaths from acute digestive troubles in infants were highest in January and February.

Date.	Total Mortality.			Zymotic Diseases.				Infant Mortality.				
	Death-rate per 1,000.			Deaths.				Deaths under Five Years.				
	Auckland and Suburbs.	Mean of Four Centres.	City of Auckland.	Auckland and Suburbs. Under Five Years.	Auckland and Suburbs. Over Five Years.	Total for the Colony.	Proportion per Cent. Auckland District.	Auckland and Suburbs. Total.	Auckland and Suburbs. Acute Intestinal Inflammatory States.	Total for the Colony.	Mean of other Three Centres.	Proportion per Cent. Auckland District.
1902.												
April ..	1·22	1·06	1·39	10	3	27	48·1	28	17	79	17·0	35·4
May ..	0·94	0·89	0·98	7	8	26	57·7	15	8	56	13·7	26·8
June ..	1·10	0·93	1·28	2	1	9	33·3	17	1	45	9·3	37·7
July ..	1·18	1·16	1·30	2	3	15	33·3	12	0	65	17·6	18·4
August ..	1·35	1·30	1·47	1	3	25	16·0	20	1	66	11·5	30·3
September	1·10	1·21	1·25	3	4	25	28·0	10	1	72	20·7	13·9
October ..	1·37	1·09	1·67	11	4	50	30·0	27	3	83	18·7	32·5
November	1·63	1·10	1·67	26	3	46	63·0	46	5	87	13·7	53·0
December	1·87	1·27	2·07	21	6	45	60·0	43	5	84	13·7	51·2
1903.												
January..	1·55	1·18	1·65	26	3	51	56·9	55	23	93	12·7	59·1
February	1·43	1·00	1·27	9	3	31	38·9	38	19	77	13·0	49·4
March ..	1·12	1·13	1·27	9	5	44	31·9	29	12	85	18·7	34·1
	1·32	1·11	1·44	127	46	394	43·9	340	95	892	15·0	38·1

INFECTIOUS DISEASE NOTIFICATION.

Notification by medical men has, on the whole, been satisfactorily performed during the year. It would be well could the method be simplified, since in times of epidemic it no doubt throws a



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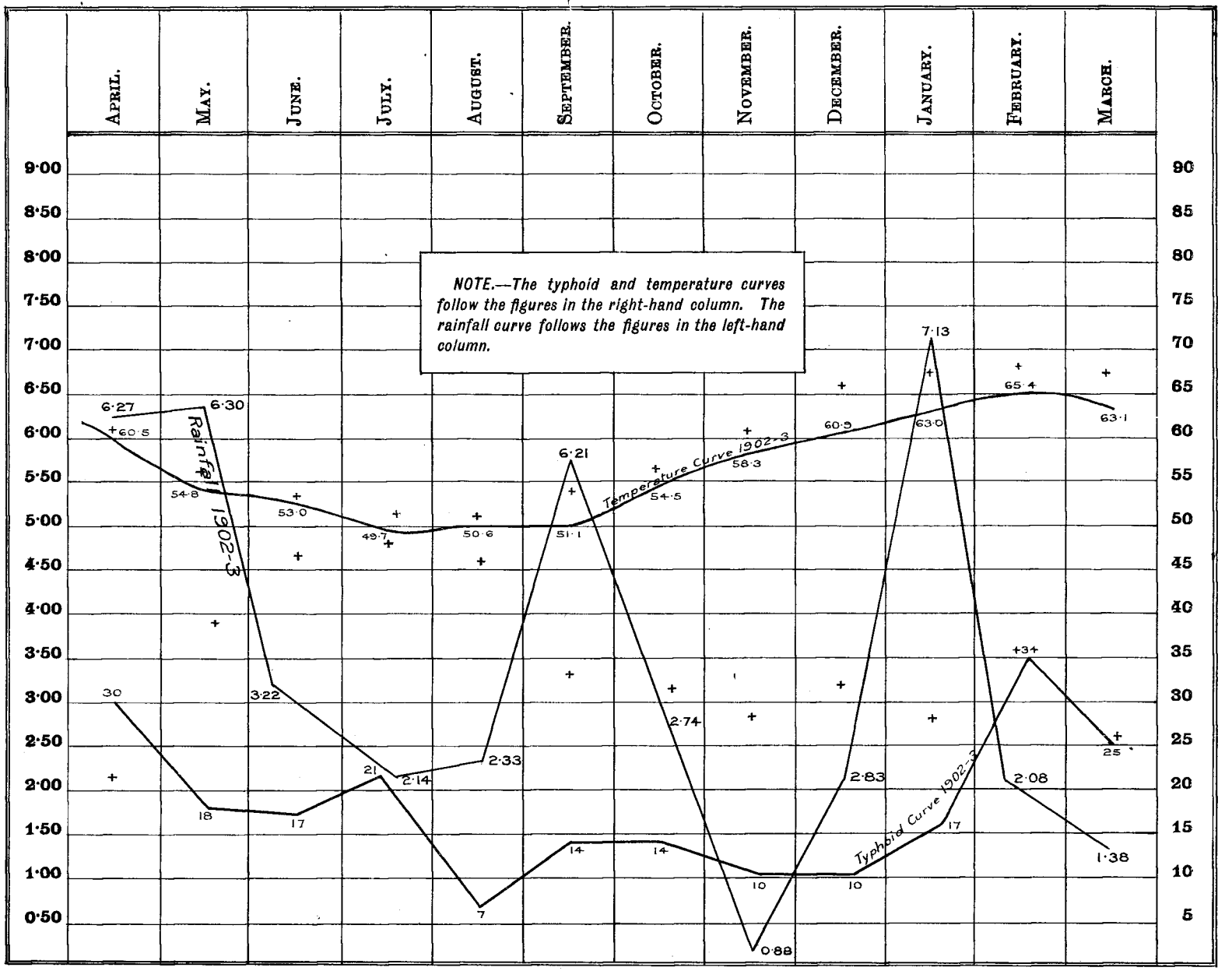
H.31

TYPHOID, TEMPERATURE, AND RAINFALL CURVES,

APRIL, 1901, TO MARCH, 1902.

N.B.—The average rainfall for previous years is marked + and the temperature, +

B



H.31

TYPHOID, TEMPERATURE, AND RAINFALL CURVES,

APRIL, 1902, TO MARCH, 1903.

N.B.—The average rainfall for previous years is marked + and the temperature, +

considerable amount of work on a busy practitioner—for instance, during the measles epidemic, while that remained a notifiable disease. In the notice from medical man to householder no more than the name of the disease, the date, and the signature is required. The duty of notifying the local body might be thrown on the householder alone. Thus the medical man, if he carried the book of forms with him, could hand the blank form intended for the local body to the householder, directing him to forward it to the proper authority; while at the same time he could fill in and serve the notice on the householder. In all, 4,514 notifications were received during the year.

The attached table gives the number of each disease and their place of origin as far as was known.

Summary of Infectious Diseases notified from 1st April, 1902, to 31st March, 1903.

City, Suburb, or County.	Enteric.	Scarlet Fever.	Diphtheria.	Measles.	Blood-poisoning.	Influenza.	Tuber-culosis.	Plague.
Auckland City	75	86	68	1,392	29	48	31	2
Birkenhead Borough ..	2	2	1	104	..	..	1	..
Devonport Borough ..	10	5	..	209	1	1	5	..
Grey Lynn Borough ..	4	21	5	96	..	2	2	1
Newmarket Borough ..	2	4	..	76	2	1	3	..
Onehunga Borough ..	7	5	6	289	1	3	1	..
Parnell Borough ..	17	9	13	138	2	4	2	..
Arch Hill Road District ..	2	11	5	45	1	3	1	..
Avondale Road District ..	..	1	..	139	..	..	1	..
Eden Terrace Road District	3	9	4	35	1	1	..	..
Epsom Road District ..	..	2	1	33	1	..	1	..
Mount Albert Road District	1	2	1	66	1	1	..	..
Mount Eden Road District	8	12	10	111	1	4	6	..
Mount Roskill Road District	1	3	1	17	..	3	3	..
Mount Wellington Road District	..	..	..	12	..	..	..	..
One-Tree Hill Road District	1	..	1	28	..	28	..	..
Remuera Road District ..	1	4	1	44	1	..	1	..
Cambridge Borough ..	..	2	7	5	1	1	2	..
Hamilton Borough ..	6	5	3	1	2	..	5	.
Bay of Islands County ..	3	35	2	24	2	..	1	..
Coromandel County ..	1	2	..	13	1	..	..	..
Hobson County	1	..	..	25	..	1	..	..
Hokianga County ..	6	..	..	2	..	..	..	..
Kawhia County	..	1	..	..	..	..	..	..
Manakau County ..	10	11	2	169	..	1	13	..
Mangonui County ..	1	1	..	..	..	..	1	..
Ohinemuri County ..	13	25	3	150	3	6	2	..
Waihi Borough	6	..	3	46	3	6	2	..
Opotiki County	1	..	..	..	1	..	..	..
Otamatea County ..	..	3	..	2	1	2	..	..
Piako County	1	8	2	7	..	..	..	..
Raglan County	..	..	..	..	..	..	1	..
Rodney County	1	..	1	84	..	..	..	.
Rotorua County	2	1	1	43	..	..	..	..
Thames County	8	9	9	43	1	5	16	..
Thames Borough	7	8	7	31	..	..	6	..
Tauranga County ..	..	..	..	9	..	..	..	..
Taupo County	..	..	1	..	..	..	..	..
Waikato County	8	4	..	4	..	1	2	..
Waipa County	2	5	..	28	..	1	1	..
Waitemata County ..	7	7	3	101	1	1	1	..
Whangarei County ..	3	23	..	..	..	..	5	..
Whangaroa County ..	9	..	..	..	..	..	..	..
Totals ..	217	318	151	3,544	54	118	108	3
City of Auckland	75	86	68	1,392	29	48	31	2
Suburban Districts ..	63	94	49	1,526	12	52	27	1
Country Districts ..	79	138	34	626	13	18	50	..

ENTERIC FEVER.

Though 217 cases of enteric were notified this year against 181 last, this is scarcely a fair comparison, as notification was not in force in the earlier months last year, and the figures for April and May, 1902, appeared also in my last report. Probably 217 is somewhat below the yearly average, judging from the hospital returns.

The accompanying charts show the monthly typhoid returns during 1901 and 1902, compared with the temperature and rainfall curves of their respective years.

It would not appear at first from these that the rainfall has exercised much influence on the typhoid rate. Thus, the excessive rainfall of April and May, 1902, was not followed by any unusual decrease. Again, July, 1901, was unusually wet, and in 1902 exceptionally dry and cold, yet in the former year the typhoid returns for August were high, and in the latter year low. November, 1902, was unusually dry, yet there is no excessive rise in December or January, while the rise in February, 1903, was preceded by a very wet January. It is probably, however, fallacious to follow the curves too slavishly as there are several sources of error—thus, a day or two of excessive rain in a month while producing a high return does not necessarily constitute a wet month. We

know that a hot dry season is favourable to typhoid, and that the summer months are always followed by an autumnal rise in typhoid. Telluric conditions are not greatly affected by a single hot or wet day, and a considerable period is required of continued hot or dry weather before the effects favourable to typhoid show themselves, while a further period elapses before the disease has passed its incubation period and asserted itself clinically. Another source of error in these charts is that the typhoid returns are for the whole province, while the meteorological figures apply to Auckland alone.

Probably a fairer interpretation of the charts is the following: Both 1901 and 1902 were colder than the average, and the typhoid returns are therefore probably lower than usual. The late autumn months in 1901 were dry, in 1902 unusually wet, accordingly in the former year we find typhoid unusually prevalent in June, July, and August, and much lower in the latter year. A noticeable feature in both years is the delay in the summer increase of typhoid, this increase generally beginning in December and rising steadily till April, being preceded by a spell of dry weather, with increasing temperature in the spring and early summer months. In 1901, however, though dry, the temperature was low in spring, and the early summer cold and wet; therefore the rise which began in December, as usual, did not continue, and it was not till a spell of very dry weather in January and February occurred that there was a noticeable increase in typhoid—delayed, thus, till March. In 1902 the early spring months—September and October—were wet and very cold; there was a delay therefore in the typhoid-increase until the unusual drought of November and December brought about the conditions favourable to the disease. We have, therefore, the increase in February, despite a wet cold January, the effect of which is not shown till March, when an unusual fall occurred.

In the City and Suburbs.

The contribution towards the total of 217 notifications of typhoid was 138—almost the same as last year. The deaths were eleven in number, showing a low case-rate. But the death-rate from enteric over the whole population of this area is 0·216 per 1,000 persons living, which is very high; that of England and Wales being about 0·175 on an average.

The *city* alone is responsible for 75, and, as before, the older parts, where there is a faulty drainage system, suffered most. A notable instance of the danger of allowing plumbing-work to be done in a careless manner occurred in a boardinghouse in the city to which five cases were traced. Here were all the classical faults—untrapped wastes connecting to unventilated house-drains and leading directly to the sewer, leaking soil-pipes, ill-flushed closets, and so forth. Typhoid has every encouragement in the city—defective drains, faulty plumbing, non-removal of refuse, a bad nightsoil service, and a polluted harbour.

Of the *suburbs*, *Parnell* shows up worst with 17 cases. Here again we have an indifferent drainage scheme and nightsoil service. But many of the cases are traceable probably to the harbour-pollution, the foreshore of this suburb especially suffering.

Devonport comes next with 10 cases, scarcely what one would expect, as the drainage system is on the whole fairly good. Some cases, as in all the suburbs, may probably have originated in the city, where the patients worked. But this would not account for so high a proportion in this particular suburb, and, moreover, some of the cases undoubtedly arose in the borough. Foreshore-pollution may be the source of these.

Mount Eden, with 8 cases, again has an undue proportion, though not as high as last year. Lack of drainage probably accounts for these cases. The lower slopes of the district suffered most.

Onehunga, with 7 cases, also points to the need for a drainage scheme.

The *country districts* were responsible for 79 cases.

Thames Borough shows a great improvement on last year, only 7 cases being recorded, this diminution being the result of the efforts made towards improvement, especially in the matter of milk-supply.

Waikato County.—The 8 cases are all traceable to one district—Wairangi. Here the principal source was undoubtedly the pollution of the Waerenga stream.

Ohinemuri County shows 13 cases, of which 6 were in Waihi; three of the latter being in one family, where the water-supply was from a polluted stream.

Waitemata County.—Seven cases, which were largely attributable to Helensville where local conditions are all in favour of the disease.

Whangaroa, 6; *Hokianga*, 12; and *Bay of Islands*, 3, are very high when the sparse population is considered. Many of these were among the Maoris, whose presence in a district generally tends to spread the disease, largely owing to their carelessness in the matter of keeping their water-supply free from contamination.

Scurces of the Disease.

An effort has been made to inquire into each case, and on the whole this year local conditions, such as foul drains and privies, seem to have been the principal causes. While there have been no extensive outbreaks traced to one source, such as oysters and milk-supplies, the following deserve some comment.

Harbour-pollution this year probably accounts for a large number of the cases in the city and suburbs, and thirteen have been traced with some degree of certainty. A large number were among children who are indifferent as to where they may bathe or play. A number of boys may often be found at the luncheon-hour fishing at the mouth of the sewer below the Railway Wharf, and touching their food with hands fouled by the filthy lines. The sewer-outfalls in St. Mary's Bay, Ponsonby, and St. George's and Mechanics' Bays, Parnell, also may be considered danger-spots.

The condition of the municipal salt-water baths was commented on in my last report. This year again one case seemed to have had its origin here.

Pollution of Streams by Sewage.—The Wairangi outbreak comes under this head, and it is the more interesting when we learn that this is the third epidemic which may be attributed to the conveyance of infection by the Wairangi Stream. The first occurred about nine years ago, when some cases occurring on the banks of this stream at the upper part of the valley were followed by others in families drawing their domestic supply from this source about half to one mile further down. In November and December, 1902, eight cases of enteric arose in the district, while a ninth person developed the disease immediately after he left the neighbourhood. The original source of infection probably was among some Maoris, whose settlement is situated on the banks of the upper part of the stream. In October there were five cases of fever in this settlement, and one woman died. A few weeks later a man (A), living on the banks of the stream, and drawing his water-supply thence about 300 yards below the Native village, developed enteric. Just at the time he took ill a ball was held in the district school, and water was obtained from a spot a few yards below his house. A few days after, an outbreak of severe diarrhœa occurred among those present at this ball, and later five of the guests developed typhoid. These cases live far apart, and as all took ill about the same time, and the water drunk at this ball seems to be the only thing they had in common, it seems pretty certain that the infection was in this water. This is the more likely since, privy and drainage accommodation being absent from the house in which A lived, everything went into the stream just above the point at which the water was obtained. Later three other cases occurred among other members of the infected families, the transmission being evidently by the agency of the various sanitary defects which obtained at these houses, a well polluted by slop-drainage, a leaking privy, and so forth. It seems probable, then, that the infection in case A was water-borne from the Maori settlement, where the usual primitive arrangements hold, the Natives bathing and washing their clothes in the stream. A repolluted the stream, and so infected the guests at the dance. The preliminary outbreak of diarrhœa is interesting—probably being an example of the infection by *B. coli*, recorded by Lorrain Smith at Belfast as preceding the invasion by the *B. typhosis*. It is remarkable that this creek should have been the means of spreading the infection in three distinct epidemics, since the conditions which conduced to the earlier ones no longer exist. It would seem to indicate that the nature of the water was favourable to the life of the *B. typhosis*.

Local Conditions.

In the majority of cases no very definite source can be traced, save that there is some unwholesome condition—a filthy open drain, a leaking privy, or a foul cesspit. The repeated outbreaks—single cases, perhaps—occurring in the same house one year after another go to prove that there are infected spots where the disease may lie dormant, awaiting some favourable condition to awaken it into activity. While dirt and evil smells are known to predispose to this disease, there must be some agency by which the specific germs are carried to the foods and drink—flies, very probably, play a part in this. I feel convinced that, so long as the present slipshod imperfect methods of removing nightsoil are permitted to continue in the city and suburbs, typhoid will remain a prominent feature in the diseases notified.

At *Hamilton* an outbreak occurred, confined to six cases. I have failed to account satisfactorily for these. They seemed to coincide with the turning-up of the soil while the water-mains were being laid, but there is no evidence that this soil was polluted. On the whole the cases seemed to have some connection with a block of buildings in the main street, where lack of drainage produces a very foul condition of affairs in the back yards.

I record the following cases as of interest, because the evidence is in favour of unexpected methods of conveyance.

Water-cress.—Five cases, with apparently nothing else in common, living widely apart, arose after eating water-cress from a spring in the Penrose district. There is no visible evidence of pollution of the water, yet it seems strange that all five should have the same history. The spring is out of the way, and the cress not widely used.

Oysters.—The third in a series of cases arose this year in a family at Waikumete. In each case is the same history—of eating oysters from a particular point on the upper reaches of the Waitemata Harbour. An interval of nearly a year occurred since the last case. There is no direct source of pollution of the oyster-bed, except that it is at the mouth of a tidal creek which receives the subsoil drainage from the Waikumete Cemetery.

SCARLET FEVER.

Since March, 1902, there has been a fairly widespread epidemic of scarlet fever, though at no time or place attaining any alarming dimensions: 318 cases were notified, of which the city alone was responsible for 86, the suburbs 94, and the country districts 138. The type is evidently mild, since but three deaths occurred during this period from this disease.

Grey Lynn and *Arch-hill* suffered most severely of the suburbs, and the district school, which probably was responsible for spreading this disease, was closed for three weeks and thoroughly disinfected, with good effect.

Of the country districts, *Bay of Islands County*, with thirty-five cases comes highest. Most of the cases occurred in *Kawakawa*, where there was a somewhat severe outbreak in December. There was an utter neglect of all precaution, and most of the cases were not notified, the householders pleading ignorance when questioned. Several deaths resulted. The school, which was largely the means of distributing the disease, was closed, and at my suggestion the County Council appointed Dr. Menzies as Medical Officer under the amendment of "The Public Health Act, 1902." Inspector Winstanley was sent up with the necessary disinfecting appliances, and the school and houses were disinfected. This checked the outbreak, though there was a slight return in February.

Ohinemuri County suffered to the extent of twenty-five cases, chiefly in Waihi and Paeroa, in both of which places the school was disinfected during the winter holidays.

At *Kamo*, in *Whangarei County*, also, an outbreak occurred among the children, and the school was closed for disinfection.

A great deal of infection might be avoided if parents took the ordinary precaution of keeping their children from school during convalescence, or while there is infection in the house. But, through ignorance or selfishness, they neglect to do this, and the local bodies often are not sufficiently alive to their duties to see that such precautions are taken. In two instances it was found advisable to suspend the milk-supply from dairy farms.

DIPHTHERIA.

One hundred and fifty-one cases have been notified, of which 68 arose in the city, 49 in the suburbs, and 34 in country districts.

Twelve deaths occurred in 1902 in Auckland and suburbs from diphtheria, a very large proportion considering the population. Only seven are recorded in the rest of the great towns.

Comment was made in last year's report on the outbreak which was started by the turning-up of the soil polluted by a carelessly constructed stable belonging to the Tramway Company. A fair number of the sixty-eight city cases can be traced directly or indirectly to this source. Inquiries were made systematically into each case, and it was noticeable that many instances occurred where the connecting-link between one case and another was found in some person or family considered to be suffering from "tonsillitis" or "croup." I have no doubt a number of cases escaped notification thus. It would be well were the medical attendant to regard with suspicion all cases of sore throat while a diphtheria epidemic is in progress, and to take precautions accordingly. One school was closed for disinfection owing to this disease. Another stable with the same faulty construction as that at Bayfield was pulled down, but on this occasion the contractor was directed to use lime and other disinfectants when the filth-saturated soil was opened. Only one case—a man working in the stable—resulted.

As in enteric, so with regard to diphtheria, a certain number of cases may be traced to the sewer-outfalls in the harbour.

Parnell suffered must heavily of the suburban districts, thirteen cases being notified here—three, at least, of those were contracted by children playing about the foul spots in St. George's and Mechanics' Bays.

Mount Eden, with ten cases, shows up badly. They arose in much the same parts of the districts as the typhoid cases, and are directly traceable to lack of drainage.

Arch-hill and *Eden Terrace*, with five and four cases respectively, have a high proportion for their population. Doubtless the foul open sewer running through these districts is largely responsible for this.

Of the country districts, *Cambridge*, with seven cases, shows too high a proportion—comment on which was made last year. Two of these arose in one of the Railway Department houses, where a direct connection between cesspit and untrapped house-sink was the means of carrying the infection.

Thames Borough.—Seven cases arose, most of them being in one road, where the water-table carrying the sewage is less well flushed and more faulty in construction than in most of the streets.

MEASLES.

A very severe epidemic of measles has swept over the district, 3,544 cases being notified—1,392 being in the city, 1,526 in the suburbs, and 626 in the country. It was usually accompanied by an outbreak of whooping-cough, and together these diseases caused 58 deaths in 1902, of which 40 were from measles. Doubtless many other cases occurred not notified, since parents frequently do not send for a medical man for this disease. I found it necessary to advertise the fact that the householder was under legal obligation to notify the Department of the cases. The removal of measles from the list of notifiable diseases also makes the return incomplete, though by the time this was done the outbreak was abating.

There is every reason to believe that the return of the troops from South Africa in August was responsible for the epidemic, which began in September, reached its height in October and November, and diminished in January. Previously only a dozen or two cases were reported month by month.

The spread was largely due to the utter disregard for all precautions which marked the attitude of the public to the disease, and the schools became veritable hotbeds—Wellesley Street, in the city, and Newton East more especially suffered. These were disinfected during the holidays, as also were Newmarket, Northcote, and Pakuranga schools, which had to be closed on account of the numbers afflicted. As an example of the indifference with which people regard measles, it was found that at Northcote a baker's boy was distributing bread within a week of the time the rash faded. This, of course, was stopped. I suggested that advantage should be taken of the holidays in October to make a general disinfection of all schools, but this was not carried out. Since measles is no longer on the schedule of infectious diseases, precautions are difficult. Several complaints have reached me from schoolmasters regarding parents sending infected children to school. But I cannot now take any measures towards preventing this.

TUBERCULOSIS.

One hundred and nine cases have been reported—31 in the city, 27 in the suburbs, and 51 in the country. These probably only represent the more pronounced cases of phthisis, and little can be gathered as to the prevalence in various districts, as medical men differ in their ideas of what constitutes a notifiable form of the disease. Thames County, 16; and Manukau County, 13, seem out of proportion to the other districts.

Beyond the construction of the sanatorium at Cambridge, little has been done in the way of combatting this disease. In a few instances which came more especially to our notice we disinfected the rooms where a patient had lived.

PLAGUE.

During the year 1st April, 1902, to 3rd March, 1903, three cases of plague have occurred—one in Grey Lynn in April, one in the city in May, and another in the city in July. The first two were fully reported on in last year's annual report. The case in July was investigated by Dr. Frengley during my absence. The patient seems to have had no direct connection with the New South Wales shipping, but was about the wharves. The disease was of the pneumonic type, and proved fatal, the body being cremated. In this, as in the other cases, the house was very thoroughly fumigated, and the contacts kept under observation for some time.

These cases might be classed as sporadic, as I do not think there was any widespread infection. No mortality among rats was noticed, and in all probability the disease was contracted in each case by coming in contact with very limited foci of infection. Rats were bacteriologically examined from time to time, with negative results. In one instance, in October, a boarding-house-keeper, feeling alarmed by finding a number of dead rats on his premises, informed me of the fact. Careful examination revealed nothing of a suspicious nature, and there was a probability of chemical poison having been the cause of the mortality. Any suspicious cases have been investigated carefully, and, where possible, bacteriological examination made of affected parts. Twelve cases were thus dealt with.

In six cases of sudden death *post-mortems* were made, and the spleen, &c., removed, and bacteriological culture made, with negative results. One case of adenitis proved on examination of the blood to be typhoid, confirmed on *post-mortem* examination. In three cases of bubo, pus was removed for examination, and in two cases of adenitis portions of the gland affected were excised for the same purpose. One case of enlarged glands at Dargaville was isolated and kept under observation by Dr. Purchas, Port Health Officer, till the true cause of the illness became apparent. One case at Rawiti of glandular enlargement in a Maori I visited and found to be of a simple nature.

BLOOD-POISONING.

This is an unsatisfactory return, as medical men are at a loss to know how wide an interpretation to put on the term. Fifty-four cases have been notified, which includes one case of tetanus and three of anthrax. These three cases occurred on a farm in the Waikato in June, and were investigated and reported on by Drs. Frengley and Douglas. A bullock which died suddenly was cut up by these men. Two contracted the disease in their arms, and one, who ate a portion of the meat, developed it in the mouth and eyes. This case proved fatal.

It is a remarkable thing that animals dying of any disease should be considered fit for human consumption; and it is to be hoped that these cases will prove a warning to farmers to exercise the greatest precautions as regards deaths among their stock. The need for sterilisation of imported bones is a matter to which already sufficient attention has been drawn.

INFLUENZA

has been removed from the list of notifiable diseases. One hundred and eighteen cases were notified before this.

DIARRHŒA.

In last year's report I mentioned the outbreak of dysentery in Auckland and suburbs, which occurred in April.

About the middle of September an epidemic of gastro-enteritis broke out, beginning in Auckland and spreading over the country districts during October and November. The illness was so widespread and of so serious a nature that I made some effort toward ascertaining its ætiology, sending out a circular to medical men asking for an opinion on the question. A form was also sent on which it was intended the foodstuffs partaken of by some of the cases might be set down, to ascertain, if possible, if this might be the source of infection. A few replies were received, sufficient to show that the disease had a fairly definite course, beginning suddenly and lasting about six days, accompanied by vomiting, cramp, and severe prostration. Children were not affected more than adults. There seemed to be evidence that it was of an infective nature—thus, when once introduced into a household one member of the family after another would be effected, till sometimes every one had been ill. They were not often seized simultaneously, which argued against any particular foodstuff being the cause of the trouble. This was also shown by the dissimilarity of the food-lists which were filled in, and by the wide distribution of the illness. The only possible foodstuff would have been something very widely used, such as flour. Knowing that a shipment of an adulterated compound was being sold as "cream-of-tartar substitute" at that time, I had analysed several baking-powders which had been used by the sufferers, but without any evidence of adulteration being revealed. I am inclined to indorse the opinion expressed by many medical men that the infective agent was of the influenza type, though whether air-born or distributed by soil or water I am unable to say. The city water-supply was regarded by some as the probable source of the disease in the early stages of the epidemic. I made a bacteriological examination, but found no evidence of serious pollution, and the spread of the disease beyond the area of this supply confirmed my results.

In January, February, and March, 1903, an unusual number of cases of diarrhœa occurred in Tauranga and Rotorua, the illness being severe and of a dysenteric type. I do not think this is the same as the gastro-enteritis referred to above. The sufferers were chiefly children, and a number of deaths occurred in both places. Probably this is more of the nature of the summer diarrhœa, commonly found in places where there is pollution of the soil by sewage, as this condition obtains

in both Tauranga and Rotorua. It has already been shown how the mortality in the city is largely also owing to this cause.

In conclusion, I would again draw attention to the necessity for placing acute diarrhœa on the list of notifiable diseases, since it is only by chance reports that serious outbreaks are discovered.

General Public Health Measures.

Infectious Diseases Hospital.

In last year's report, after describing the utter lack of preparation to adequately deal with infectious-diseases epidemics in Auckland, I expressed the hope that the action of the Department in getting the many local bodies concerned to combine for the purpose of establishing a well-organized hospital for infectious diseases had at last put the matter on a sound basis. I must now confess that my opinion was founded on too sanguine a view of the methods of civic government in the district, and I regret to report that we are apparently as far off a satisfactory solution of the difficulty as ever.

The Department believed that the meeting of delegates had unanimously agreed that a hospital was required, and that the details of the work—the site, plans, and assessment of rates—had been referred to a sub-committee and the Chief Health Officer. They were further encouraged in this belief by receiving a formal agreement to the resolutions passed at this meeting from each local body—in all but a few instances without questions being asked as to details, or protest made. In spite of this apparent unanimity of opinion last year, and in spite of seven months' subsequent acquiescence—during which the Department chose and gazetted a site, made plans for the building, and drew up a basis of rating with the approval of the sub-committee, and attempted to collect the subscriptions—we now learn that all this work would be wasted by the local bodies, and that, with a few exceptions, they repudiate their agreements. So unexpected an outcome of the negotiations necessitates a review of the position taken by the Department to discover, if possible, whether any misinterpretation on their part of the necessity for the work, or the previous public feeling, led to a misunderstanding.

We will take first, then, the conditions which led the Chief Health Officer in April, 1902, to call a meeting of local bodies to consider the question. To put it shortly, we had at that time an epidemic of various infectious diseases—diphtheria, scarlet fever, &c.—and no proper provision for either their treatment or the accommodation of the nursing-staff, and the public safety, by lack of isolation of cases and disinfection of clothing, was endangered. Added to this, plague was at our doors, and one case had arisen in Auckland. We had, further, nobody responsible for the proper treatment of these cases, and the Hospital Board taking an unwilling charge, objecting to doing anything as regards plague, and threatening to repudiate the care of what they termed the minor infectious cases, taking advantage of the fact that they were not called on to do this work under the Public Health Act. The passing of this Act provided a convenient excuse to the Board for avoiding what had been their clear duty prior to 1901. Why they had neglected to face the question of proper provision for infectious cases long before opens up the question of whether the constitution of these Boards has proved satisfactory. It cannot be argued that hitherto there had been no need for such provision. To my personal knowledge they were unable, eight years before, to afford satisfactory accommodation when an outbreak of diphtheria occurred, and the cases had to be placed in what was supposed to be a special ward for major surgical operations. The recommendations of their medical staff on this matter were neglected, as also on the question of adequate means of disinfecting clothing, &c. When in 1900 plague broke out, their unpreparedness was again manifest, and a temporary hospital had to be hurriedly erected under pressure by the Government. This structure was placed in the public Domain adjoining the Hospital, and provided accommodation for about twenty cases, with a small annex for a medical man. There was a further building for contacts in the same portion of the Domain, erected by the City Council, the Government paying half the cost. This building was burned down early in 1901. Save, then, for the temporary plague-building, the only accommodation for infectious diseases was a small cottage in the Hospital grounds, containing four beds, with no special provision for nursing-staff.

In the face of the above facts, it would seem strange that the Hospital Board should feel themselves in a position to blame the Health Department for not taking adequate steps to meet the epidemic of 1902. Yet this we find to have been done in a report by the Medical Superintendent, read at a meeting on the 28th October, 1902, the report being heartily indorsed by a majority of the Board. It is impossible to avoid contrasting the inaction of the Board after all these years with the fact that within six months of the establishment in Auckland the Health Department had already made efforts towards inducing the bodies concerned to prepare for emergencies in the matter of infectious outbreaks and the disinfection of clothing. That their representations were unsuccessful is the fault of the public bodies approached, and shows that the powers possessed by the Department are insufficient if they are to be held responsible for public health. An attempt made in 1901 to induce the City Council and the Hospital Board to combine and erect a steam disinfector, and provide a special ambulance for infectious diseases, proved fruitless. Again, in February, 1902, the outbreak of plague in Sydney offered a sufficient argument for the Department to press the sanitary needs of the district upon the local bodies, and it was proposed to increase the Hospital accommodation; but the only result was bitter opposition on the grounds of the presence of this Plague Hospital in the public Domain. This feeling grew, and when towards the end of March it was known that the City Council were calling tenders for a building on the site of the burnt Contacts Hospital a great outcry arose in the Press and among a section of the public.

It is somewhat amusing to refer to the tone of the objections at that time, and contrast it with the arguments used later against the Point Chevalier scheme. Thus, in a leading article in April, 1902, the morning paper says, "Our contention that it is not advisable or usual for infectious diseases to be treated in buildings adjacent to a general Hospital is now indorsed by the

official experts"; while in another leading article, dated the 3rd February, 1903, we find the same paper vigorously supporting building for infectious diseases within the Hospital grounds. Similarly, we find a member of the Hospital Board, on the 8th April, 1902, at a Board meeting advocating the removal of the Infectious Diseases Hospital "some distance from town," and on the 23rd January, 1903, the same member telling a meeting of local bodies' representatives that the Hospital authorities were quite able to treat such cases at the General Hospital. Certainly at this time there was a strong public feeling against having an infectious-diseases hospital in the centre of the city, and there was talk of forcibly pulling down the plague-buildings in the Domain.

To complicate matters, an outbreak of scarlet fever and diphtheria occurred in March, and the accommodation provided by the Board naturally proved utterly inadequate, with the result that the Plague Hospital was taken by the Hospital authorities to meet the necessities of the moment. We were now without accommodation for plague, and fearing that at any time we might have such a case to deal with I approached the Hospital Board on the question of providing something in return for this seizure of the Plague Hospital. That I was not mistaken in my anxiety was shown by the fact that sixteen days later the first case occurred. It was somewhat of a surprise to find, when, on the 3rd April, I met a sub-committee of the Board on the subject, that they absolutely declined to assist me in the matter, and, further, taking advantage of the fact that under the Health Act they could not be called on to deal with infectious cases, threatened to refuse further treatment of any infectious disease, even going the length of discussing the advisability of turning the cases then in the Plague Hospital "loose upon the town." Fortunately, owing chiefly to the influence of the Chairman, Mr. Stitchbury, and Mr. Bollard, better counsels prevailed, and at a meeting on the 8th April an undertaking was given to make temporary provision for possible plague cases, and this was done, though many members protested. But it was evident that the whole question of treatment of infectious diseases was unstable. The Plague Hospital was merely a temporary structure, not intended for constant occupation, or suited for more than one class of disease. It was insufficiently isolated from the General Hospital and from the public, and opinion was strongly against its presence on the Domain grounds. Moreover, the attitude taken by the Hospital Board was a warning that they could not be relied on to continue the care of infectious cases under existing legislation, and they had further shown a lack of foresight in their methods of dealing with the subject. Their tendency to pick and choose which cases they should deal with, and which leave to the local bodies, was in itself sufficient to warrant the determination of the Health Department to place matters on a sound basis, and erect a hospital on modern lines, with ambulance, steam disinfector, proper provision for classification of cases, and adequate accommodation for the nursing staff, on a site admitting of all infectious cases being there treated. Accordingly, at the meeting of the Hospital Board on the 8th April, when Mr. Bollard introduced a scheme for the erection of an infectious-diseases hospital on the General Hospital Grounds, I opposed it, feeling that such a site in no measure met the requirements, and refused some days later, when approached by the Board, to approve of the plan. Again, on the 21st April, at a meeting of city and suburban local bodies, I advocated the erection of a modern infectious-diseases hospital, and on the motion of the Mayor of Auckland it was unanimously resolved to urge the Government to amend the legislation so that such a hospital could be built on behalf of the local bodies by the Hospital Board. On the 23rd April, at a conference between Dr. Mason and the Chairman of the Hospital Board and the Mayors of the city and Grey Lynn, the question was further discussed, and it was agreed that a general meeting of local bodies concerned be held to lay before them the needs for a special infectious-diseases hospital, and that the Hospital Board meanwhile should erect a small building to help in meeting immediate requirements, this building to subsequently become an observation ward for doubtful cases occurring in the General Hospital, such as is possessed by every well-appointed institution.

Public feeling at the time certainly justified Dr. Mason's determination to take such steps as were in his power to do away with the state of chaos in regard to infectious disease. Accordingly, the meeting of delegates of local authorities was called for the 28th April. The following was the text of the notice telegraphed to the fifty-one bodies which comprise the Auckland Hospital District: "The question of erecting one general hospital for the treatment of all infectious diseases, instead of requiring each local authority to look after such cases in addition to paying for maintenance of the General Hospital, will be discussed at the City Council Chambers on Monday, 28th April, at 11 o'clock. Dr. Mason has come from Wellington in order to obtain the views of the various bodies affected, and will be glad if you will attend or appoint a delegate to represent your Board." I have quoted the telegram in full, for it forms in itself a sufficient answer to two charges brought later against the Department—first, that the local bodies thought it was a hospital merely for plague and smallpox, though the telegram specifically says *all* infectious diseases; second, that Dr. Mason had acted in an arbitrary manner, without due regard to the public wishes. It is evident that, in calling together these bodies to consult their views, he was taking pains to avoid even the semblance of dictation. Had he been inclined that way he might, in accordance with section 38 of the Public Health Act, have directed them to build the hospital without further parley.

The meeting of the 28th April, however, was encouraging. Some thirty delegates were present, and almost all the bodies were represented. There was absolutely no hostility, and the following resolutions were passed unanimously: (1.) Affirming the need for immediately erecting a hospital for infectious disease. (2.) Asking the Chief Health Officer to exercise the powers vested in him by the Public Health Act, and declare the Auckland Hospital and Charitable Aid District an area for the purpose of erecting the infectious-diseases hospital. (3.) That in the

opinion of the meeting the temporary Plague Hospital in the Domain ought to be removed, and that the Health Department be requested to undertake forthwith the erection of a hospital for infectious disease for the district hospital area, the site to be selected by the Chief Health Officer and a sub-committee of those present; that the proposed plans be submitted for the consideration of such sub-committee; and that the same sub-committee prepare a scheme as a basis of agreement for allocating the cost between the contributing bodies; and that this resolution be submitted to the respective local bodies. (4.) Appointing as the sub-committee the Mayors of Auckland, Grey Lynn, and Parnell, the Chairman of One-tree Hill Road Board, and a member of the Waitemata County Council. It was suggested that resolution 3 might mean delay, but the mover, Mr. H. C. Campbell, the Mayor of Parnell, explained that it was not intended that such a delay should occur, but that the sub-committee might act at once. The motion was then unanimously carried, and the Chairman, Mr. Kidd, Mayor of Auckland, remarked that the delegates might inform the bodies they represented that, although the resolution was submitted to them, immediate action would be taken. To this there was no demur; and later, when, all in accordance with resolution 3, copies of the proceedings were submitted to the various bodies, but two or three signed them as approved without any reservation.

In the face of such resolutions, and such apparent unanimity of opinion, it might be thought that the Department were justified in proceeding confidently with the selection of a site and the assessment of the rates, and it is somewhat surprising to find the local bodies nine months later repudiating the whole business, and giving as an excuse for the non-payment of their rates that they were being treated in a tyrannous manner by irresponsible Government officials. No time was lost in getting to work—a sub-committee meeting was held immediately after the general meeting, and the site at Point Chevalier selected. A few days previously Dr. Mason had inspected the various available positions, and had no difficulty in picking this as the best then available, and the sub-committee were unanimous in their approval. The last of the copies of the resolutions was posted to the local bodies by the 30th April; and the plans and specifications of the proposed hospital were in the hands of the sub-committee by the 18th June, by which time the approval of this scheme by all the local bodies had been obtained, most signing without question. Those who did ask questions were apparently satisfied with the replies, for they also assented. To those who seemed inclined to demur I pointed out that under section 38, subsection (10), it was possible to appeal to the Stipendiary Magistrate to settle the question, but advised them to avoid this course by coming to an amicable agreement. By the 5th June all but five small bodies had signified their assent, and to these remaining ones I sent a further letter asking them to decide by the 10th June whether they wished to appeal to the Magistrate or not. This had the effect I desired, and all finally assented—two or three, however, indorsing the document as signed "under protest." It is impossible in the light of subsequent events to avoid wishing that the other bodies had made so firm a stand in the matter, when we should have known better how we were placed. To sign without question and later refuse to fulfil the agreement was to mislead, while the unconcealed opposition to the scheme shown by these few small bodies was the honest course, and therefore preferable.

That Point Chevalier had been selected as the site was not made public until it appeared in the *Gazette*, dated the 23rd July. About a week later it appeared in the Auckland papers, and no unfavourable comments were made.

Several meetings of the sub-committee over the plans were held, and on the 17th September Dr. Mason met the committee, and the final arrangements were made—*i.e.*, the total amount to be expended was fixed at £8,500; the plans were modified so as to keep within this sum and meet present requirements. The rating was to be on the same basis as the Hospital and Charitable Aid Board Rate, and the City Council was asked to be the executive body. This question was discussed at a meeting of the City Council on the 18th September, when they consented to act as executive and call for tenders. They further agreed to pay their share of the rate.

On the 22nd September circulars were posted to all local bodies giving the amount for which they were assessed, and asking that the moneys be paid to the Auckland City Council as executive body. In response to this, a few local bodies actually paid a part of their share, others wrote asking for time; but the majority seemed inclined to merely shelve the matter. Accordingly, on the 21st October, at my request, the Crown Solicitor sent out a circular to the bodies urging that payment should be made, and, in order to grant time to those in financial difficulties, it was suggested that the payments be in two instalments—one on the 15th November, 1902, and the next on the 18th February, 1903. There was some response to this letter, but over half the bodies continued to ignore their agreement, some on the ground of poverty, most without giving any reason. They merely did not want to pay; and the end of the year found us without the necessary amount to start the work, while the Government could not advance the money, it only being possible to subsidise the subscriptions pound for pound. The total did not warrant the City Council in calling for tenders as agreed.

Meanwhile the Hospital Board were at last brought face to face with the fact that they had been totally unprepared for an epidemic of infectious disease. The observation ward, agreed on at the meeting of the 23rd April, had never been erected, and nothing had been done in the way of tents, &c., to increase the accommodation pending the completion of the Point Chevalier scheme. As early as May, 1902, the nursing staff were beginning to suffer from the lack of accommodation, and in June, July, and August cases of infectious disease—scarlet fever and diphtheria—appeared amongst them, and again in November and December, till nineteen cases had been so notified during the year. Others suffering from influenza, &c., brought the total to thirty-three nurses off

duty with sickness during the year. The patients also suffered, and cases of scarlet fever contracted diphtheria, and *vice versa*, while scarlet fever also appeared among the surgical cases, and suppuration was so often the result of operations that in July specimens of ligatures and dressings were submitted to me for bacteriological examination to see whether the source of infection lay there. These, however, proved to be sterile. But the Board continued to stick to its policy of resistance to any constructive outlay as regards infectious cases, pointing, as before, to the Health Act, and refusing to look at it in any but that narrow light. One might have expected that they would have recognised that they alone were in a position to deal with infectious cases on behalf of the local bodies, having the necessary machinery for collecting the funds and the staff for treating the cases. A small outlay in tents early in the year would have saved a vast expenditure later, and saved the sickness among the nursing-staff, as well as undue prolongation of the stay in hospital of some of the cases. In April, on Dr. Mason's representations, they fenced in the Plague Hospital, but the primitive drainage arrangements of this building did not receive the attention necessary to prevent them creating trouble; consequently, in August I had to call attention to the insanitary state resulting. Finally in October they were obliged to spend a considerable sum in making a connection with the sewer. Had they done this in March, when they took possession of the plague-building, much loss would have been saved; but the adage about a stitch in time evidently did not find a place in the regulations of the institution.

At this time we find them casting much blame on the Department for not completing the Point Chevalier scheme, and writing to urge us to compel the local bodies to take up their duties under the Health Act. Yet, simultaneously, we find a prominent member of the Board urging, from his place in the House of Representatives, the same local bodies to resist our proposals, and later various other members took a prominent part in that resistance.

In December, owing to the amount of sickness among the nurses, the Plague Hospital was closed for fumigation, the intention being when it reopened to take in only diphtheria. I again approached the Board with the suggestion that tents might be used for other cases; the fact that scarlet fever was rife at the time making the necessity for some sort of provision the more urgent. However, this was not done, and in January the Hospital was reopened, but scarlet-fever cases were refused admission. As several cases came to my notice that ought to have been removed to the Hospital, I waited on the Chairman (Mr. Garland) on the 8th January and pointed out that the Board alone were in a position to act promptly in preventing what might otherwise prove a serious epidemic, and that they had a moral responsibility in consequence. The reply was that the Board were in financial straits, and could not treat the cases from lack of funds. As the Hon. the Minister for Public Health was in Auckland at that time, a deputation from the Board waited on him with a request that the money might be advanced to enable them to continue treating the cases. There appeared to be some uncertainty as to the authority of this deputation to do what they offered. Certainly a special meeting called to confirm their action failed for lack of a quorum, and no vouchers were forwarded to the Department to show what money had been expended. However, the Hospital was reopened on sounder principles than hitherto, tents with wood floorings being erected for the nurses, the scarlet-fever patients being placed in the Plague Hospital, while the old isolation buildings were reserved for diphtheria.

By the end of January the local bodies who had hitherto merely pleaded poverty for neglecting to pay their rates towards the Infectious Diseases Hospital, and had asked for extension of time, and so forth, now threw off all pretence and broke into open revolt against the whole scheme, repudiating any liability despite their signed agreements. Meetings of delegates of the local bodies were held on the 23rd January and the 6th February, at which resolutions were passed condemning the Point Chevalier scheme as an unnecessary burden. The Department came in for a lot of abuse, and their plans as to the scope of the hospital were deliberately misrepresented—thus, it was said that the cost was to be £15,000, that cases of measles were to be herded out there in unlimited numbers, and so forth—misstatements which even members of the original subcommittee who knew and had approved of the real plans did not contradict. All sorts of objections suddenly occurred to the local bodies, and were re-echoed in the Press—the site was unhealthy, it was too far from Auckland, there was no need for an infectious-disease hospital, the Department had tricked them by pretending to erect merely a shed for plague cases, and so forth. The sincerity of these objections may be gauged by the fact that the site and amount to be spent were made public in September—four months before—and no unfavourable criticisms were offered either by Press or public. Whence, then, this sudden awakening to the idea that the Point Chevalier scheme was "monstrously extravagant and wholly unnecessary," to quote the leader of one of the papers of the 7th February?

Two factors appear to have been at work—first, that the Department was pressing the bodies for the promised money—presumably they had not expected this when they committed themselves to this project; secondly, the Hospital and Charitable Aid Board found themselves in difficulties, and it was evident that a great rise in the annual rate would be necessary if they were to carry on with the existing method of administration. This, I take it, was the principal factor; and with a 50-per-cent. rise in the General Hospital rate in prospect the demand for the infectious-disease scheme was the last straw which broke the camel's back, and the already poverty-stricken little districts felt it was time to take a stand against all expenditure on hospitals, infectious or otherwise. Apparently the Hospital Board felt that something was owing to the local bodies to make amends for the sudden call on their resources, for we find them taking an active part at all the meetings called to protest against the Health Department, pointing out how nicely the Hospital could treat infectious cases in their own grounds, and generally making a scapegoat of the Health Department for the increased expenditure which necessitated the higher rate. The cost of treating infectious cases was bolstered up as much as possible, the "Montrose" troopers coming in handy for this purpose, and the extraordinary increase in infectious cases since the

establishment of the Health Department darkly hinted at, till the unfortunate Health officials almost came to be suspected of letting loose germs of disease "to justify their continuance," to quote the words of a speaker at one of these meetings. The fact that this same Board had but a few months before urged the Department to redouble their efforts to make the local authorities assume the responsibility for care of infectious cases was now overlooked; also the question whether the administration by the Board had been so very successful, considering the record of sickness among the nursing-staff and in the surgical wards. Much was made of the fact that to treat cases at Point Chevalier would cost more than at the Hospital, and certainly this would be the case if it had to be run as a separate institution by the Health Department, which will happen if the Board carry out their intention not to undertake the management. But it may be questioned whether, were such an arrangement to be made and the Infectious Diseases Hospital run on these lines, there would even then be such an enormous expenditure as the Board found necessary to debit against infectious disease. The report of the Finance Committee read at a meeting on the 11th February places the increased expenditure for the nine months, 1st April to 31st December, at £3,766, of which £3,000 was due to infectious diseases, and the remainder to increase in ordinary expenditure. It would certainly be possible to run a very large and elaborate establishment at £4,000 a year. But doubtless much of this amount was consumed in replacing the members of the staff who were sick, and in dealing with pneumonia cases among the troopers, and in other expenses not generally found in the accounts of a well-managed infectious-disease hospital.

Considering this great expenditure it is perhaps scarcely fair to accuse the Board of want of consideration for the pockets of the ratepayers when they finally decided early in February to close their doors against infectious cases, more especially as they had taken such a kindly interest in the economics of the Point Chevalier scheme. The reason given for this step was that on the strength of the assistance promised on the 9th January the Board had spent £450, and was not now in a position to carry on the work, their credit at the bank having been stopped. At a meeting on the 3rd February a resolution was passed that "unless Government supplied the funds within eight days they would be reluctantly compelled to close the Infectious Disease Hospital from want of funds." And, since the funds were not forthcoming at this peremptory mandate, the hospital was closed. It is difficult to accept the plea of lack of funds as sincere, for, although the bank credit was overdrawn, there was no effort made to raise money in other directions, and it would be absurd to believe that the Board could not get credit, especially as a gentleman voluntarily offered the needful money at bank rate of interest. Nor could the Board honestly pretend that the demand for an advance of funds was made on an ordinary business footing. Some further assurance was needed that the informal deputation's proposal had been confirmed, since it was known that the special meeting called for that purpose had failed for lack of a quorum, while no notice was sent that any subsequent meeting had supplied the deficiency. No vouchers were sent to support the claim. Indeed, these were not forthcoming till a month after the Department had finally taken over the building and furniture, and even then were found to be so inaccurate as to necessitate careful revision. However, on the 16th February Dr. Mason attended a meeting of the Board, when the plague-building, with its furniture, was formally handed over to the Department on behalf of the local bodies, cost price being paid for furnishing and tents obtained since the deputation to Sir Joseph Ward in January. The Board, it must be said, were disposed to assist the Department in the matter, and agreed to attend to food-supply and cooking at a general daily charge of 2s. per head, and, further, gave permission for the use of the telephone and gave us right of access through their grounds.

This, then, is the present position: The Hospital Board have, with many protestations as to their anxiety for the interests of the ratepayer, forced the Health Department to treat, on behalf of the local bodies, infectious diseases at a cost naturally double what it would have been had the Hospital staff been available. The unfortunate local bodies have now to meet the salary of a medical attendant, outside nurses engaged at the usual rates, while small repairs, which formerly the Hospital engineer could attend to, now require to be paid for. In the original agreement the Board were to supply nurses from the general staff, the local bodies paying their wages. This assistance was withdrawn, however, after a few weeks. Every effort is being made to keep the expense as low as possible; thus no case is admitted until the Health Department is satisfied that there is no possibility of treatment at home without danger to the public or the patient himself. It also must be recorded that Dr. Woodward, medical officer in charge, has volunteered to attend the Hospital in an honorary capacity whenever the work is so light as to permit of this without serious injury to her private practice—a generous action which has so far received no word of recognition from the local authorities who benefit.

The Department is attempting to make the expenses fall chiefly on the districts from which the cases are being sent. To this end, a charge of three guineas per week is made for each patient against the local body concerned, but half of which is subscribed by Government subsidy. This, with an average of five patients, will not cover the cost of running the establishment. It is evident that twice this number could be treated by the same staff, the only increase in cost being the small items for foods and drugs.

Cases have been under treatment since the Department took the matter in hand till the 31st March, of which twelve were scarlet fever and four diphtheria. As regards measles, rather a peculiar state of affairs exists. Not now being on the schedule of infectious diseases in the Health Act, measles cannot be treated by the Department and charged to the local bodies, while the Hospital Board refuse to accommodate them. In this way some trouble was occasioned by the case of an infant suffering from pneumonia following measles. It was brought to the General Hospital, and refused admission. On visiting the case I found it to be in a serious condition, and I personally approached the Board on the subject, explaining the difficulties, and offering accommodation in one

of the buildings under our charge. They refused to consider the case, however, until I became personally responsible for the cost; on these terms it was admitted. It must be added, however, that the Board have recently returned me the amount of their charges.

A meeting of all bodies concerned was called on the 20th March, when Dr. Mason laid the modified plans before them, and further announced that where it was found that the financial position of a Board warranted it the time for payment of the levy would be extended to two years. The delegates, however, would not listen to these proposals, and did not even examine the plans. Instead, a resolution was passed in favour of placing the buildings in the Hospital grounds, the arguments against such a plan being described by one speaker as "mere bunkum"—a remark characteristic of the attitude of the public in Auckland towards all expert advice which happens to be in opposition to popular prejudices.

The Hospital Board, however, appear to have again reconsidered their attitude on the question, and have at last thought of consulting their medical staff, with the result that these gentlemen have unanimously decided to oppose the choice of the site within the Hospital grounds—advice which the Board can scarcely ignore.

It is unnecessary to consider seriously all the arguments used by the local bodies against the Point Chevalier site, since many are so obviously mere subterfuges to justify the breaking-up of the agreement of April, 1902. Roughly, the objectors may be divided into two groups—first, those who do not criticize the scheme, except to say that they are unable to stand the expense it entails; secondly, those who do not want to pay, but excuse themselves by objecting to the proposed site, to the attitude of the Department, or to the Health Act, using any means which presents itself of evading their responsibility. The first group of objectors are worthy of consideration. Many of these small Boards find themselves unable to meet the drain on their resources, and are rated up to the full limit. The ever-increasing hospital and charitable-aid rate seriously cripples them, and this additional burden assumes serious proportions. The only reply one can make to this argument is that it is a pity they did not make it clear at first that their financial position would not permit of their accepting the scheme. The arguments used by the second group of objectors are mostly discounted by the fact that they were not thought of till the Department began pressing for the money. It was curious how they suddenly discovered that the site was most unsuitable after four months' silence, during which the Department were allowed to carry out plans for acquiring the land. From a geographical point of view the site could not be improved, being at the end of a long point projecting into the Waitemata Harbour, and therefore surrounded on three sides by the sea. No matter how the city may grow in the future, this site will always remain available for our purpose. Moreover, the railway passes within a mile and a half, water-supply can be obtained by tapping the Waitakere mains; drainage is easily obtained; and, looking ahead, it would be easy with a steam-launch to serve the districts on the north side of the harbour without conveying the cases through the city or transhipping to an ambulance, since a short wharf at the point would permit of access to deep water. Much has been made of the distance from Auckland, but we know of so many places where even greater distances have to be covered in reaching the infectious-diseases hospital that this can scarcely be considered. The one valid objection is the bad access to the place, due to roughness of the roads. This, of course, can be overcome. Moreover, a bridge carried across from Faulder's Point to Point Chevalier—at no great cost—would bring the site within twenty minutes' drive of Queen Street over good roads. Viewed from the point of future requirements, this site is the only one to consider, the question being whether at present the expenditure is justified. To this I reply that there is no other site available, even for temporary measures, which could be acquired as cheaply. We started the scheme on the distinct understanding that the Domain was tabooed. The Hospital grounds are impossible from sanitary reasons, not affording the space necessary, though this view the local bodies will not accept. The spread of infection was not confined to nurses engaged at the infection wards, but also attacked servants in the Nurses' Home, surgical cases in the main building, and so forth. The other sites are either so rough that to prepare the ground would cost half the money proposed to be levied, or they do not afford facilities for drainage or sufficient space free from population.

Even had the scheme for erecting the hospital in the main Hospital grounds been carried out, it would still have been necessary to acquire a site and erect a building and organize a staff for the diseases which the Hospital Board refused to treat—small-pox, plague, and leprosy—so that the cost of the two schemes would amount to much the same. It is rather amusing to note, as regards the latter disease, that one of the favourite arguments used by the dissenting bodies and the Press is that they consented to the Point Chevalier scheme thinking it was only for such diseases as leprosy. Yet, in spite of this avowed consent to place leprosy on the mainland within five miles of the city, we find the same bodies and the same Press crying wildly in protest against a proposal by the Department to place a single case on an island twelve miles down the harbour. Such quaintly illogical reasoning is found in most of the arguments used—reducing them to the level of hastily trumped-up excuses. There is not a complete unanimity of opinion among the objectors as to what should be done—thus, some thought no provision for infectious diseases need be made, ignoring the epidemics then in progress; others would draw the line at preparing for plague and small-pox, though what they proposed to do should these diseases occur they did not specify.

A favourite argument against the Department was that the delegates at the April meeting were not told the purpose of the hospital—that they thought it was a small affair for plague, &c., and that in any case the sub-committee were not authorised to proceed with the work till the matter had been further referred to the local bodies. The first contention, if true, surely argues a sad lack of method in the way business affairs are transacted by the representatives of the public, for we must conclude that they officially signed a document without troubling to inquire what it was about. We know, however, that the original invitation to the meeting and the matter discussed at the meeting itself left no doubt as to the object of the scheme. That the sub-committee were justified in going on with the work is proved by the announcement of the Chairman of the original meeting that immediate action would be taken. Further, the concluding words of the document to which the local bodies signed their consent are: "The sub-committee are now taking steps to secure a site and prepare plans in order that this building be started as early as possible."

Many of the criticisms do not call for reply—such as the assertion of several who made themselves prominent that the Health officials had trumped up the need for an infectious-diseases hospital in order to justify the existence of the Department, that they had invented the plague cases for the purpose of scaring the public into adopting the scheme, and so forth.

The year 1903–4 opens, then, with things as unsatisfactory as ever as regards infectious disease, and unless the recent proposal of a section of the Hospital Board to acquire a part of the Domain for a site is followed out it will be necessary for the Department to push the Point Chevalier scheme against the present wishes of the local bodies, who possibly may change their minds once more.

Provision for Infectious Disease in the Country.

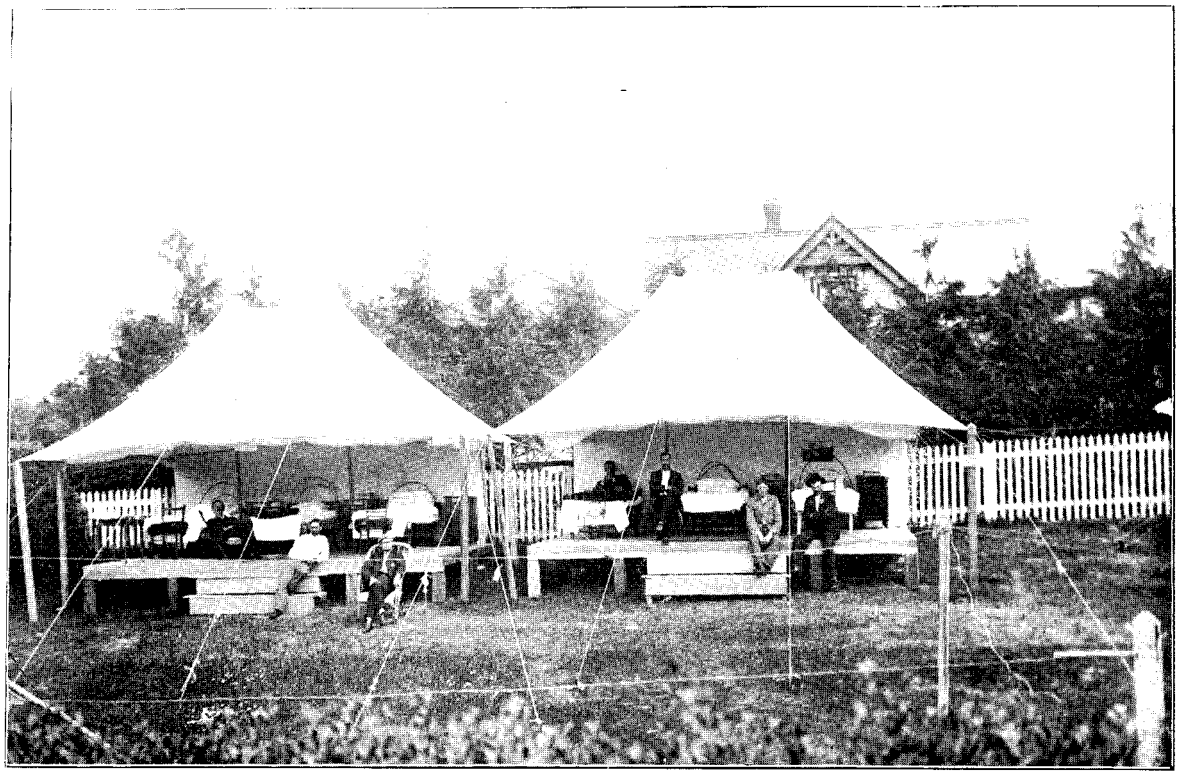
In most districts the cases are treated in their own homes, the local bodies exercising a more or less perfunctory care as regards isolation and disinfection.

At Thames and Waikato the Hospital Boards, acting on behalf of the local bodies, have provided a certain limited amount of accommodation for cases sufficient at ordinary times for the needs of their districts.

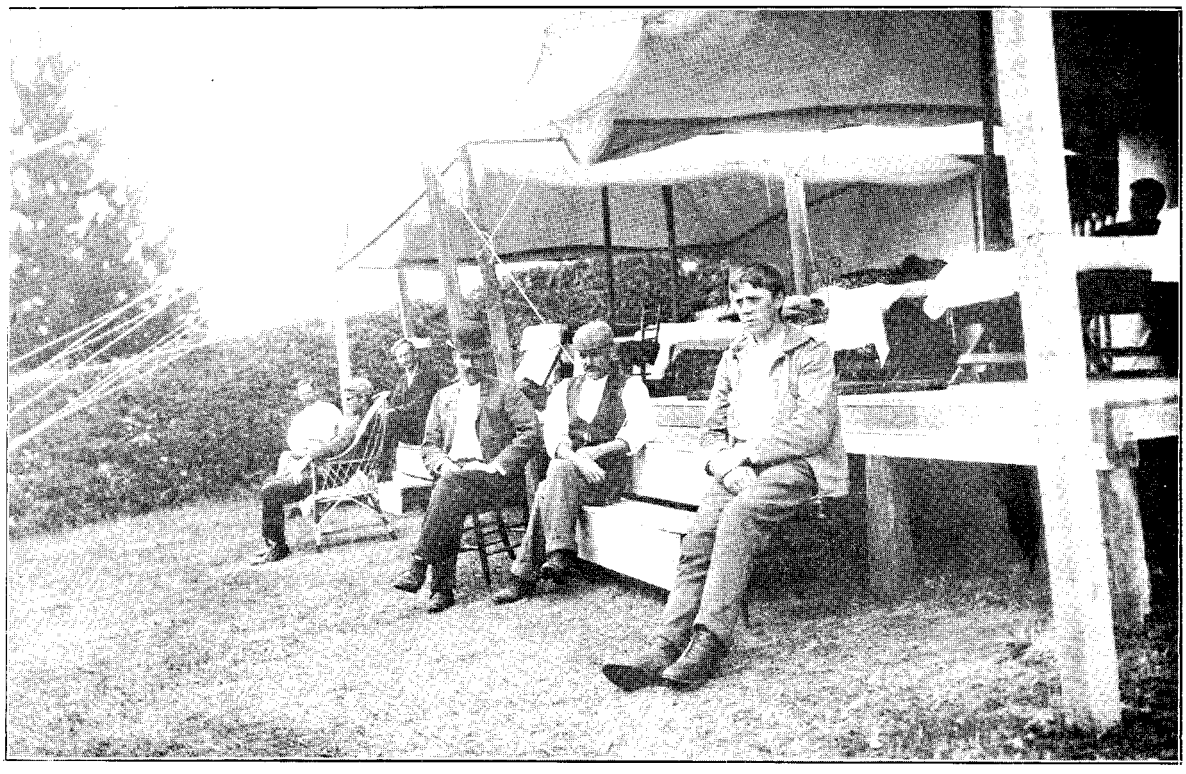
At Rotorua great difficulty was found in sending the cases to Hamilton Hospital, since the cost of the special infectious-diseases railway-wagon is prohibitive to many. Further, the Hamilton authorities object to cases being sent from a district not contributing to the funds. It has been arranged, therefore, that the temporary accommodation ward prepared last year be now converted into a hospital where cases may be treated. Probably this will prove quite satisfactory.

Sanatorium for Consumptives.

The necessity for an institution for the open-air treatment of consumption has been so long apparent that it is with great satisfaction that I am able to report on the work done at Mangakawa, near Cambridge. The site chosen by Dr. Mason last July is an admirable one as regards position, and there was the additional advantage of a good house and well-laid-out grounds as a basis for the Sanatorium, so that in spite of necessary alterations we have been able to start in a small way, treating cases since December, 1902. The climate at Cambridge is much drier than in most parts of the North Island, and in consequence the district has for long had a reputation for the treatment of consumption. A complete set of meteorological instruments has now been set up at the Sanatorium, and we shall have the advantage of accurate data as to climate. The distance from Cambridge is about five miles, the road rising steeply for the last two miles, ascending the hill through native bush and scrub till the house is reached at an elevation of some 1,100 ft. above sea-level. Situated on a ridge between deep gullies, a most extensive view of the Waikato and Thames Valleys is obtained—indeed, it is hard to imagine more magnificent scenery—a factor not without its influence in the treatment. One of the first things attended to was to connect the building by telephone with the Cambridge Post-office, and with the house of Dr. Roberts, Medical Officer. The necessary additions are in the hands of the Public Works Department, and were commenced in November; they are now approaching completion. Although the original house was large, a



"Te Waikato," Cambridge Open-air Shelter.



very great deal of work has been required to accommodate the fifty cases with which it is proposed to begin. Thus, a wing containing a kitchen and offices, servants' bedrooms, scullery, store-rooms, and so on, has been added, and another wing containing a specially constructed ward and verandah for the reception of some of the cases. For the remainder, a series of open-air shelters is being built—sixteen being small, to hold one patient each, also three double ones, and a larger one for four beds. These shelters have one solid wall turned towards the south-west—the prevailing wind—while the other sides can be fully opened. They are roofed with stained shingles, and the eaves are wide, the result being rather picturesque. The water-supply presented some difficulty, as the source was from a stream in a gully some 200 ft. below. A storage-tank has been built on an elevation 40 ft. higher than the main building, the water to be pumped up by means of an oil-engine. We shall thus have a constant-pressure system. The drainage is disposed of in a septic tank and filter-beds, the effluent running through the bush to a gully on the opposite side of the hill from the water-supply. Asphalt pathways are being laid between the shelters; hen-yards and cowsheds erected; and with bath-rooms, lavatories, closets, and the general internal fittings a vast amount of work has been done under difficult conditions, owing to the distance the material has to be carted. The existing road was very rough and badly graded, and on the hillside, and this is now being improved by the Roads Department. But the rainy weather is having the effect at present of making the new parts almost impassable for the winter, and it will be absolutely essential to have the road metalled to meet the heavy traffic which will ensue when the institution is opened. The lighting of the main building and shelters requires consideration. Oil-lamps are scarcely suitable for the open shelters, being dangerous, besides involving much work cleaning and filling. It is evident that electric lighting would be better, and probably cheaper—after the initial outlay—and it is to be hoped this may be approved.

To Mr. Vickerman, District Engineer, and to his assistant, Mr. Cummings, every praise is due for the manner in which the alterations have been planned and executed, and for the time and patience they have expended in making the additions to the original scheme which have been found necessary as the scope of the undertaking became apparent. Nor can too much be said of the assistance of the Matron, Miss Rochefort, whose experience and foresight has been invaluable. In addition to the ordinary work of nursing the patients, and the housekeeping duties, on her shoulders has fallen the organizing of the internal economy, the furnishing, in itself a heavy item, bookkeeping, and a large amount of correspondence, not to mention the superintendence of the garden and farming operations. It is very evident that when the institution is fully opened these duties will be far beyond the powers of one person, necessitating the appointment of a house steward to take the clerical work, superintend the farming and outside work, arrange for food-supplies, &c.

The farm is an important item in the working of the institution, since a good milk-supply has to be kept up, necessitating a large herd of cows, so that grazing-land and fodder have to be provided. This has recently been placed entirely in the hands of Mr. Clifton, Chief Stock Inspector, who had previously given us every assistance in purchasing cows, horses, and poultry. The grass land on the property is at present insufficient, and much work lies ahead—breaking in new ground, preparing land for crops, and so forth. Thus the advantage of having such matters in charge of such an authority as Mr. Clifton cannot be exaggerated.

A few patients have been admitted from time to time since last December. For their accommodation tents were erected, and this plan has proved very satisfactory. These tents were specially made for the Department; have wooden floorings, and a widely projecting fly, while the walls are made separately, lacing at the corners, so that any side can be closed or opened, according to the weather. In all, fourteen patients have been treated, of whom five have been discharged cured or greatly benefited; one has died; and one was discharged at friends' request, being in too advanced a condition to benefit by the treatment. The remainder are progressing in a very satisfactory manner. Dr. Roberts, of Cambridge, has been appointed medical officer, and has been unsparing in his attention to the treatment of the cases; and, being in direct telephonic communication with the Sanatorium, the fact of his residing in the township has proved no disadvantage so far as the patients are concerned. But it already makes a heavy call on his valuable time, and while it will be inadvisable to lose the services of one so experienced in the treatment of tuberculosis as Dr. Roberts it will be necessary when a larger number of patients are under treatment to appoint a resident medical officer as well.

Besides Miss Rochefort, the only permanent appointment to the nursing-staff so far has been Sister Duffin, whose work has been beyond praise. The nursing-work will be more arduous than in an ordinary hospital, since the cases are not concentrated in wards, but scattered about singly in shelters. Some considerable distance will require to be covered in making the rounds, and a proportionately large nursing-staff will be necessary in consequence. Thus two charge nurses and three probationers will be the least number admissible.

The domestic staff so far appointed consists of three housemaids, a cook, kitchen-boy, and porter; while for outside work there are the gardener, the driver or farm-hand, and the general utility man. Of course, at present much of the work in which they are occupied is constructive. It will be necessary later to add a laundress; a night porter; and, if the electric-lighting scheme is carried out, a man to look after the engine.

The work in connection with the Sanatorium has occupied a very large share of my time. In connection with the domestic staff alone, some sixty applicants have been dealt with; and, owing to the difficulty of obtaining and keeping good servants in a country district, constant changes are made, involving fresh advertisements and more persons to be interviewed. Plans have had to be gone over with the Public Works Department, applications from prospective patients dealt with, tradesmen interviewed *re* supplies, contracts prepared, tools and various fittings obtained, and so on in endless succession, while frequent visits have to be paid to the Sanatorium itself. Certainly more assistance will be necessary to make it a self-administered concern.

Thirty-seven applications have been received from patients seeking admission, and so far as possible they have been personally examined by Dr. Roberts or myself to ascertain their suitability. That this precaution is necessary is evident from the condition of some who are too evidently in so advanced a stage that treatment is hopeless, and it is sad to notice the number of deaths among the applicants. The function of such an institution is not yet fully understood, and applications are largely from those in the later stages of the disease, the earlier cases evidently not comprehending that the course of treatment is particularly suited to their condition.

A difficulty presents itself in regard to finding suitable light work for the cases under our care, for the monotony of the life would be greatly relieved, and the patient often benefited, by some such employment. Nor should this monotony and the isolation of the situation be forgotten in regard to the staff, and every effort will be required to provide amusement, and in all ways lighten the burden and dull routine of the work.

Quarantine Precautions.

In addition to the ordinary routine work of the Port Health Officer, the following special matters must be reported :—

The Precaution against Plague.—All vessels from infected ports were quarantined and fumigated. The licensing and examination of passengers continued till the 6th August from the 1st April. Till then nineteen vessels and over two thousand passengers were so examined. Two defaulters were prosecuted and fined. Deposits on all vessels from infected ports were obtained to cover cost of disinfection. All this entailed an enormous amount of work on the office. Later, vessels arriving from Honolulu, where plague had broken out, were subjected to special examination.

Return of South African Troopships.—From the arrival of these troopers in August till the last cases left Motuihi at the end of September a very great deal of time was occupied in attending to the various matters resulting from their presence here. Even on into October the accounts for the expenses at the Quarantine Station kept the office very busy.

The "Britannic" arrived on the 7th August, with three cases of measles and one of pneumonia on board. These cases were conveyed to the Hospital. All the blankets were collected, and sealed up in the hold.

The "Montrose" arrived on the 19th August. On boarding her with Dr. Sharman we found that there had been an outbreak of scarlet fever and of measles on board, while many of the men were suffering from broncho-pneumonia, due, no doubt, to the insanitary conditions which seemed unavoidable in troopships conveying irregular contingents. It must be admitted that in the cleanliness and order which result from discipline, the colonials had much to learn from the British soldiers, who by obedience and systematic attention to detail are able to avoid the evils which were so strikingly apparent on these vessels. The clean smart appearance which Thomas Atkins retains, even after a long voyage, was conspicuous by its absence in these men. We were informed that the scarlet fever had broken out shortly after leaving Africa, and that measles had appeared later. Evidently the medical arrangements had been unable to cope with the outbreak, and a state of chaos reigned. Thus we could not at first learn from the medical officer in charge the number of cases of each disease, and a hurried classification had to be made, partially relying on the statements of the patients themselves. This occasioned some delay. Meanwhile the whole of the kits were opened on deck, and the contents carefully sprayed with formaline by the Fumigating Officer, and all the men not in hospital were inspected by Dr. Sharman and myself. It was found that over eighty cases were in hospital—about fifty being scarlet fever and measles, and the bulk of the remainder pneumonia. How many of these latter were really the sequelæ of infectious diseases it was difficult to ascertain. It was decided to place all the sick who could with safety be landed upon Motuihi, and convey the more dangerous (about eighteen in number) to the Auckland Hospital, where the authorities had been warned previously of the likelihood of such a contingency. Owing to the lack of wharfage accommodation at the quarantine island, a difficulty was experienced in landing the patients, which had to be done in boats, the vessel being taken round to the north side, as a fairly heavy sea was running at the usual landing-place. In all, thirty-eight cases of scarlet fever (mostly convalescent), nine cases of measles, and twelve of pneumonia were placed on Motuihi; the available accommodation, when these cases were classified in the different buildings according to their ailments, being completely taken up. The buildings were found in first-class condition. Acting on instructions from Dr. Sharman, who had visited the island a day or two previously, the caretaker had fires burning and beds ready. The troop surgeon and ten orderlies were detailed to look after the patients, and a day or two's supplies of food and drugs were landed with them. The "Montrose" then returned to Auckland, but the more serious cases were not sent to the Hospital till next day, as it was by this time very late. I personally supervised their removal by ambulance and cab. A sergeant and two nursing sisters accompanied them to assist the Hospital authorities. The cabs used were subsequently disinfected by Inspector Winstanley as a precaution, though the cases supposed to be infectious were sent in one of the ambulances. After the removal of these cases the sick-quarters were thoroughly fumigated, but as fresh cases of measles were developing among the troops the vessel was ordered out into the stream again, the military authorities finding it impossible to prevent the public from being admitted on board, though orders had been given to this effect. During the eight days the "Montrose" was in Auckland nine fresh cases of measles occurred, and were sent down to Motuihi. Others occurred on shore since; and when they found themselves ill, the men, fearing detention in quarantine, stayed on shore with friends without reporting sick or obtaining permission from the military authorities. This no doubt resulted in the spread of measles in the district, as the numbers notified rapidly rose from this time.

Blame has been cast on us for not quarantining the whole of the troops; however, we had no accommodation left on the island, and in view of the outcry elsewhere when the men were placed in temporary accommodation it is evident that dissatisfaction would have arisen whatever course was pursued. Had they been strictly confined to the vessel a very much wider outbreak of the disease would have occurred amongst them, and in view of the insanitary conditions many serious developments were likely to have arisen, all of which would have been laid at our door. Measles was already present in Auckland, and, all things considered, I do not think we should have been justified in taking so unusual a step as to enforce the strictest quarantine regulations for such a disease. Had strict discipline obtained we should have been in a better position to deal with the emergency. Great difficulty was experienced in finding accommodation for the sick troopers who had landed either as belonging to Auckland or who were there without leave. Arrangements were made with some of the private hospitals to receive the non-infectious cases when the District Hospital was unable to receive more. In one case a bed was purchased by the Department and sent to the hospital to enable them to accommodate a case of pneumonia. Some of the hospital cases were very severe, and three deaths occurred from pneumonia. On Motuihi we were more fortunate, and all the sixty cases treated there made a good recovery.

Feeling dissatisfied after a few days with the management of affairs at Motuihi, I obtained permission to replace the military staff by a civilian one. Accordingly, Dr. Swale and four nurses were appointed, as also a clerk, dispenser, cook, wardsman, and laundress. The greatest watchfulness had to be taken to preserve discipline with the troopers, many of whom had the most primitive notions of order and cleanliness, and soon altered the faultless state in which the caretaker had kept the building prior to their arrival. As the cases were discharged the staff was reduced from time to time, but it was not till the end of September that the island was finally evacuated.

The resources of our office were strained to the uttermost by the extra work caused by the arrival of these troops. Hundreds of telegrams were sent in reply to inquiries from friends; stores had to be arranged for and sent to the island, letters forwarded, also a generous supply of books and periodicals supplied by sympathisers in Auckland. The Quarantine Station was visited at first daily by Dr. Sharman or myself. Later the visits were reduced to once or twice a week. The accounts for stores, drugs, salaries, and so forth, occupied and kept the office busy till well on into November.

The lack of wharfage accommodation at the Quarantine Station is a matter for serious consideration, as also the need for a steam disinfecting plant. One lesson learned from our experiences at the island was that such a site would be useless for the treatment of infectious diseases arriving from the mainland, as at many times days would elapse before sick persons could be conveyed there with any safety.

Owing to small-pox, one vessel, the "Wakanui," was placed in quarantine for a short time; but on visiting the vessel we found that quarantine had already been performed at Sydney, where most of those on board had been vaccinated. After the remainder were vaccinated by Dr. Sharman pratique was given.

Owing to small-pox arising in Melbourne and Sydney, special precautions were taken during October, November, and December as regards vessels from those ports.

Sanitary Inspection.

It is unnecessary to enlarge on the need for better inspection. In the country districts generally there is none. In some instances the County Engineer acts in this capacity; but naturally his time is much occupied with other matters. In Waitemata County residents were appointed in various districts to assume the duties when required. In the suburbs and small country boroughs the clerk or roadman has the billet of Inspector of Nuisances tacked on to his other duties. Nowhere but in the city is there proper inspection by a man specially trained in the work. Few districts could afford it.

With a view to overcoming this latter difficulty, an effort was made to get the immediate suburbs of the city to combine into one district, and the Road Boards forming the remainder of Eden County into another district, for the purpose of obtaining such inspection. The scheme met with no support, however. The suburban bodies would not consider it, being quite satisfied with present arrangements. At a meeting of the outlying Boards called for the purpose of considering the scheme only five of the thirteen were represented; some did not even reply to my letter. Those willing to join were too few to be able to offer pay sufficient to attract the class of man required. The scheme therefore had to be abandoned.

It is greatly to be regretted that there is so much ignorance as to the functions and uses of sanitary inspection. The public do not realise how much depends on having drains laid properly, plumbing done according to a standard, water-supplies protected, and so forth. It is annoying to find all over the district, in town and country, new houses being built with the faults of the Middle Ages reproduced. In this connection, however, it is satisfactory to record one advance which may have a wide influence for good. I refer to the classes at the Technical Institute, reorganized and modernised by the Director, Mr. George. Classes for plumbing—practical and theoretical—have now been started. In Mr. Haynes, City Sanitary Inspector, an able instructor has been found, and when the civic by-laws make it necessary for plumbers wishing to register, and applicants for the post of Inspector, to show certificates of having passed examinations of this and kindred institutions we shall have a very different class of work from the present.

It is, I think, a matter worthy of consideration whether the Government should not establish a State examination in sanitation, which applicants for Sanitary-Inspectorship would be required to pass, after attending a specified course of instruction in such an institution as the Technical School. Holders of recognised English and colonial certificates would, of course, be exempt. A State qualification in plumbing would also be valuable.

Sanitation of Hotels.

An effort is being made to improve the general sanitary condition of hotels in the district. In the older ones grave defects are common, and even the more recently built ones often afford matter for criticism.

The hearty co-operation of the police has been secured in this direction, and, as usual where the services of that Force can be called on, some real benefit is likely to be the result. A few hints on the principal points to be observed have been drawn up and issued to the police for their guidance, and serious defects, if not remedied, will be brought to the notice of the Licensing Benches. Drainage, water-supply, privy accommodation, and the better ventilation of bed-rooms are more especially being attended to. As regards the last item, too often one finds rooms without communication directly with the open air; these are being condemned, as also dark ill-ventilated passages.

Our inspection has not as yet been systematic over the province, except in the case of hotels in the tourist district, which have been reported on by Inspector Winstanley.

In three instances the owners have reorganized the drainage systems on our recommendation —two in the city and one at Thames—while minor improvements have been effected elsewhere.

School Sanitation.

My time has been too fully occupied to go systematically into this question. As regards the public schools visited, on the whole little room for criticism is found. Overcrowding exists here and there, but is remedied as soon as the necessary funds are available. The Education Board are fortunate in having in their architects, Messrs. Mitchell and Watt, gentlemen who are enthusiasts on sanitary matters, and who keep in touch with modern advance.

The disposal of school drainage in the suburbs and country districts where no sewerage systems exist is a troublesome question, more especially owing to the difficulty of finding a local School Committee to take an intelligent interest in the matter. These bodies find obstacles even to the regular cleansing of privies, and have sometimes replaced the architect's work with a foul and dangerous cesspit, risking the children's health in order to save themselves trouble.

In the septic-tank system probably the solution of the difficulty will be found; but various points have to be considered before this can be generally applied. Thus the flow of sewage is very intermittent, being only during certain hours of the day, and during holidays is absent altogether. The possible effect of this must be taken into account. Then, again, a trough closet—the only suitable form in schools—discharging a large volume of fluid suddenly into a small tank will tend to replace too quickly the contained matter, and might lead to solids being washed through unchanged. It is evident that the experience, satisfactory though it be, of cities and private homes does no necessarily apply to country schools. Then, again, a safe position for the filter-beds and for the disposal of the effluent is in many places hard to find, especially when we consider the inherent love of investigation in children; and, above all, is the lack of assurance that the system will receive fair and sufficient attention at the hands of the School Committee. As regards slop-waters and the discharge from urinals, where there is a sufficiently porous subsoil I have recommended a septic tank with subsoil distribution of the effluent in open-joint tiles, using the natural soil for a filter-bed, and so avoiding the erection of one in the school playground. This system has been installed at Mount Eden and Onehunga public schools by Mr. Mitchell, who suggested the plan, and whose advice on the subject has been invaluable. At Mount Eden especially a very dangerous condition had existed, the soil being saturated with urine and fecal matter, which was buried in the school grounds, and I had reason to complain of the delay in carrying out the improvements. The septic tank, with distribution of effluent in the subsoil, which is here very porous, together with closed pans in the privies, has provided a satisfactory remedy, and one which the Education Board will do well to copy where similar conditions are found. At Devonport, Kamo, Waiotahi, and Karangahake public schools I have also made suggestions for improved drainage.

The question of disinfection of schools has been already dealt with. In this connection it would be well were the walls to be treated from time to time with a lime-wash, both as a germicide and as a remedy for the grimy condition too often to be seen. Improvement also might be made as regards sweeping. On entering immediately after school hours one finds the cleaner busy with his brush, filling the air with dust (and therefore, probably, also infective germs) which settles on the desks and on the walls. Damp cloths or mops, or even a sprinkling of wet sawdust, would avoid this.

It is to be regretted that the playground should receive so little thought in both primary and secondary schools in the towns. There is a tendency to crowd it with new buildings, as the school attendance increases, until there is but little room left for the children to get air, sunlight, and exercise. Without going the length of having a football or cricket ground attached to each school, I think it would not be amiss were there a regulation made as to the minimum space per head permissible for playgrounds. Where the school attendance has increased so as to overstep this limit more land should then be acquired. I think the outlay would be warranted, affecting as it does the health of the children.

Septic Tanks.

Not only in schools, but for private homes and elsewhere where the disposal of sewage has presented obstacles, I have advocated the septic system of treatment, and many of the public have shown a considerable interest in the subject. In order to demonstrate the method, on behalf of the Education Board, Mr. Mitchell construced a small model, which he kindly placed at my disposal. It was examined while in the office by a very large number of persons, and proved useful in convincing them of the extreme simplicity of the process. I further used it to illustrate a lecture at the Auckland Institute. As already mentioned in connection with schools, the conditions under

which these small tanks work are in some respects different from the large installations for towns, and the literature on the subject refers chiefly to the latter. For some time I have been making experiments with a small tank, and the results are certainly encouraging. Various minor details require attention, such as the best means for distributing the tank-effluent equally over the filter-beds. It appears to be necessary, also, to provide septa in the tank to prevent the disturbance of the deposit which is produced by a large volume of water entering suddenly.

The plans issued by the Health Department have been sent, together with explanatory letters, to some twenty or thirty private persons, many of whom in the suburbs, and at Cambridge, Hamilton, and Rotorua, are acting on the advice. At Hamilton District Hospital, the new sanatorium at Cambridge, the Mount Albert Industrial School, and St. John's College, Tamaki, the system is being followed out. I have recommended also to various local bodies the adoption of the septic tank for portions of their districts where drainage is causing trouble or where a general sewage system would prove too expensive. The Remuera Board are, I understand, about to adopt the plan for one group of houses. Other places—Te Aroha, Birkenhead, Mount Eden, and Parnell—have not yet fallen in with the recommendation, hesitating, possibly, because the process is new to them. But the ever-increasing pollution of harbours and streams must result before long in the treatment of all sewage by this or similar methods.

Cemeteries.

Attention to the question of cemeteries was drawn by the disinterment of Chinese which took place in September, eleven in all being removed from Waikumete. The process was certainly objectionable. Inspector Winstanley attended, and directed the use of deodorants and saw that the bodies were properly sealed up for removal. The new regulation that a period of fifteen years must elapse before disinterment is allowed will avoid much of the unpleasantness.

Several cemeteries, owing to the growth of population, are now so situated as to make it inadvisable to permit any more interments. In the city the Symonds Street Cemetery should certainly be finally closed. In the Anglican and Wesleyan portions alone 117 burials have taken place in the last three years; to which must be added those in the Roman Catholic, Presbyterian, and Jewish sections, the figures for which I have not obtained. Burials here are restricted to relatives of those already interred, and naturally one feels a delicacy about a matter in which sentiment plays so strong a part. Under the present legislation burials will continue there for at least another five years, and it is a matter for consideration whether the danger to the health of the community is not sufficiently serious to warrant action even though it affects harshly a few individuals. The same remarks apply to the Anglican and Roman Catholic cemeteries in Onehunga, which are closed except to relatives. The positions of these in relation to the catchment-area of the water-supply and close proximity to the pumping-well make the matter more urgent. At Clevedon, Wairoa South, the Presbyterian cemetery is too close to the village.

Sanitary By-laws

In few districts are the by-laws in any way adequate or modern. They generally have a few regulations as to nuisances, but essentials, such as the distance of privies, stables, hen-yards, &c., from the dwellinghouse, or the regulation of plumbing and drainage work and nightsoil-disposal are unheeded In one or two boroughs where an attempt is made to control such matters the systems are antiquated and faulty. In one case I was appealed to by a firm of plumbers, recent arrivals from Home, who had been prohibited from adopting the recognised modern methods of drain-connection by the local Inspector, armed with borough by-laws which might have been made in the early part of last century. The need for a set of model laws is very great—one adapted to country townships without drainage, and another to more advanced places. In the ollowing instances I have made recommendations, and prepared a number of suggestions:—

The *City* Council have had new by-laws in hand for a considerable time, but they have not yet been finally adopted. I found several serious defects in the proposed laws—such as a 1½-gallon flush for closets, absence of provision as to house-foundations, and so forth—and I have forwarded a number of modifications which seemed necessary. I have also suggested by-laws regulating hen-yards, and the paving of yards and spaces round houses, and house-refuse collection. I have not yet heard whether these recommendations are to be adopted.

Mount Albert, Arch Hill, and *One-tree Hill* Road Boards have passed general by-laws adopting most of my suggestions.

For *Cambridge* and *Tauranga* I have prepared a series of by-laws regulating nightsoil; and for the *Thames* refuse disposal and collection. These have not been adopted by the Councils.

Epsom and *Mount Roskill* Road Boards have been approached as to by-laws *re* refuse and nightsoil-disposal, but no action has been taken.

The following alterations in the Health and Municipal Corporations Acts have suggested themselves to me as necessary:—

The minimum air-space round a house is given in the Municipal Corporations Amendment Act as 300 square feet. In a young country even a wider area might be insisted on, there being absolutely no reason for so low a standard where space is so easily obtainable. Again, in Road Boards even this small area cannot be insisted on—a serious matter in the suburbs, where building is going on so rapidly as to form streets as crowded as in the city. In one set of by-laws for a Road Board I suggested regulating the size of allotments on which building was permissible, but found on referring to the Solicitor-General that such a by-law would not be legal. The prevention of overcrowding being perhaps the most vital sanitary matter, this deficiency is to be regretted.

Removal of ruinous houses can only be effected in a borough, as the law on the matter is in the Municipal Corporations Act only. The powers of the Health Department in this direction are practically nil.

In the *schedule of offensive trades* it would be of assistance were nightsoil services to be included. At present our powers over contractors are very vague. The Health Officer should have power of veto in the matter of all nightsoil-depots.- Further, there is nothing in the Health Act to enable one to prosecute a contractor who deposits nightsoil on roads or private premises. The only jurisdiction in the latter case is to prosecute the occupier, who is the sufferer from the other's carelessness.

The time allowed (seventy-two hours) in section 56, subsection (4), which must elapse before a householder can take action against the Council or their contractors, is surely too long. Where a privy is not cleaned, or a defective pan is provided, twenty-four hours should be sufficient notice.

It would be well were part of the fine where a person is convicted of committing a nuisance to go to the local body. This might encourage them to greater efforts. At present it is most difficult to get a Board or Council to take action, and though we can proceed if they make default this introduces a complication in the case.

The Sanitary Districts.

Auckland City.

I regret that I cannot report any very great advance in the sanitation of the city during the year. With the highest death-rate of the four centres, one might reasonably ask for a moderate amount of zeal in sanitary reform. Yet all the greater questions have been shelved—the abattoirs, the refuse-destructor, the improved-drainage question, and so on. Doubtless this is due in part to the expenditure of funds and energy over the electric tramways and the paving of Queen Street, which should perhaps be classed as a sanitary work, as certainly much of the sewer-gas odour formerly noticeable in that street is now gone.

As regards *drainage*, a certain amount of money has been spent in the outlying parts of the city in laying sewers, but these still reproduce the old faults, being costly tunnels on the combined system, too large for the sewage, and too small for the storm-waters. I must emphatically dissent from the opinion expressed by the City Engineer in his report that this system is the best one for Auckland. Indeed, the result of a very heavy rainfall in January was a sufficient answer to this opinion. The sewers on this occasion burst in many places, flooding streets and cellars with filth. The basements at the lower end of Queen Street suffered more especially, and in one case where the screw tops on the gully-traps had held out the result was that the house-drain burst and tore up the floor. The pollution of the harbour is in itself sufficiently serious to warrant the abolition of this antiquated and dangerous method of sewage-conveyance.

Of the house connections nothing complimentary can be said. The drains are laid according to the ideas of the contractor, and are passed without the faintest semblance of a test. When the testing apparatus had been obtained by the Department I wrote placing it at the disposal of the Council, but no advantage was taken of this offer. Of the plumbing the less said the better. I can only hope that when the new by-laws are passed the Council will give such assistance to their officers as will enable them to insure that these laws are carried out. The influence of the teaching of the Technical School may also have the effect of introducing modern methods into the ever-mysterious ways of the plumbing fraternity.

The *nightsoil service* has gone from bad to worse during the year. What was originally intended for a closed-pan system is now nullified by the fact that a fair proportion of the pans fail to prove watertight, while in a large percentage the lids no longer fit. The result is a serious menace to the health of the city, and one which should not be tolerated for another year. The contract system has nothing to recommend it, and I cannot see why city and suburbs should not combine in this matter to form a Board to deal with nightsoil-removal on a sound basis. In no direction could money be more usefully spent; and, with uniformity of method in the various districts, a single depot and an up-to-date plant would not cost such a serious amount as to make the scheme impracticable. An attempt was made by the Department to secure improvement as regards the depot. In last report I indicated my objections to the present system, and suggested water-carriage to some isolated spot as one way of dealing with the trouble. From the first I have been opposed to the Point Chevalier depot, and the prospect of the Infectious Diseases Hospital being placed out there afforded a sufficient reason for making an effort to give effect to this. A conference was held during one of Dr. Mason's visits to consider the question of a depot, and a visit was paid to an island up the harbour, to which as a depot certainly no objection could be taken on the grounds of health. The contractors were willing to combine in carrying out this scheme; but, like many suggested reforms in Auckland, the effort came to nothing—the Council would not support it; and the last state of the city is worse than the first.

Refuse-removal.—The destructor question hangs fire, except that a site in Mechanics' Bay has been selected. The position is not very central, but with strict attention to detail there should be no offence caused by the destructor being placed here.

No improvement has been made in the method of collection of refuse or in the household receptacles. These matters, I am told, will be considered when the destructor is being erected. By-laws on the subject are not included in the new draft.

I have found it necessary to protest against the method in vogue of disposing of road-scrapings. These, including the contents of the water-table silt-traps, are placed on any convenient vacant allotment requiring filling in to make it available for building purposes. What the effect on the health of the inhabitants of houses built on such foundations might be does not apparently concern the Council or the owners of the land. Some of these deposits are very offensive, and are in populous areas. To my protests the Council replied that to cart the stuff further afield would entail a very large expenditure. As a compromise, however, they undertook to cover up the filth with clean soil from time to time.

The home and trade garbage meanwhile continues to be carried to some long-suffering suburb, and there left to breed rats and evil odours. I attempted to obtain improvement, especially in the matter of fish-refuse, which, sold as manure, was causing a nuisance in the Mount Roskill district. In this I was successful, securing a mitigation of the evil by compelling the farmers using it to plough it in quickly, and avoid places too near houses and public roads. The Road Board, however, did not pass the by-laws suggested by me, and therefore but half-measures have been secured.

Ruinous Houses.—Twenty-five ruinous and insanitary houses and two insanitary stables in the city have been condemned by the Department during the year. These represent but a fraction of the number which should be removed, since the city is liberally supplied with hovels which would disgrace a Whitechapel slum; but the action of the Council was such as to render efforts in this direction mere waste of energy, and no power (except epidemics of dangerous and infectious disease) is given to the Department over ruinous houses. One house and one stable were removed voluntarily by the owner. Legal action was taken by the Council in regard to two houses owned by the occupiers, who were living in a deplorable condition, and these houses have now been removed. But in regard to blocks of premises owned by more influential persons the Council took no steps. In one case a few bits of tin and wood and a coat of paint on the wall next the street was accepted as sufficient to place the house in good sanitary condition.

The *abattoir* question remains in the same position as a year ago. Conferences have been held and sites examined to no purpose. At one time even the Council adopted a suitable site at Otahuhu, only to rescind the motion at a subsequent meeting. It sufficiently illustrates the extraordinary attitude of our civic rulers on this matter to note that during the discussion on one site, which would have involved a long and expensive sewer, it was proposed by one Councillor to dispose of offensive matter by dropping it into a deep hole in the ground. Meanwhile the condition of the present slaughter-yard has become such that, personally, I have felt it safer to refuse to allow meat killed there to be used in my household.

The *keeping of animals* in the city calls for reform, especially as regards the structure of stables. The filthy custom of keeping fowls in the back yards, either loose or in ill-cleansed runs, is not conducive to cleanliness or health. The suggestion of the Department to regulate this matter by by-laws was not given effect to. Back yards in general are dirty and ill-kept, partly owing to lack of refuse-removal. I have suggested a by-law compelling the paving or asphalting of a certain area round each house; but the matter is still *sub judice*.

Sanitary Inspection.—Handicapped by the present lack of by-laws, and the frugality of the Council as regards assistance, sanitary inspection in the city is not encouraging to the enthusiast. However, some sound work has been accomplished. In the matter of disinfection of houses especially I am glad to be able to report favourably, and I do not doubt that much infectious disease has been prevented by the vigorous measures adopted. Nothing has been done towards providing a steam disinfector for clothing, &c. Possibly this may be arranged when the Infectious Diseases Hospital is an accomplished fact.

The Suburbs.

The administration of local government in the hands of the eighteen little districts surrounding Auckland does not offer much encouragement to those interested in the sanitary advancement of the district. A few of these bodies make earnest efforts towards improvement in matters hygienic, but are hampered by lack of funds and the utter indifference of the ratepayers. In others the chief ambition begins and ends in the keeping-down of rates.

No real improvement is possible until these bodies cease to exist as independent sanitary authorities. A Greater Auckland would accomplish this, but has against it a determined opposition, which places the scheme on too nebulous a basis for practical purposes. A Board, constituted like the Sydney Metropolitan Sewage Board, might prove more feasible. This body should control not only drainage and water-supply, but also nightsoil and refuse removal. It should have power to frame uniform sanitary by-laws for the district, and should possess a sufficient staff of inspectors to enforce these laws. Co-operation in the carrying-out of any scheme is at present impossible.

The *Arch Hill Gully Sewer* is no nearer accomplishment than it was a year ago. The bodies concerned are all anxious for the work, but they cannot agree as to essential details. A draft of a form of agreement was prepared at my request by the Crown Solicitor, but it failed to meet the approval of the Committee appointed to consider the question, and it was further pointed out that an agreement would require every little detail being therein stated, and the impossibility of getting unanimity as to such details made this method impracticable. Solicitors were then appointed by the delegates to go into the question of a combination under section 2 or section 66 of the Health Act. But here, too, the difficulties were too great, owing to the lack of definitiveness in the Act as to the status of the administrative body so formed. It was hoped that the amendment of 1902 would place this matter aright, but in this we were disappointed. The only way out of the difficulty seems to be to have an Act framed similar to the Hobson's Bay Watershed Sewage Act, and this may be taken in hand during the approaching parliamentary session. Meanwhile, the districts near the gully suffer from the intolerable condition of the stream in this gully, which is merely an open sewer.

My effort to secure combination for the purpose of securing efficient sanitary inspection did not meet with any support.

Grey Lynn Borough continues to show some vigour in its conduct of sanitary affairs. The sewerage has been extended, and an improvement effected in house-connections by the introduction of a boundary-trap, and ventilation of the drains.

The prohibition of water-closets in the district has proved a hardship in some places. This was done with the laudable intention of minimising the pollution of the harbour at the sewer-outfall. The opinion, however, of authorities on the matter seems to indicate that slop-water sewage is not rendered more offensive by the introduction of closet-discharge. It is a matter for the consideration of the Council whether it would not be better and less costly to face the question of treatment-tanks at the outfall and introduce water-closets than to attempt any further dealings with a nightsoil contract. This contract, which included a closed-pan service, has proved an utter failure, and has given rise to much cause for complaint.

One ruinous house has been condemned, but no action has yet been taken.

In *Parnell Borough* little has been done in the matter of improving the many sanitary defects. The Council renewed the nightsoil contract on the antiquated and offensive system of the past, and a fortnightly service, with wooden receptacles. Therefore foul privies continue to exist. In the older parts the drainage system is very defective, and the by-laws as to house-connections are primitive.

Newmarket Borough has done practically nothing as regards sanitation. A drainage scheme failed to obtain the support of the ratepayers. The district is very backward in all respects.

Devonport Borough.—The Council asked for the approval of the Department of a plan for the completion of their sewerage at Stanley Point to enable the money to be borrowed under the Loans to Local Bodies Act. Approval was given to the loan, but the work has not yet been taken in hand. Some improvements in the ventilation of the sewers have been made.

An effort was made by the Department to improve the condition of the milk-supply of the district.

More attention should be paid to the method of carrying meat from town on the ferry-boats. At present it is allowed to lie on the deck, and is in no way protected.

The general sanitary condition of the district is good.

Birkenhead Borough.—This is a growing district, and one which calls for more effort on the part of the Council to improve the conditions affecting the public health. It has the unenviable distinction of possessing the highest death-rate of any of the suburbs. From March, 1902, to April, 1903, the death-rate was 24·12 per 1,000 of population, against 17·68 in the city, and 12·72 in Grey Lynn. The infant mortality, too, was high, being 13·24, against 7·33 in the city.

The increasing number of houses makes the drainage question a matter of importance. The foreshore also is suffering. I made the suggestion that, failing a sufficiency of funds to introduce a sewerage system, certain householders should be called on to provide septic tanks. The Council, however, would not fall in with my proposals. A nightsoil service has been introduced; but the Council ignored the advice of the Department as to closed pans and a weekly service.

Northcote.—This district is growing too big for primitive sanitation. Lack of drainage is causing trouble, and a water-supply is urgently required. The present arrangements for nightsoil-disposal are most unsatisfactory. The Waitemata County Council have been approached on these questions.

Onehunga Borough.—At a conference with the Council the subject of drainage was introduced, and it was resolved to obtain a report from the Engineer as to this most needful improvement. So far I have not learned the result of this action. The pumping-spring remains without adequate protection, though, I understand, the work was decided on some time ago. The nightsoil service is on the most primitive lines. Too many cases of typhoid have recently occurred in this borough.

Mount Eden Road District.—The introduction of the closed-pan nightsoil service has not proved as great a success as might have been expected. Here, as in Grey Lynn and the city, the system is not carried out in its entirety, and therefore but poor results follow. People are inclined to blame the system rather than the manner of administering it, and it is hard to get them to believe that with proper attention to detail the work can be done without offence.

The difficulties of drainage in this district are great, and little can be done until there is some combined attempt by the neighbouring bodies to deal with the question. However, in one street a connection with the city sewer could be made at once, and without much cost. I have repeatedly approached the Board on this question.

For one group of houses, rapidly increasing in numbers, situated at the outlying part of the district, I suggested a septic tank to deal with the sewage of the whole group. The houses are here so placed as to be beyond the reach of any but a very costly general sewerage scheme, hence my proposal to deal with it separately. No action has been taken, however.

At *Remuera Road District*, for similar groups of dwellings, the drainage from which caused trouble, the Board have agreed to provide a septic tank. The drainage in the parts of this district adjoining Newmarket calls for improvement.

At *Eden Terrace* one owner was prosecuted at my instance for allowing his premises to be insanitary.

At *One-tree Hill* and *Mount Albert Road Districts* the new by-laws are being introduced. At the slaughter-yard for condemned stock in the former district considerable improvements have been effected, the carcases of horses no longer being allowed to lie decomposing in the paddocks, while the pig-sties are being concreted and drained. The boiling-down vats were being fitted with fume-cremators when a fire destroyed the whole place. The owner is, however, rebuilding with all the improvements suggested by the Department.

In the other districts various minor matters have been dealt with.

Country Districts.

Owing to the many calls on my time the country districts have not received the attention they deserve. In the boroughs generally drainage and nightsoil-removal are neglected; while among farmhouses only the isolated position protects the occupants from such diseases as typhoid, since

the water-supply—when from wells or springs—is in danger of pollution by the primitive arrangements of nightsoil or slop-water disposal in the majority of cases. Thorough and repeated inspection is needed as much in the back blocks as elsewhere, but under the present system neither the counties nor the Health Department have the necessary staff. The attention of the Government Inspector is chiefly confined to outbreaks of infectious diseases.

Thames Borough has shown some improvement this year. A by-law, compelling the use of the iron privy-pan, has been introduced, also a weekly service. The disposal of refuse, however, remains unsatisfactory, the tip being in a dangerous position. The drainage remains an unsolved problem, owing to the low-lying parts of the town. Much improvement might be effected in many of the water-tables, both as to structure and flushing. Four insanitary houses have been condemned.

Waihi has not obtained a water-supply, and the question of drainage has yet to be dealt with; the by-laws recently passed only deal with nuisances. The nightsoil service and system of refuse-removal need amending.

Rotorua.—Here the sanitary works—refuse-removal and the nightsoil service—which are in the hands of the Town Council, are thoroughly well done. The method of nightsoil-disposal is indeed the only satisfactory one in the province, and may well serve as a model for larger places. The secret of this is that it is done by the Council and not by contract.

There are several sources of pollution of the present water-supply, and the pressure is inadequate. The proposed new supply will remedy these evils.

Tauranga Borough has suffered, like Rotorua, from an outbreak of diarrhœa, especially among children; sixteen deaths occurring from this cause in six months. This, in a population of a thousand persons, shows an alarmingly high death-rate. Soil polluted by sewage is no doubt the chief source of the trouble. Recommendations to the Council as to improvements in the night-soil service, and the protection of the public wells, have not resulted in any action being taken.

Opotiki Town Board have been making inquiries with a view of establishing a nightsoil service. The place is going ahead and will soon be in need of a water-supply and drainage system. The present drain-outfall in the shallow tidal creek is not desirable, and when a larger scheme is to be adopted some better method of disposal must be considered. Steps were taken during the year to compel the removal of several nuisances—an ill-kept cow-shed, cesspits, and so on.

Te Aroha Borough Council have at last introduced a nightsoil service, not, however, with closed pans.

The lack of drainage arrangements results in a series of danger-spots in some parts of the town. This urgently requires attention. The pollution of the river at the sewer-outfall remains, as the Council would not instal a septic tank. The matter may be small at present, but will gradually assume larger proportions if unchecked. The river-front adds so much to the charm of this pleasant little resort that the Council would do well to exert themselves to effect its conservation.

Cambridge Borough.—The introduction of the water-supply has been effected during the year, and promises to prove a great success and convenience. It is to be regretted that the hotel-owners should not have been alive to the necessity of introducing the supply into their houses. In the greater part of the town the houses have a sufficient area round them to admit of disposal of sewage by means of septic tanks, and as this has already been done by one resident, it is to be hoped others will follow. In the lower parts of the town, however, drainage is required, as also for the hotels, in which the sanitary condition is not beyond criticism. A nightsoil service should be introduced, with by-laws for the prohibition of the present insanitary and filthy cesspits. I framed a series of such regulations as a suggestion for the Council. However, they have not adopted them.

Hamilton Borough.—Here, too, the water-supply is being pushed forward, and is approaching completion. The water is pumped from the Waikato to a storage reservoir, which will give a sufficient pressure all over the borough.

The Council have obtained a report from their Engineer as to drainage of certain parts of the main street, where a very foul condition of things exists from accumulation of sewage in ditches. The appearance of typhoid in Hamilton is a new feature, and one which should indicate the urgency of this work to the Council. A nightsoil service has not yet been adopted. The pollution of the river by the drainage of certain houses, and by the untidy habit of depositing there all the refuse of the borough, is to be condemned. Here, as in Te Aroha, the conservation of the river-front is desirable from an æsthetic as well as a sanitary point of view.

Whangarei Borough has seriously taken in hand the question of drainage, which presents certain obstacles owing to the low levels of part of the town. The enterprise of the Council in this matter is to be applauded.

Paeroa Township has a good water-supply, but the question of drainage is one which is likely to compel attention.

At *Karangahake* the nightsoil service has not yet been introduced.

Helensville has been the centre of several outbreaks of typhoid. Its sanitary condition is very bad in every respect.

Kawakawa suffered from a severe outbreak of scarlet fever. The sanitary condition as regards drainage and nightsoil-disposal was shockingly bad.

Huntly.—Action was taken in regard to cesspits and certain houses unprovided with privies. There is a danger here from pollution of the Waikato, from which many houses draw their supply.

Summary of Work done by the Office.

Office-work.

I cannot but feel that an undue proportion of my time is taken up in the office, while much practical work has to go untouched. It is difficult to see how this can be avoided, since reports have to be written and letters answered, and a considerable portion of the day taken up with interviews. Were it not for the able assistance of Mr. Leplastrier in the routine work of the office—the notices to local bodies *re* disinfection, the keeping of accounts, distribution of vaccine, and so forth—the work could not be overtaken. Could one feel that the energy expended was producing practical results in like proportion, there would be less reason for dissatisfaction. The following matters occupied a large share of attention, and may be specially mentioned:—

Plague Precautions.—Examination of passengers, collection of deposits, and other matters connected with shipping. On shore suspected cases had to be investigated and precautions taken.

Infectious Diseases.—Notices to local bodies issued, 605.

Accounts for medical men re notifications, 449.

The *correspondence over the Infectious Diseases Hospital* scheme was enormous. Meetings had to be attended, plans and sites inspected, and so on.

The handing-over of the care of infectious diseases to this Department has naturally resulted in a great increase of work, though this has been greatly lightened by the able efforts of Dr. Woodward, Medical Officer in charge.

The *Sanatorium at Cambridge* in itself causes a formidable amount of work—applicants for treatment to be written to or examined, the domestic staff to be advertised for, and applicants interviewed, goods ordered, and so forth.

The *invalid troopers* at the Quarantine Station occupied most of our energies for many weeks, and doubled our correspondence; while the accounts to be kept alone formed a large item.

Special investigations were made on the following subjects:—

Plague Suspects.—Fifteen cases examined, three proving to be true plague; and a case of mortality among rats and mice was inquired into.

The *epidemic of gastro-enteritis* necessitated an extensive correspondence. Foodstuffs were examined, sufferers questioned, and medical men interviewed.

Outbreaks of typhoid at Wairangi and Hamilton and Bay of Islands were specially investigated, and of *scarlet fever* at Kawakawa.

In addition to this 279 case of typhoid, scarlet fever, and diphtheria were inquired into.

The *leper case* at Wairangi was visited several times, and his movements traced, and efforts made to provide for his safe accommodation. Several suspected cases were visited by Dr. Pomare.

Inspection of Food.—This subject has not received the attention it deserves. The methods employed in the conveyance and storage of meat leave much room for improvement. My attention was drawn to the dirty habit of many butchers of using old newspapers to wrap the meat, sausages, &c., delivered to customers.

Milk-inspection remains unsatisfactory, as the action of the Stock Department has been limited to dairy-farms, while the powers of local bodies as to the retail trade require defining. The better disposal of the wastings from creamaries should be attempted, as a nuisance is often produced. Two dairymen were examined at the instance of the Dairy Inspector in Auckland on account of suspected tuberculosis.

Samples of foods suspected of adulteration, taken at our instance by the police, and submitted to Mr. Pond for analysis, were,—Cream of tartar, 3; flour, 3.

Foodstuffs condemned as unfit for food and destroyed:—Salt fish, 20 kegs; fowls exposed for sale, 8.

Prosecutions were undertaken on behalf of the Department as follows:—Infringement of quarantine regulations, 2; unlicensed establishment of an offensive trade, 1 (in another case the proprietor removed his premises to avoid prosecution); orders to remove insanitary dwellings, 2; insanitary premises, 1.

Notices re *suggested sanitary improvements* have been issued as follows: To private individuals, 132; to local authorities—General 158, *re* disinfection 605.

Special reports on the following subjects have been prepared:—

Sanitary Inspections.—I have not had time to make as many personal visits to the various districts or to individual cases as I should wish. Exclusive of Inspector Winstanley's work, the following inspections have been made during the year: Private houses, 90; houses inspected and condemned, 34; house-drainage, 30; *re* drainage of districts, &c., 12; *re* water-supply, 4; nuisances, refuse-tips, &c., 12; offensive trades, 2; insanitary stables, 13; piggeries, 2; dairies, creameries, &c., 12; shops, 4; slaughterhouses, 3; *re* infectious disease, 10 houses; schools, colleges, &c., 10; hotels and boardinghouses, 12.

Special inspections have been made as follows:—

Twelve *workshops, factories*, and *bakehouses* have been visited. This has been chiefly at the instance of Mr. Ferguson, Inspector of Factories, whose supervision of sanitary matters in this connection is admirable. One could wish in other matters for the direct powers over factories given to the Health Department through the Inspector.

A complaint *re* dust from the emery wheel at the Newmarket Railway Workshop was inquired into.

The *sanitary condition* of the Auckland Gaol; the Costley Home; the Maori Hostelry, Parnell; the Old Persons' Refuge, Thames; the Costley Institute; the Orphanage, Parnell; and the Mount Albert Industrial School, formed subjects of investigation.

The *sanitary aspect* of Otorohanga Township was inquired into and reported on.

Possible sites for the Auckland abattoirs, the nightsoil-depot, and the Infectious Diseases Hospital have occupied considerable attention.

I append Inspector Winstanley's report on the work done by him during the year.

INSPECTOR WINSTANLEY'S REPORT (SUMMARY).

Houses visited in connection with infectious diseases, 370.

Residences inspected, 6,171.

Notices served, 113; with the result that the matters complained of have been remedied in 110 cases.

Number of infectious diseases traced from April, 1902, to March, 1903, shown in report: Enteric, 130; scarlet fever, 79; diphtheria, 60.

Number of complaints lodged by letter and otherwise, from April, 1902, to March, 1903, 100; all of which received attention.

Special Matters.

Districts visited.—*Re* infectious diseases outbreaks: Whangarei, Kamo, Te Aroha, Kawakawa, Wairangi, Helensville, Hamilton, Waihi, Tauranga, Thames. *Re* general sanitation: Cambridge, Whangarei, Kamo, Te Aroha, Opotiki, Tauranga, Thames, Ngaruawahia, Te Awamutu, Helensville, Dargaville, Waihi, Rotorua, Huntly, Karangahake, Pukekohe, Taupo, and Lake Districts.

Trades inspected.—Jam-factories, biscuit-factories, sausage-making factories, Auckland markets *re* fowls, &c., and general produce; restaurants, fish-shops, bakeries, &c.

Dairies inspected.—At Devonport, Rotorua, Te Aroha, Paeroa, Thames, Pukekohe, Wairangi, Tauranga, and Opotiki.

Slaughterhouses inspected.—At Auckland, Thames, Huntly, and Paeroa.

Hotels in Town and District inspected.—At Auckland and Suburbs, Thames, Te Aroha, Waihi, Karangahake, Kamo, Helensville, and Lake District.

Foods condemned or Samples taken for Analysis.—Consignments of fish in kegs from Australia —condemned; consignment of flour from America—samples taken; samples of flour obtained from different bakers in Auckland and suburbs.

Re *House-drains, &c.*—The absence of regulations requiring contractors, &c., to give notice to the Department and the local authority of their intention to carry out drainage-work, &c., and to furnish the District Health Officer and Engineer with plans of same showing the proposed works before proceeding to execute, and also to give due notice after such works are completed so that they may be inspected, leads to defects which are perhaps the most serious menace to the health of the community brought under my notice.

PATHOLOGICAL LABORATORY.

Pathological work—more especially bacteriological research—requires regular and constant attention. Therefore this branch of my duties has not yet been properly developed. At special times, such as during the presence of the plague, a spasmodic effort had to be made to get things into order, prepare media, and so forth; but in general little work is done. The apparatus to hand is very incomplete, but unless more time could be devoted to the subject it is scarcely worth while obtaining a proper equipment.

The following is a summary of the work done:—

Post-mortems made (chiefly on suspected plague cases), 5.

Organs examined bacteriologically: Spleens, 6; livers, intestines, &c., 3; bubonic swellings, 2; glands, 4.

The following *specimens* submitted to me have been examined: Pus, 14 samples; blood, 14 samples, 13 being for the Widal test; sputums for tubercle 29, for other conditions 2 (tubercle was found in 16 specimens); throat swabs for diphtheria, 5 (in 2 the bacillus was found; urines, 28; vomit, 1; fæces, 1; tumours, sections cut, 4; ligatures and dressings were bacteriologically examined for Auckland Hospital.

Post-mortems on Animals.—Guinea-pigs, 4; rats, 4; diseased fowls, 1.

Bacteriological tests were made of—the city water-supply; public milk-supplies, 1; septic-tank effluents, 2.

Vaccine distributed.—734 tubes of lymph were supplied to medical practitioners and public vaccinators in the district.

Pamphlets on vaccination were sent to local bodies, public vaccinators, School Committees, and others.

Physical Examinations for Government Officials and Employees.

Eigty-one examinations *re* sick-pay were made on *returned troopers*. This work was very burdensome, and it was a great relief when other arrangements were made.

For the various Departments 37 persons were examined, distributed as follows: Health—Applicants for sanatorium treatment 17, for staff 6; Education, 3; Marine, 3; Public Works, 2; Postal, 2; Agricultural, 3; Defence, 1.

In conclusion, I wish to record the great assistance given by Mr. Symons, of this office, in drawing up the charts and tables, and compiling the statistics for this report.

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

HAWKE'S BAY DISTRICT.

Department of Public Health,
District Office, Napier, 1st April, 1903.

Dr. J. Malcolm Mason, Chief Health Officer,

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

I regret that I have not been able to visit the whole of my district since I returned from England and took over the duties from my *locum tenens*, Dr. Finch, on the 17th September, 1902. The district in and about Wairoa is still to be visited, therefore what I shall have to say of those places will chiefly be based on a past knowledge.

The sanitary progress of this district since the appointment of a District Health Officer in August, 1901, may be described as "Something attempted, something done"; for the future, "That which we have done, but earnest of the things that we shall do."

The diseases notified during the year are,—

Scarlatina.—Napier, 25; Hastings, 15; Dannevirke, 47; Gisborne, 28; Woodville, 0; other districts, 27: total, 142.

Typhoid Fever.—Napier. 35; Hastings, 3; Dannevirke, 3; Gisborne, 26; Wairoa, 5; Woodville, 0; other districts, 10: Total, 82.

Measles.—Napier, 24; Hastings, 83; Dannevirke, 3; Gisborne, 3; Woodville, 2; other districts, 33: total, 158.

Tuberculosis.—Napier, 5; Hastings, 2; Dannevirke and Woodville, 0; Wairoa, 14 (chiefly amongst the Maoris); Gisborne, 3; other districts, 7: total, 31.

Diphtheria.—Napier, 5; Hastings, 4; Dannevirke, Woodville and Wairoa, 0; Gisborne, 3; other districts, 22: total, 34.

Septicæmia and Erysipelas.—Napier, 5; Gisborne, 3; Hastings, Dannevirke, Woodville, and Wairoa, 0; other districts, 2: total, 10.

The deaths registered during the year are,—

The Whole of the District.—Total, 452: From typhoid fever, 5; other zymotic diseases, 12; septicæmia and erysipelas, 6; tuberculosis, 33; cancer, 17.

Napier.—Total, 153: From typhoid fever, 2; septicæmia, 5; tuberculosis, 9; cancer, 8; measles, 1.

Hastings.—Total, 56: From tuberculosis, 3; cancer, 1; measles, 1.

Dannevirke.—Total, 31: From scarlatina, 2; tuberculosis, 1; cancer, 1.

Gisborne.—Total, 96: From typhoid fever, 2; septicæmia, 1; scarlatina, 2, tuberculosis, 7; cancer, 3.

Woodville.—Total, 17: No deaths registered from zymotic disease, tuberculosis, or cancer.

Ormondville.—Total, 12: From tuberculosis, 2. No deaths registered from zymotic disease or cancer.

Waipawa.—Total, 34: From diphtheria, 1; tuberculosis, 3; cancer, 2.

Waiapu.—Total, 7. No deaths registered from zymotic disease, cancer, or tuberculosis.

Waipukurau.—Total, 17. From typhoid fever, 1; tuberculosis, 4; cancer, 2.

Wairoa.—Total, 9. No deaths registered from zymotic disease, cancer, or tuberculosis.

VITAL STATISTICS FOR THE COMBINED DISTRICT AND THE PRINCIPAL TOWNS.

Combined District.—Deaths from all causes, 13·86 per 1,000: From typhoid fever, 0·16 per 1,000; other zymotic diseases, 0·39 per 1,000; septicæmia and erysipelas, 0·12 per 1,000; tuberculosis, 1·059 per 1,000; cancer, 0·55 per 1,000.

Napier.—Deaths from all causes, 17·5 per 1,000: From typoid fever, 0·23 per 1,000; other zymotic diseases: 0·116 per 1,000; septicæmia and erysipelas: 0·57 per 1,000; tuberculosis, 1·025 per 1,000; cancer, 0·92 per 1,000. (In this and all future mortality statistics of cancer in this report, the crude death-rate must be understood.)

Gisborne (with the Suburbs Whataupoko and Kaiti).—Deaths from all causes, 14·24 per 1,000: From typhoid fever, 0·44 per 1,000; other zymotic diseases, 0·88 per 1,000; tuberculosis, 1·54 per 1,000; cancer, 0·66 per 1,000.

Dannevirke.—From all causes, 13·4 per 1,000: From zymotic disease (excluding typhoid), 0·863 per 1,000; tuberculosis, 0·44 per 1,000; cancer, the same as tuberculosis.

Woodville.—16·36 per 1,000.

Hastings (with Havelock).—Deaths from all causes, 13·8 per 1,000: From zymotic disease (excluding typhoid) 0·23 per 1,000; cancer, the same; tuberculosis, 0·679 per 1,000.

THE SANITARY CONDITION OF THE VARIOUS PARTS OF THE DISTRICT.

The Borough of Napier (Population 8,774)

Has a supply of excellent water in sufficient quantity, derived from an artesian source. The major portion of the town is sewered, and further extension of the sewers is contemplated when the finances permit of it. Pan-closets still exist in the sewered portion of the borough, but the Council have made water-closets where possible compulsory, and they are gradually being substituted. Of course, in the parts of the borough that are unsewered, pan-closets, *faute de mieux*, must continue. The nightsoil is collected in open pans, and deposited in the Whare-o-Maranui Reserve, close to the Taradale Road. The ground here is low and moist, and as water is reached at a depth of a little over a foot, it does not lend itself readily to nitrification. It has long been an abomination to travellers using the road that passes alongside it, and unfortunately a great portion of our milk-supply comes in along that road, but the nuisance is rapidly becoming less, and, with the universal introduction of water-closets, will cease altogether.

It may pertinently be asked why such an unsuitable site has been chosen for a nightsoil depot. In extenuation, it must be admitted that the Borough Council has been greatly handicapped in its choice of a site by the position of Napier and the nature of its environs. These are formed of alluvial flats, scarcely above sea-level, and very little removed from what was a few years ago an extensive swamp. The present depot is three miles from the post-office, and quite two miles further away from some portions of the borough. To obtain more suitable land for the deposit of the filth, where rapid nitrification would take place, would necessitate a journey of some four miles further out—that is, seven miles from the post-office, and something like nine miles from certain portions of the borough. Great as the nuisance has been in the past, and to a certain extent still is, it is difficult to see how it could have been or can be remedied, except by the universal introduction of water carriage for the sewage, and the consequent abolition of the nightcart, or, as was recommended by me to the Council many years ago, the purchase of a destructor capable of dealing with nightsoil.

The drainage scheme was designed about twenty-five years ago, and was intended to be worked on the combined system. This was abandoned for the separate system, on the recommendation of the then Municipal Engineer, Mr. Peppercorn. But, unfortunately, when the system was altered the size of the sewers was not, and the consequence is that they are too large for the amount of sewage to be carried, hence there is a sluggish flow and the consequent deposition of sewage-mud. In the past the house-drains have been badly laid, and on examination rarely, if ever, stand the water test, and the house-connections in the past have been defective. Before the days of sewering the drainage of Napier percolated to the flats and into the swamps immediately adjoining, which have now been reclaimed, and this has caused these portions of the borough to be "sewage-sick." This condition has been kept up by the defective drains, and the consequence is that the opening-up of the streets for any purpose frequently leads to an outbreak of typhoid fever in the vicinity. When, in 1880 and 1881, the streets were opened up for the purpose of laying the drains and sewers we had two of the worst epidemics of typhoid the town has ever known, both in extent and virulence.

While on this point I may say that typhoid is gradually becoming less in Napier. Some years ago it used to be my lot to attend about a hundred cases of typhoid in a year, besides the cases that fell to the lot of the other practitioners; but during the year ending the 31st March, 1902, with a much larger population, only fifty-eight cases were notified, and this was considered a heavy typhoid year. During the year ending the 31st March, 1903, the number of cases notified was only thirty-five. I consider that the reduction of the number of cases during the past year is due to the meteorological conditions being unfavourable to the production of the disease. I have observed during my long residence here that the meteorological conditions play an important part in the causation of the epidemic. I am led to hope that when the improved sanitation that we are now effecting is completed typhoid, if not a thing of the past, will become still further reduced. There were some insanitary houses in Napier, where typhoid was an annual occurrence, on which I reported adversely when I held the appointment of Health Commissioner in 1900, and in which the Borough Council insisted on my recommendations being carried out, that have been free from typhoid since.

The area set apart as a cemetery in Napier is limited, and the ground is rapidly filling up, and it will not be possible to use this site as a burying-ground for many years longer. The choice of another piece of land for the purpose will soon become acute, and presents many difficulties. The amount of suitable land in and around Napier is limited, and the horns of the dilemma are a section that will conform to sanitary requirements and will not penalise the public on the score of expense.

The lectures on sanitary plumbing instituted by Mr. Kershaw, the Sanitary Inspector, under the auspices of my *locum tenens*, Dr. Finch, are still in evidence. They are well attended, and are bearing good fruit.

Whenever opportunity offers, the water test is applied to the house-drains that have been laid in previous years, and when found to be faulty, as is too often the case, the defects are made good. All newly laid drains are thoroughly tested before they are passed. All house connections are carefully inspected, and all incompetent and slovenly work is condemned. Bell traps and catch-pits, that were once the rule in the borough, are now the exception, and are rapidly being superseded by traps of an approved and up-to-date pattern.

The Borough Council have lately passed a sanitary by-law embodying many of the recommendations made to that body by Dr. Finch and myself, which must be productive of some good, and is an earnest of what will be accomplished in time by persistency.

The Council in the past have connected houses with the sewers in a manner that cannot be commended, and I regret to add that the evil that has been accomplished can only be remedied gradually, and will take some years to complete. It has been the practice when connecting the house-drain with the sewer to place the Buchan well inside the boundary, sometimes within 2 ft. or 3 ft. of the terminal shaft. This terminal shaft is intended to ventilate not only the short length of drain between the Buchan and it, but the whole length of the sewer also, and by this practice the sewer is brought on to the premises. I have pointed out to the Borough Council that it is incumbent on them to ventilate their own sewers, which should be disconnected from the house-drains on the sewer-side of the Buchan, which should be at the boundary of the premises, and that the property-owner should ventilate his own drain only. The method that has been in vogue here in the past has rendered efficient ventilation in a great measure nugatory.

The sewer-outfall is unfortunately placed, and requires attention. The sewage empties itself into a tidal river, close to a much-used road, and near the railway-line. At the time that our drainage was designed, and the present site chosen for the outfall, the local conditions were different, and the water carriage of nightsoil was not at the time contemplated. Several methods

have been proposed for dealing with the matter: The extension of the outfall; the installation of a septic tank; the land on the other side of the river being raised by a grader, and the sewage being pumped into it, and purified by broad irrigation, or intermittent downward filtration. The Council contemplate employing a competent sanitary engineer to advise upon the matter, and I hope that this will shortly be done, and his scheme adopted.

In some parts of the town there are houses crowded together on insufficient areas, with as a consequence deficient air-space in and around each house. The Council have now passed a by-law forbidding this practice, and therefore overcrowding in building will be prevented in the future. As the life of a wooden house is limited, the evils which at present exist will cease in the near future, when the present houses fall into decay or are destroyed by fire.

The more sanitary distribution of foodstuffs in this town requires attention. Both bread and meat are carried in open carts, or on the top of carts, exposed to the dust of the roads, which is always prevalent in windy or dry weather. Milk is baled out of the cans at the customers' doors, and thus rendered liable to pollution from dust and the filth carried with it, instead of having the cans fitted with suitable and easily cleaned taps, or the milk distributed in properly constructed and plugged bottles of a suitable size. One firm only in Napier distributes milk in the latter manner. I am glad to bear my testimony that the majority of milk-purveyors are in every other respect reputable and cleanly. I am in hopes that in the near future I shall be able to effect reform in these important matters.

Some years ago I represented to the Borough Council the unsatisfactory conditions of many of the slaughterhouses, and the fact that there was no supervision of the animals slaughtered, and the necessity of an up-to-date abattoir and a competent inspector. I am glad to say that my recommendations met with success. Mr. Hislop was commissioned to draw the plans; when these were obtained difficulties of one kind and another cropped up, causing vexatious delays. One after another the difficulties were surmounted, and about a year ago a creditable and thoroughly up-to-date abattoir was completed, with efficient supervision and inspection of the meat slaughtered and offered for sale. Everything was *en train* for the abattoirs prior to the Health Department springing into existence, and the fact that the measure was voluntary on the part of the Council, not due to compulsion, but to their public spirit, is highly creditable.

Clive (Population, 657).

The local body is the Hawke's Bay County Council.

This is a scattered township, built upon a low, damp site, being only 3 ft. or 4 ft. above sea-level. It is bounded on the north by the Ngaruroro River, and on the south by the Tukituki, and is liable to floods. The houses are for the most part old, and in some cases out of repair and dilapidated. When I was Health Commissioner, in 1900, there were several insanitary places, and the county drains were in a disgraceful condition, but I was able to get most of the evils remedied. Clive has a good water-supply from an artesian source, nearly every house having its own well. There is no common system of nightsoil-removal, and most of the closets are "pit." Though much better than it was, it is far from being a model township.

I have devoted my time during the summer months chiefly to the outlying portions of my district, and as a consequence have not had much time for those nearer home, but in the coming winter I hope to be able to effect some reforms in this and other places near at hand.

Taradale (Population, 763).

The local body is the Taradale Town Board.

There is no common system of nightsoil-removal at present, but I hope to get it instituted shortly. Most of the closets are "pan," and are emptied on the sections. There is drainage for slops by the concrete channellings, kept flushed by artesian wells. Individual artesian water-supply.

The houses in this township are for the most part well built and sanitary. There were, and still are, some objectionable places, some of which have been remedied, and steps are being taken to remedy the others. The houses are well apart, and there is no overcrowding.

Meeanee.

The local body is the Hawke's Bay County Council.

This is an old township adjoining the newer township of Taradale, which has in a measure swamped it. Like Clive it is low-lying, damp, and liable to floods. There is no common system of nightsoil-removal. Individual water-supply from an artesian source.

Havelock (Population, 408).

The local body is the Hawke's Bay County Council.

The business portion on the flat is composed of houses that are for the most part old, and in many cases dilapidated. There is no common system of nightsoil-removal, no drainage, and no public water-supply. There were several ill-constructed, shallow wells in the township, that have been filled in on my recommendation. On the recommendation of Dr. Finch, Mr. C. D. Kennedy has drawn plans and given an estimate for a drainage scheme to carry bed-room and kitchen shops, but up to date nothing has been done towards putting the work in hand. An excellent water-supply could be obtained at a cheap rate, either from an artesian source, or brought by gravitation from some of the numerous springs that are to be found on the hills at the back of the township, and I am in hopes that in the near future this will be taken advantage of. The hotel is supplied with excellent water from an artesian source.

On the hills at the back are several villa residences. These are all new and well built. The residents have supplied themselves with water from the springs above, and their sanitary arrangements are good.

Hastings Borough (Population, 3,650).

This is a very scattered town, covering an area of nearly 6,000 acres. It is situated on the Heretaunga Plains, and the whole town is very flat, and is only about 12 ft. above sea-level. There are very few old or dilapidated houses here, and most of the buildings are comparatively new with up-to-date conveniences, some of the residences being handsome and well planned. There is no overcrowding of houses even in the business and congested portion of the borough. There is weekly removal of nightsoil and refuse. The nightsoil is removed in single open pans, and emptied into the sewers. The more sanitary method of collecting the filth in double-lidded pans has been brought before the local authority, but has not yet found favour. I shall not let the matter rest, and mean to have double-lidded pans over the whole of my district where the night-cart is in evidence.

A sewerage scheme was constructed about twenty years ago, but full advantage has not been taken by those capable of connecting, and only a few houses have water-closets. The Borough Council contemplate raising another loan shortly for the purpose of extending the drainage to other portions of the borough that have been built over since the original scheme has been designed and executed. This work is much needed, and I hope to see it put in hand in the near future. Some of the residents on the outskirts of the borough have had septic tanks installed on their premises from plans supplied by the Department, and we have supervised their construction and the laying of the drains.

The water-supply is an individual one from artesian wells. As the wells in time of drought do not rise high enough to permit of the universal introduction of water-closets, I hope to see some pumping scheme introduced to supply the town with water from a high-pressure source for this and other purposes. If this presents an insuperable difficulty, the introduction of "combination closet" would be advantageous in this town. Water carriage is the most satisfactory method of dealing with sewage of all descriptions, and when the sewers are extended in Hastings I hope to see the use of the night-cart very much contracted. Many of the houses discharge their slops into Field's annular flushing-tanks, which were introduced on the recommendation of the engineer who designed the drainage scheme (Mr. Rochefort, of Napier), and this, combined with the fact that the overflow from the artesian wells discharged into the sewers, renders the Hastings sewers amongst the best-flushed and cleanest to be found anywhere.

I regret to say that many of the stables in Hastings are not connected with the sewers. I have already pointed this out to the Borough Council. It will have to be remedied, and will receive my earnest attention very shortly.

As in Napier, the carriage of foodstuffs needs attention. The milk is here baled out at the customers' doors, to the detriment of that sensitive article of food and its possible contamination. I have pointed the matter out in my report to the Borough Council, but as yet nothing has been done. In every other portion of my district the milk is drawn from the cans by means of taps. It is much to be regretted that the two largest and most important towns in Hawke's Bay should adhere to the old-fashioned and insanitary practice of baling.

Kaikora North (Population, 268).

The local body is the Kaikora Town Board.

This township is healthily situated. The houses are scattered and comparatively new. There are no old, insanitary, or dilapidated houses in the township. There is no common system of nightsoil-removal, and no public water-supply.

Waipawa (Population, 669).

The local body is the Waipawa Town Board.

There is weekly removal of nightsoil and refuse. The nightsoil is removed in single open pans. There is a sewerage system for kitchen and bed-room slops, but several houses that might have taken advantage have not done so, and remain undrained. The contents of the sewers are collected in a box drain and carried out on to the shingle-bed at the back of the town. The smell at the outlet was offensive to passers-by, but with judicious trenching, on the recommendation of Dr. Finch, the nuisance has been to a great extent abated. There is no public water-supply, but water could be obtained from the river by pumping at a moderate cost.

There are several old and dilapidated houses in Waipawa that need attention, and more advantage will have to be taken of the drains in the future than has been in the past. I have effected some reforms in these matters, and intend dealing with other places which are in need of improvement.

On my recommendation the removal of nightsoil has been extended to the Bush Township on the outskirts of Waipawa.

Waipukurau (Population, 565).

The local body is the Waipukurau Road Board.

Weekly removal of nightsoil in single open pans. Partial-sewerage system for kitchen and bed-room slops. No public water-supply. The drains are in many cases badly laid.

The local body favourably entertained my recommendation of double-lidded pans for the removal of nightsoil, but the matter is hung up for the present, as the local body had, and still has, in contemplation the introduction of a public water-supply and improved-drainage scheme, providing for the water carriage of sewage. There has been some delay in this, for which the Board is not wholly responsible, and, of course, sanitation, here as elsewhere, "moves but slowly, slowly passing on from point to point."

There were some insanitary houses in the main street that were adversely reported on by me in 1900, subsequently by Dr. Valintine in 1901, and, when acting as my *locum tenens*, by Dr. Finch in 1902, that I have had demolished since I took over my duties.

There have been outbreaks of diphtheria in some cottages near the railway-station that were traced to defective drainage by Dr. Finch. This has now been remedied on his recommendation.

Ormondville (Population, 459).

Local body, the Ormondville Town Board.

The houses are scattered, and there is no common system of nightsoil-removal. There is a box drain chiefly for the removal of storm-water, but the kitchen and bed-room slops of a few houses drain into it.

Dannevirke Borough (Population, 2,315).

Weekly removal of house-refuse and nightsoil in single open pans.

The borough has provided itself with an ample supply of excellent water of unusual softness. This is collected into a reservoir from the hills above, and is brought into the town by gravitation. The water is available for all the houses in the borough. Prior to the introduction of this high-pressure water-supply the water was derived from rain-water tanks and shallow and improperly constructed wells. As a consequence of the impurity of the water available, infantile diarrhœa was a scourge in Dannevirke. Since the water-supply has become an accomplished fact this disease is conspicuous by its absence.

There is no scheme of drainage in Dannevirke at present, but Mr. Leslie Reynolds, having had instructions from the Council, has prepared a scheme, which I hope will be adopted. Some cases of typhoid fever have occurred in Dannevirke during the present year, and the town has previously been free from the disease. I attribute these cases to the want of drainage—that is, proper drainage—for some of the houses are draining into a stream that runs through the town and will serve excellently for carrying off storm-water. The people of Dannevirke seem to be very keen on the question of drainage, and I am very sanguine that in my next annual report I shall be able to speak of the drainage as being in course of construction, and am confident that when it is completed it will be found that the introduction of proper drainage has done the same for typhoid as the water-supply has done for infantile diarrhœa.

Dannevirke presents many natural advantages. It lies high, about 600 ft. above sea-level; is well swept by the natural scavenger—wind; and obtains a fair amount of sunshine. It has a light, porous soil, with good natural drainage. It is a rising town, with a fast-increasing population. It will be observed that Dannevirke has the lowest death-rate in the district. This may be attributed partly to the natural conditions I have mentioned, and is also attributable in a great measure to the fact that, Dannevirke being a recently settled town, most of the residents are young and middle-aged, and there are few old people to swell the mortality bills.

Woodville Borough (Population, 926).

Nightsoil is removed weekly in single, open pans. House-refuse is also removed weekly. There is a box sewer, with box branch drains for the purpose of carrying storm-water, household slops, and the drainage of some creeks. The high-pressure water-supply alluded to in the last annual report by Dr. Finch as being in contemplation is now an accomplished fact. The waters of the Mangapapa Creek are collected into a large, well-constructed, and covered reservoir, situated about 200 ft. above the highest portion of the town, and brought down by gravitation. The daily supply is 200,000 gallons, a sufficient supply for a town with upwards of five times the population of Woodville. The water is pure, pleasant to taste, and of unusual softness, the total hardness being less than 2°. This water would act readily upon lead, and I have warned the Borough Council against the use of leaden pipes in the house-connections, &c. The cost of obtaining the water-supply was £10,000. I consider that for such a small community to tax itself to such a large amount for such a purpose deserves the highest commendation.

The Mayor informed me that Woodville contemplates further taxing itself at an early date for an up-to-date drainage scheme, which will do away with the nightcart altogether. The present box drain will be used for the carriage of storm-water only, for which purpose it is quite suitable. For this reason I did not press upon the Council the necessity of an alteration in their method of collecting nightsoil, but I am told that in the event of the drainage scheme being dropped they would be quite ready to adopt it. Dannevirke is in a like case.

Though no death from zymotic disease, cancer, or tuberculosis has occurred in Woodville during the past year, the death-rate—18·36 per 1,000—is the highest in the district. This does not, in my opinion, point to any insanitary conditions or unhealthy influences in the neighbourhood. There has been a large number of deaths from accident during the year, and vital statistics in small communities are apt to be fallaceous, and abnormal fluctuations from slight causes readily occur.

Up to the present there has been no case of typhoid fever or diphtheria recorded in Woodville. As the chief industry is dairying and the manufacture of butter for export, this fact is very satisfactory.

Porangahau.

The local body is the Porangahau Road Board.

This is a small, scattered township. It has no public water-supply nor disposal of nightsoil. The houses are for the most part well built and in good repair. Some of the settlers have considered the advisability of treating the sewage from their houses by means of septic tanks, and have obtained plans from me.

Gisborne Borough (Population, 2,737).

Weekly removal of nightsoil and house-refuse. The nightsoil is buried in a light, sandy soil that lends itself readily to rapid nitrification. At one time it was the practice to bury the filth rather deeply, but on my recommendation it is now buried in shallow trenches, and this has been found to be more effectual in bringing about the desired result. For some years past a recom-

mendation that I ineffectually made to the Napier Borough Council has been adopted in Gisborne—viz., of collecting the excreta of typhoid patients nightly, cremating the excreta, and disinfecting the pan—and this practice has been followed by a diminution in the number of cases. When Health Commissioner in 1900, I strongly impressed upon the Borough Council the necessity of collecting the nightsoil in double-lidded pans, and reiterated my views on taking up the duties of my present appointment. I am glad to say that my recommendations have met with approval, and Gisborne has adopted this method of collecting nightsoil.

A few premises are supplied with pipe drains to carry house-slops into the river, but at present there is no public water-supply or drainage scheme in operation. Three years ago, on my recommendation, Mr. Mestayer was consulted on these matters, and that gentleman gave estimates and plans for a water-supply and drainage scheme. A loan for the former has been authorised, but the money is not yet available; and the consequence is that the much-needed water and drainage are in abeyance for the present.

Though the death-rate from all causes in Gisborne is comparatively low—14·24 per 1,000—the proportion of deaths from typhoid and other zymotic diseases is the highest in the district. From these facts I am confirmed in the opinion that I have previously expressed; that, given a supply of pure water and an efficient drainage scheme, Gisborne would be one of the healthiest towns in the colony.

Kaiti (Population, 700) and Whataupoko (Population, 1,148)

are suburbs of Gisborne. They are scattered and open, the houses are new and well built. Nightsoil is removed by private contract, and there is no public water-supply. The local bodies are the Kaiti and Whataupoko Road Boards.

Tolago, Tokomaru, and Waipiro

are scattered townships up the east coast, the two former being chiefly Maori settlements. They have no common system of sanitation nor public water-supply.

Some of the settlers in this district have interested themselves about septic tanks, and have obtained plans from me, and one has already had a tank installed on his premises. It is encouraging to those engaged in preventive medicine to find settlers away in the back country taking an intelligent interest in sanitary matters.

About four miles to the south of Waipiro, at a place called Te Puia, there are some hot springs, belonging to the class of chlorinated waters, some of which contain iodine. There are upwards of a hundred different springs, but differing very slightly in composition. Most of them issue from the ground at too high a temperature—160° Fahr.—for use till they have been cooled down. These springs are most fortunately situated. They are 800 ft. above sea-level, open to the east and north and partly to the west, but protected by high hills from the cold south. The air at that elevation is pleasant, bracing, and invigorating. The aspect has the benefit of the sun from sunrise till late in the afternoon. The beauty of the scenery—the hills around, the lake, and Waipiro Bay—leaves nothing to be desired. Pulmonary tuberculosis should do well in such a spot. The waters are suitable for the treatment of gout, rheumatism, and some forms of skin-affections. The Waiapu County Council has made excellent roads in the vicinity, and it only needs the expenditure of a little capital to make Te Puia one of the pleasantest as well as one of the most health-giving sanatoria in the colony.

Clyde, Wairoa (Population, 623).

The local body is the Wairoa Town Board.

I have not been able to visit Wairoa since I took over the duties of District Health Officer, but hope to be able to do so shortly. I am compelled, therefore, to speak of Clyde as it was, and perhaps may not give it credit for the reforms that I hope it has made. The houses are rather crowded together, and many of them are old, in bad repair, and insanitary. There is no public water-supply, and the water is obtained from tanks and shallow, improperly constructed wells. Until lately there has been no common system for the removal of nightsoil, and the filth was buried in the small sections, often close to the shallow wells, that were too often unprotected even by brickwork, and were never steined nor set in cement.

When Health Commissioner, in 1900, I impressed upon the Town Board the necessity of instituting a common system of nightsoil removal and carrying it out with double-lidded pans. During his term of office Dr. Finch reiterated these views, and was successful in getting them adopted. Clyde is the first town in my district to adopt the least objectionable and most sanitary method of the conservancy system.

Pigs are kept in the town, and too frequently the sties are badly constructed, not overclean, and frequently are situated too close to the dwellings. When I visit Wairoa I am confident that I shall be able to make some much-needed reforms.

Mohaka

is a small township, pleasantly situated. The houses are scattered and well built. There is no public water-supply nor common system of sanitation.

When calculating the vital statistics of Napier, I did so on the population of Napier only. I find that the deaths at Clive and Taradale are registered in Napier. It is therefore more correct to calculate them on the basis of the populations of the three places. The corrected statistics are—Deaths from all causes, 15·008 per 1,000, as against 17·5 per 1,000; from typhoid, 0·196, as against 0·23, per 1,000; from other zymotic diseases, 0·098, as against 0·116, per 1,000; from septicæmia and erysipelas, 0·49, as against 0·57, per 1,000; from tuberculosis, 0·9, as against 1·025, per 1,000; from cancer, 0·784, as against 0·92, per 1,000.

GENERAL REMARKS.

With the exception of Napier and Hastings, the milk is delivered in cans fitted with properly constructed taps, through which the milk is drawn instead of being baled out at the customers' doors, thus exposing this sensitive and important food-supply to preventible contamination. It is greatly to be regretted that the two largest and most important towns in my district should lag behind the smaller places in any form of sanitation.

From the experience that I gained during my recent visit to England, and the opportunities that were afforded me of observing the mental apathy that was displayed by even intelligent people towards all forms of sanitation, even in towns of considerable size—I do not speak of the larger cities; and, of course, there is only one London—I formed the opinion that New Zealand has much cause for self-gratulation; that the sanitary condition of many of our towns, the desire to improve their present sanitary conditions, and the intelligent interest taken by all classes of the inhabitants afford an object-lesson to many older communities.

More than a quarter of a century ago, when Napier was a much smaller town than it is at present, the inhabitants taxed themselves for an abundant supply of excellent water. A comprehensive and expensive drainage scheme followed shortly after. I think that all unprejudiced persons must agree with me that these facts reflect the highest credit on those who were responsible for them. I regret that our drainage scheme is not all that it should be; many defects, both of design and construction, can be pointed out; and money might have been saved in the latter. But it is easy to be wise after the event, and to the too-censorious we may retort with,—

A man must serve his time to every trade
Save censure—critics all are ready-made.

But, notwithstanding that adverse criticism is possible, it must be admitted that the scheme is on the whole good, and that the errors that unfortunately exist do not in any way detract from the enterprise and public spirit of the men who were responsible for the initiation of the scheme.

Hastings is much in the same boat; but its drainage scheme, as far as it goes, is more up to date and superior in design. The water-supply of Hastings is ample, and the quality is much the same as in Napier. Hastings has outgrown its present drainage, which will have to be added to in the near future. The Borough Council recognise this, and contemplate its extension.

We find the smaller towns, like Waipawa and Waipukurau, with a sewerage system which, though incomplete and in some respects defective, is better than none, and reflects credit on the inhabitants.

Dannevirke and Woodville have both taxed themselves for a water-supply, on which they are to be congratulated. The quantity is more than ample for their needs, and the quality is unsurpassable. In the former town a comprehensive and up-to-date drainage scheme seems to be in sight, and in the latter I hope is in the near future.

When I turn to the northern portion of my district, I regret that I have to be less optimistic. Gisborne, with its suburbs of Kaiti and Whataupoko, has a combined population of upwards of 4,500 people, and is innocent of public water-supply and drainage. In Gisborne the plans for both have been obtained, and the loan for the installation of the water-supply authorised, but at present it ends there. The place is not wanting in public-spirited men who have the true interests of the town at heart, but there are conflicting interests and difficulties that are met with at every turn and will take time to overcome. With the rapid growth of Gisborne, water and drainage have become an absolute necessity, and, with the rapidly increasing wealth that is coming in from the back country that has been and is being rapidly opened up, there should be no trouble in financing the scheme. Gisborne is to be congratulated on having adopted the method of collecting nightsoil in double-lidded tins.

The townships further north are too small and scattered for a common system of water-supply and sanitation to be expected of them. Most of the settlers have an individual supply of pure water available from the springs and streams in the neighbourhood of their premises, and some of the settlers have provided themselves with septic tanks.

I should like to see a public water-supply for Wairoa, and am informed on reliable authority that it can be obtained at a moderate cost; and some form of drainage may be undertaken later on. At present Wairoa is to be commended for having adopted a system of nightsoil-removal with the most approved method of collection.

During the past year there has been a large number of infectious diseases in the district, measles and scarlatina being specially prevalent. I am happy to say that the cases have been for the most part of a mild type, and few deaths have occurred as a result of them. The Health Officer in a scattered district like this is greatly handicapped in preventing the spread of such infectious diseases as measles and scarlatina, and I have found that the public are not sufficiently alive to the necessity of isolation. In the former disease its great infectivity, coupled with the fact that the most infectious period is during the catarrhal stage, prior to the development of the rash, when the nature of the disease is still doubtful, renders the prevention of its spread extremely difficult. Again, owing to the popular fallacy that measles is a mild complaint, medical aid is frequently dispensed with, and it is to be feared that many cases are, as a consequence, unnotified, and escape all supervision, and it follows almost as certainly as the night the day that when a case is introduced into a community all who are not protected by a former attack will become infected. With scarlatina much might be done to check the spread of infection, but at present the Department is faced with great difficulties. It is impossible for the Health Officer to be ubiquitous, and evidence is difficult to obtain. Persons in the peeling stage expose themselves in cabs, railway-carriages, and other public places, reckless of the danger to which they are exposing others. I am aware of many such cases, but up to the present I have not been able to obtain sufficient evidence to secure a conviction. This is much to be deplored, for—

We must not make a scarecrow of the law,
Setting it up to fear the birds of prey,
And let it keep one shape, till custom make it
Their perch and not their terror.

When we have been successful in educating the public to the great importance of these matters —the danger to which they are exposing others, and the danger to which they are being exposed— I hope that the thinking portion will take an intelligent interest in the matter, and render us their earnest co-operation and assistance, and thus augment our powers to conserve the public health.

Mr. Kershaw's lectures on sanitary plumbing, that I have referred to in a previous portion of this report, have not been confined to Napier. The plumbers of some of the other towns have expressed a desire for instruction, and have benefited by Mr. Kershaw's ability to communicate it.

I have addressed the local bodies with reference to the appointment of sanitary inspectors. Dannevirke and Woodville have expressed themselves favourably towards the suggestion, and I have no doubt will soon have the matter *en train* for the appointment. Other local bodies have brought the matter up at their meetings, and shelved it for future discussion; and some others are silent upon the point. During the winter months I shall have more opportunities of meeting the various local bodies, discussing the matter with them, and pointing out the necessity of the appointments.

F. D. DE LISLE, L.R.C.P., D.P.H., F.R.I.P.H.,
District Health Officer, Hawke's Bay.

WELLINGTON DISTRICT.

Department of Public Health, Wellington, 24th August, 1903.

Dr. Mason, Chief Health Officer, Wellington.

WELLINGTON HEALTH DISTRICT.—Area, 12,696 square miles; population—white 183,170, Maori 7,162—190,332; dwellings, about 20,000; birth-rate, 28·4 per 1,000; death-rate, 9·8 per 1,000; infectious diseases notified (exclusive of measles), 1,526. *Local Authorities:* Boroughs, 21; County Councils, 21; town districts, 10; Road Boards, 40: total, 92.

In spite of many drawbacks, the work of the year 1902–3 has not been completely devoid of result. In last year's report our hopes for the coming year were duly set forth. Some of these hopes have been realised; but many, alas! must be served up as a *réchauffé* for 1903. We have, however, made some headway, and among our triumphs may be mentioned—(1.) The more or less successful organization of the district into sub-districts, each under the charge of a competent sanitary inspector, appointed by and under the control of the Department. (2.) The satisfactory arrangement that has been made with the Wellington Corporation as regards the inspection of the city. (3.) The fact that four boroughs have adopted water and drainage systems, one borough a public water-supply, and four boroughs have decided to extend their drainage systems. (4.) A general improvement in the sanitary condition of the whole district. (5.) The erection of three hospitals for the treatment of infectious cases.

It is obviously unwise to tabulate our failures, but chief among these has been our inability to cope with the epidemic of scarlet fever, which is even now in our midst.

ANOMALIES OF "THE PUBLIC HEALTH ACT, 1900."

It has been noted by more than one competent authority that the New Zealand Health Act of 1900 is one of the most complete Acts on the subject in the English language. It certainly strikes the ordinary reader as such, and he probably would consider that it would carry a District Health Officer as far as he could wish to go. But the Act is neither so complete nor so far-reaching as it would at first sight appear to be. Sometimes it is actually bewildering. A District Health Officer may condemn a building in a borough as unfit for human habitation, but he cannot prevent it from being erected just outside the limits of the borough; consequently the suburbs of a large town are often made the dumping-ground for insanitary buildings. Power to condemn buildings in counties is urgently needed. It is not very long ago that we were prevented from officially condemning a very insanitary hospital, as it happened to be just outside a borough boundary. It is also unfortunate that in seizing unsound food the action can only be rendered legal by subsequently prosecuting the owner. This is apt to be rather hard on the owner who has purchased the noxious article in all good faith. Although sanitary inspectors may be appointed by local bodies, yet two local bodies may not combine for the purpose of paying the inspector's salary, despite the fact that by so doing money is saved and a better officer appointed. These are a few minor details. It is to be hoped that the larger question of quarantine will be dealt with by amendment during the ensuing session.

LOCAL ADMINISTRATION OF THE PUBLIC HEALTH ACT.

One of the chief difficulties in the way of a successful administration of the Public Health Act is the number of local authorities, there being no less than ninety-two in the Wellington District. Speaking broadly, the Borough Councils, Town Boards, and County Councils are alive to their responsibilities under the Public Health Act; but not so the Road Boards, of which there are forty in the district. These, with two notable exceptions, have tried to shift all sanitary work on to the respective County Councils. It is difficult to see what particular gap in local government is filled by the Road Boards, especially the smaller ones.

Under the administration of some County Councils are certain small townships with populations varying from five to eight hundred inhabitants—too many for a county, too few for a borough. As many of these townships are far distant from their administrative centres, they therefore have no local governing body in the true sense of the word, and it is not to be wondered at that the elements of sanitation are neglected. For such townships the Town Districts Act of 1886 would be most useful, as it answers admirably in those townships where that Act is still in force.

Sanitary Inspectors.

In last year's report mention was made of the need for a better system of sanitary inspection, especially as regards the provincial towns and country districts, where inspection is often intrusted to individuals who, besides possessing very limited knowledge of the first principles of sanitation, are still further handicapped by the multifarious nature of the duties attached to the office of inspector of nuisances. In many instances local authorities have adopted our suggestions, and combined into sub health districts under the charge of a sanitary inspector who, though paid by the local bodies, is appointed by and is under the control of the Department. In this manner much valuable work has been done, especially with regard to the isolation of cases of infectious disease, and disinfection. The local authority has no longer to telegraph to headquarters to know what is to be done with a case of scarlet fever. The Inspector is on the spot to advise, to see that all precautions are carried out, that children do not attend school from an infected house, and that milk is not distributed from an infected dairy. Naturally enough, many local bodies hesitate to pay for the services of "another inspector," and regard with suspicion the suggestions of the Department as the "thin end of the wedge." They can scarcely disabuse their minds of the suspicion that if once beguiled into a little outlay on sanitary matters the "ravening maw" of the Department will not be satisfied, but that other demands must follow. However, these suspicions must be lived down, and in the meantime we must rest content with the knowledge that the optimistic and misdirected gentleman who, in addition to collecting the dog-tax and inspecting fire-escapes and vehicles, reports monthly to his Council that the sanitary condition of the town is "excellent" is rapidly becoming a figure of the past.

The local bodies surrounding New Plymouth, Wanganui, Palmerston, Feilding, Marton, and Masterton have appointed inspectors in the manner suggested by the Department. One great objection to the scheme is the size of the various sub-districts, and there is no doubt that in the event of a general outbreak of infectious disease the inspectors would be unable to attend to all the sanitary requirements of the areas under their charge. But this, however, could easily be rectified by reinforcing them with additional assistance from headquarters, and this the Department has promised to do, free of cost to the local bodies, should the exigencies of the case warrant it. In non-epidemic times inspectors should be able to attend to the wants of their districts, and, although as many inspections may not be made as under the old *régime*, yet a better system exists, and offenders against sanitary law can be brought to book promptly. In addition to their ordinary duties, inspectors have been instructed to collect, and submit to the Department for examination, samples of water, food, and pathological specimens, and to make themselves generally useful.

Many persons labour under the delusion that once a system of drainage has been installed no form of sanitary inspection is necessary. Never was there a greater mistake. Skilled inspection is even more necessary in a sewered than in a non-sewered town. A badly executed drainage system is worse than none, and a system, however good, where the house connections are faulty is little less than dangerous. To see that the necessary fitments are provided to prevent the entry of sewer-air into a building is one of the first duties of an inspector. Nor must it be forgotten that the accumulation of rubbish is just as likely to take place, and is therefore just as dangerous to the community in a sewered as in a non-sewered town. In a certain town, that some two years ago adopted a thorough modern system of water-supply and drainage, were to be found quite recently the old disused privies, with pans full to overflowing, adjoining the modern water-closets. On the same premises might also be discovered long-neglected, unemptied cesspools. These facts speak for themselves.

In the appointment of inspectors the Department has been careful to pick out men rather for their methods than for their actual knowledge of sanitation. In public-health work, more than anything else, so much depends on the manner in which such knowledge is exercised for the public good. A man with much knowledge but little tact is less likely to get work done, and done cheerfully, than a man in whom the minimum of knowledge is combined with the maximum of discretion. Before definitely appointing an inspector he is required to serve for a period at headquarters on probation. His knowledge is tested, and his methods carefully observed. Should the combination prove satisfactory, he is appointed on the understanding that he passes an examination in sanitation within six months from the date of his appointment. In this manner we have been enabled to obtain the services of men who are now doing good work, and who supply the Department with knowledge of useful nature.

Certification of Plumbers.

One of not the least satisfactory results of the year's work has been the establishment of plumbers' classes in various parts of the district. That the public has at last awakened to the fact that a great deal that concerns its health and happiness is left in the hands of the plumber is in itself a favourable sign. If it is necessary to connect a dwelling by means of a dirty pipe with a dirty pipe of larger calibre, it is only right and proper that the connection should be made in the best possible manner, and that all care should be taken to prevent sewer or drain air from entering the building. The latter precaution is very often neglected, with untoward if not fatal results. A Bill for the registration of plumbers is badly wanted. In the meantime, however, many Borough Councils are insisting that none but certificated plumbers shall be registered. The plumbers them-

selves seem anxious and willing to submit to the examination considered necessary to obtain their certificates, and departmental officers have been instructed to give the plumbers' classes every possible assistance. It is to be hoped that during the ensuing year arrangements may be made whereby District Health Officers and inspectors will be able to give systematic courses of lectures on the theory of plumbing. Such classes have been arranged for at Wellington, Wanganui, New Plymouth, Stratford, and Masterton.

Infectious-diseases Hospitals.

Not the least of our difficulties, and the cause of much friction with local bodies, has been occasioned by that section in the Public Health Act which places the responsibility of erecting and equipping infectious-diseases hospitals on the shoulders of the local authorities, instead of on those of the Hospital Boards. At first sight, it certainly does seem ridiculous that the Hospital Boards should have been relieved of this responsibility, especially in the country districts; but at the same time it must be borne in mind that in the larger centres, particularly in the chief seaports, additional accommodation for infectious diseases should certainly be provided to that already existing at the general hospitals. In constant and direct communication with many parts of the world, it is only to be expected that from time to time cases of the rarer forms of infectious diseases will find their way to our ports. At the present time, however, we have practically no hospital accommodation for such cases, nor have we sufficient for cases of minor infectious diseases. Whether provided by the Government or by the Hospital Boards, extra accommodation is badly needed, and the lack of it will some day occasion confusion and that excessive expenditure always occasioned by measures taken in time of panic.

The fact is often overlooked that in the long-run ample accommodation for cases of infectious disease is the truest economy. The recent epidemic of scarlet fever has shown that in cases occurring in some of the smaller houses in Wellington, where the patient could not be properly isolated, it has often been found necessary to prohibit the healthy persons of the same household from attending to their ordinary duties. In addition to the medical expenses, the actual loss of wages, and therefore loss to the community, should be taken into consideration. Nor must the loss to the State occasioned by a meagre school attendance be entirely forgotten.

It has been admitted that the objection of the local authorities to erect infectious-diseases hospitals is a reasonable one, and that the responsibility of so doing should be undertaken by the Hospital Boards. But, at the same time, the burden would not fall so heavily on the former as would at first sight appear. However erected, the hospitals are paid for out of the ratepayers' pockets, and whether paid for by hospital or county rate matters little, provided that the infectious-diseases hospital when once erected and equipped is taken under the administrative control of a Hospital Board. In the smaller towns it would certainly seem unjust to insist that the expenditure occasioned by the erection, equipment, and staffing of infectious-diseases hospitals should be entirely borne by the local authorities, when there is a Hospital Board available whose special duty would seem to be to provide for the sick, irrespective of the actual disease from which they may happen to be suffering.

In spite of these drawbacks, infectious-diseases hospitals have been erected in this district at Wanganui, Patea, and Masterton, and other local bodies have signified their readiness—though, it must be confessed, reluctantly—to fall in with the wishes of the Department on the subject; but we trust that an amendment in the Act placing the responsibility on Hospital Boards will relieve us of much unpleasantness, to say nothing of ill-merited abuse.

Before leaving the subject of infectious-diseases hospitals it might be as well to refer to the question of hospital-sites. On this matter a section of the public are perfectly childish and hysterical. Though it is far from our wish to overlook the sentimental side of the question—for none of us would consider the erection of an infectious-diseases hospital next to our dwelling an unmixed blessing—yet it is perfectly ludicrous to watch the agitation that is got up and fomented by certain persons over a hospital-site. There is always a something at the back of these agitations which very often resolves itself into pounds, shillings, and pence. "A great menace to public health," might sometimes, if very freely translated, be rendered as "a great detriment to the price of a section." Careful inquiries have shown that scarlet fever shows no special tendency to infect the inmates of houses adjoining fever hospitals. Infection is not carried aerially. In our most crowded towns we could obtain hospital-sites a few chains from any dwelling or public thoroughfare, which (small-pox hospitals excepted) would occasion no risk of infection being carried to people in the vicinity. No matter where a hospital-site is chosen, it will not please every one, and some one will always agitate for its being put somewhere else, and some one must gain or lose by the transaction.

The Coming of the Troopships.

On the 1st August, 1902, the troopship "Britannic" arrived in Wellington with 1,018 officers and men of the Eighth and a few details of the Ninth and Tenth New Zealand Contingents. The Principal Medical Officer reported thirty-seven sick, of whom twenty-five were "down" with

measles. A closer inspection made by Dr. Pollen and myself discovered twenty additional men to be sickening for that disease. Arrangements were accordingly made for fifteen of the worst cases to be taken to the Wellington Hospital, and the remainder to Somes Island, where they were put under the charge of Dr. Purdy.

On the 8th August the troopship "Orient" arrived with 635 officers and men of the Ninth and Tenth Contingents. This vessel was ordered into quarantine on account of a case of small-pox on board. The men were subsequently disembarked on Somes Island, where they were detained for four days. The events following the arrival of these troopships are already matters of history, as the unsavoury details have been duly set forth in the report of the Contingents Transport Commission. The matter would not have been brought up again but for the fact that there is little doubt that the return of the troopers aggravated, if it did not occasion, an outbreak of measles which became pretty general throughout the colony.

From the earliest times returning soldiers have brought back to the countries of their birth diseases that they had contracted when serving abroad. At times widespread epidemics followed their introduction to a new soil. War exacts a penalty in some form or other from non-combatants. Happily the South African War, so far as disease is concerned, exacted no greater penalty from New Zealand than a measles epidemic, and possibly a few stray cases of scarlet fever and typhoid. The details of the measles epidemic will be dealt with in another part of this report.

A portion of the public was of opinion that it was the duty of the Department to quarantine the "Britannic," on account of the thirty-seven cases of measles on board. Was this advisable? Was it possible? In the first place, it must be remembered that measles has been epidemic in the colony since 1847. Moreover, the disease has a long incubation period (from two to three weeks), and quarantine would have necessitated an irksome detention of the troopers for an indefinite period. Lastly, it must be understood that under ordinary conditions measles is attended with a comparatively trifling mortality, but under conditions of want and overcrowding it is a very deadly disease. During the siege of Paris, of 215 of the Garde Mobile who took the disease eighty-six, or 40 per cent., died. The mortality among the "Britannic" troopers was bad enough; but how much greater would it have been if 1,018 men had been pent up on board the overcrowded troopship until arrangements could have been made to accommodate them on Somes Island!

Again, as to the possibility of quarantining the "Britannic," where were 1,018 men to be placed at a moment's notice? At the time there was not house accommodation on the island for 150 men. On the arrival of the "Orient" a week later, with only 380 men on board, it took two clear days to get the island ready. How much longer would it have taken to provide for three times that number? The subsequent events justified my decision to empty the ship as soon as possible; and though there was no doubt that infection was carried on shore, yet the harm done was only a tithe of what would have followed had the ship been ordered into quarantine.

It is to be regretted that in my examination before the Transport Commission I was not questioned as to who was responsible for the sick on the "Britannic" on the night of the 1st August. The Principal Medical Officer had an ample opportunity to do so—an opportunity he very wisely neglected to take advantage of. On the other hand, when that officer gave his evidence I had no opportunity of cross-examining him on the subject, although I asked to be recalled after hearing an account of his evidence. However, the Commission could not see its way to grant my request; otherwise I think I should have been able to prove that there was no misunderstanding as to who was responsible. The officers of the Department had quite enough to do that night without undertaking the medical treatment of the sick. Besides, it is surely not usual for Health officers to take over the medical control of the sick on board of one of His Majesty's ships, or, for that matter, on any ships where there are medical officers specially appointed for the purpose.

As may be expected, the quarantining of the "Orient" occasioned a great deal of work, which fell heavily upon the shoulders of this Department. Somes Island had practically to be furnished throughout. Some of the men were accommodated in tents, and the remainder in those buildings not occupied by the sick. Our difficulties were considerably increased by the lack of discipline on the part of the troopers. There was at first no means of transport. The water-supply ran out on the second day. The officers of this Department are much indebted to the Defence Storekeeper and his assistants for the prompt manner in which they provided the daily necessaries.

The months of August, September, and October were almost entirely taken up examining troopers, making arrangements for their examination in various parts of the colony, or attending medical boards at headquarters.

Statistics.

It would scarcely be wise to draw deductions by loosely comparing the vital statistics of this sparsely populated colony with those of older-settled communities. It will be many years before the influence of density of population on the mortality-rates is likely to be felt in this country. Nor must the favourable influence caused by the yearly influx of healthy adults to the colony be entirely overlooked.

It is unfortunate that for the purposes of comparison there are so few data regarding previous epidemics and their attendant mortality. It is true that carefully compiled vital statistics have been kept duting the last forty-three years; but, as notification of infectious diseases has only been really compulsory for the last two years, it is impossible to correctly estimate the actual mortality-rates. There is also another great drawback in compiling statistics. The departmental year expires on the 31st March, and the Registrar-General's report is issued some six months after the expiration of the previous calendar year; consequently it is very difficult to obtain the necessary mortality-returns classified in age-periods. It is true that a report on the vital statistics of the larger towns and suburbs is issued monthly, but these reports are of little value to the Department. The statistics in this report therefore cannot be termed altogether reliable, as, until the publication of the Registrar-General's report for the year ending the 31st December, 1903, they cannot be actually verified.

The loose manner in which some practitioners fill in their death-certificates calls for some comment. The registration of a death as owing to "diarrhœa," "tuberculosis," "influenza," &c., does not convey sufficient information to be of much value for statistical purposes. Tubercular diseases might very well be transferred from the "Constitutional" group to that under the heading of "Specific Febrile" or "Zymotic" diseases, and "tetanus" should also be placed in the latter group instead of being recorded under "Local" diseases.

The Septic-tank System.

During the past year there have been numerous inquiries regarding this system. In this district no less than six boroughs have decided to instal septic tanks in connection with gravitation schemes. In one borough the system has been working well for the past two years. In addition to the above, many small tanks have been erected on the plans issued by the Department as suitable for hotels and private houses.

Owing chiefly to the exaggerated reports of certain interested persons, a section of the public labours under two great delusions as regards the efficacy of the system—viz., (1) as to the amount of sludge formed; (2) as to the nature of the effluent. The popular impression is that the amount of sludge likely to be deposited in the tank hardly requires consideration. This is a great mistake. I know of one tank, capable of holding 100,000 gallons, dealing with sewage of some two thousand persons, where, in the course of eighteen months, the sludge has accumulated to such an extent as to occupy certainly not less than a third of the total capacity of the tank. I believe it is the experience of authorities in the Old Country that the sludge accumulates in these tanks far more rapidly than was at first anticipated by the original exponents of the system. In one tank that came under my notice the accumulation of sludge was followed by a marked deterioration of the effluent. It would be interesting to know if this is the usual experience. As to the nature of the effluent, many persons imagine that the effluent issues from the filter-beds in such a condition as to be almost fitted for potable purposes, and almost every person believes that the effluent is devoid of all forms of pathogenic bacteria. It is almost unnecessary to say that exaggerated ideas like the above cannot but tend to bring the septic-tank system into disrepute. The public expects far too much of it. It was only the other day that I was showing some inquiring Councillors a tank-effluent which, in my opinion, came up to, if indeed it did not surpass, all expectation. Great was the disappointment on detecting a slight odour. "That fit to drink!" Similar disappointment will doubtless be felt by some local authorities when they find that their tanks have to be cleaned out every two years, if not more often.

The tanks erected on the plans issued by the Department are, with few exceptions, working well. The work of some has been greatly handicapped by the "local expert," who has endeavoured to improve upon them, not on all occasions with the happiest results. A better means is needed for distributing the tank-effluent over the coke-beds. There is no doubt, however, that where properly installed and carefully supervised the system produces a far better effluent than that obtained under the old precipitating systems. The working-expenses of the septic tank are comparatively small. It is therefore particularly adapted for the smaller towns of this colony, especially where the filter-beds can be dispensed with and the tank-effluent aerated and distributed by means of broad irrigation.

HOTELS.

Sixty-five hotels have been inspected during the year. Of these, five have been condemned as unfit for the accommodation of the public. Besides the usual sanitary defects in drainage, &c., the water-supply to many hotels is often of a very inferior quality. It is not unusual to find a privy, urinal, or slop-drain perilously close to the unlined well from which the water-supply of the hotel is taken.

Publicans on the whole have readily complied with the requirements of the Department. A few keep their houses very well indeed, and not many shut up their bath-rooms through fear of the water-supply to the bath falling short. On the whole a great improvement has taken place. At no less than six publichouses has the septic-tank system been introduced, and quite a number of proprietors are seeking information on the subject.

QUARANTINE STATIONS.

The inadequacy of the accommodation at Somes Island has already been referred to. The buildings were erected some twenty-six years ago. However suitable they may have been for the immigrants of the early seventies, they are scarcely fitted for the accommodation of the passengers of a modern liner. Indeed, under existing conditions a grave scandal would in all probability be the result of attempting to quarantine sick and healthy persons on the island. The hospital is only 40 ft. from the first-class quarters; it is out of date, and the sanitary arrangements are defective. The first-class are in fair repair, but, at the very most, could not accommodate more

than forty persons. The second-class quarters are fallen into disrepair, there are bunks for about fifty persons, but the rooms are too small and almost entirely unfitted for their purpose. For some time past the third-class quarters have been used by the Agricultural Department as stables and granaries, and are therefore unfit for occupation.

The water-supply is totally inadequate. At the present time there are only about 7,000 gallons on the island—about three days' supply for a hundred persons. The 400-gallon tanks attached to the building are scarcely sufficient to supply the closets with water for sanitary purposes. The large concrete tank, which should contain some 7,500 gallons, is leaky, and would, at the very most, hold only half that amount.

The wharf is in an utter state of disrepair; many of the piles are so rotten that tug-masters are afraid to approach it in rough weather. One pile underneath the crane has already gone.

The following improvements are badly needed at the station: (1) An additional building for the accommodation of not less than two hundred persons; (2) a twelve-bed hospital, well removed from the main building; (3) additional tanks for the storage of not less than 20,000 gallons of water; (4) a new wharf.

Sanitation of Maoris.

The Maoris are distributed throughout the Wellington District as follows: Wairarapa, 837; Taranaki, 2,190; Wanganui, 1,689; Manawatu, 1,723; Rangitikei, 459; Wellington, 264.

The Native portion of the population has a very material influence on the sanitation of the district. In the Wairarapa, Wanganui, and Waitara districts typhoid is endemic in many of the pas.

Last December a smart epidemic of dysentery broke out at Papawai, and two deaths were recorded. At my suggestion the Native Department sent a nurse to Papawai to see that Dr. Bey's instructions were carried out, and to teach the Native women the art of preparing food for the sick. Dr. Bey was very pleased with the result of the nurse's efforts, as many of the Native women took an intelligent interest in her instructions. Though not quite satisfied as to the cause of the epidemic, there is every reason to believe it was caused by some article of food. It is difficult for the pakeha to get to the bottom of some of the Native mysteries. There is no doubt that a great deal of decomposed fish is sent from Wellington to Papawai. Fortunately I was able to seize two consignments which were literally putrid.

In the early part of the year a few cases of typhoid were reported among the Maoris in a pa near Waitara.

At Waitotara Dr. Harvey has reported several cases of scarlet fever among the Natives.

I believe Dr. Pomare has drawn attention to the advisability of having deaths among the Natives registered. This is certainly very necessary.

Much good would result from sending pakeha nurses among the Maoris to instruct them in the rudiments of sanitation and in nursing of the sick.

School-inspection.

Thirty-four schools have been inspected during the year. Of this number I have personally examined and reported on eight. Twenty-five have been disinfected.

But for the limited allowance of cubic space, the sanitation of schools in the larger centres is good. In last year's report attention was drawn to the necessity of increasing the cubic space; the Education Department decided that 200 cubic feet for the future should be provided for. In a large school inspected at the beginning of this year only about 80 cubic feet of air-space was available for each scholar. It is seldom that inspection reveals such a state of affairs, but it is not unusual to find class-rooms where the allowance is barely above 100 cubic feet per scholar.

The ventilating arrangements of class-rooms also occasion much trouble. Natural means of ventilation cannot be relied on; and the finances of Education Boards will not warrant the adoption of artificial methods.

In the up-country schools there is considerable room for improvement. In many instances the buildings have been erected on cold, swampy ground, which is bad for the children whether in the school or the playground. In some of the schools a very limited amount of cubic space is provided, and the ventilating arrangements are very primitive. The ordinary country schools are provided with privies over huge excreta-pits; these pits are rarely cleaned out. The urinals are seldom properly drained. Many School Committees have expressed themselves as willing to do away with excreta-pits, but very truly say that it is extremely difficult to get reliable persons to attend to the regular removal of the pans.

Taking the year all round, there has been a considerable improvement in the general sanitation of schools, the Education Boards having readily complied with the suggestions of the Department.

On plans devised by Messrs. Fleming and Turnbull, Inspector and Architect respectively to the Wellington Education Board, excellent schools have been erected at the Lower Hutt, Levin, and on the Wellington Terrace.

Infectious Diseases, and School Attendance.

There is no doubt that a great deal of infectious disease has been disseminated by school attendance, but there is evidence that schoolmasters have been very much more careful during the past year in preventing the school attendance of children from infected houses. Unfortunately in up-country districts a schoolmaster very often incurs odium by excluding children on the suspicion that an infectious disease exists in their homes. In many instances there is no medical man available to decide the question, and, if the children excluded should happen to be those of a member of the local School Committee, considerable trouble arises; in fact, the unfortunate master is put to so much annoyance that he is inclined after one experience to leave to others the enforcement of section 87 of the Education Act. And who can blame him? Much trouble might be

avoided by the schoolmaster reporting his suspicions to the School Committee (or the nearest available member thereof). The latter could request the local authority to send a medical man to the suspected premises (*vide* "The Public Health Amendment Act, 1902") to ascertain whether or not infectious disease actually existed. Pending the doctor's report, the Committee should prohibit children from the suspected house attending school.

School-closure.

Only four schools have been closed during the past year. Although a District Health Officer has no power to enforce closure, I have experienced no difficulty in persuading the Committee to close a school when I have considered such a precaution necessary. In the larger towns, where children meet upon common playing-grounds, very little advantage is gained by closing a school as a precaution against the spread of an epidemic.

Factory-waste.

A satisfactory means of disposing of these wastes, particularly those from dairy factories, has not been obtained. Many factories are situated on the banks of rivers into which the comparatively harmless washings can be discharged; but where a river is not available, and the factory-waste is allowed to stagnate on land adjoining the buildings, a horrible nuisance is occasioned. Septic tanks and filter-beds have been erected to deal with the drainage of more than one factory, but they cannot be described as an unqualified success; apparently the drainage is too sterile to enable the organisms to gain a hold. Broad irrigation is undoubtedly the best means of disposing of these wastes; but, unfortunately, such a system requires more attention than the factory-hands are willing to bestow on it, or the directors to enforce. Again, in some instances the factories have been erected on very small sections of land, where it is impossible to dispose of the wastes without infringing on the rights of the neighbouring property-owner.

The Removal of Nightsoil.

In many towns the removal of nightsoil is left to contractors, who are authorised by the respective Councils to charge householders a certain sum each week for removal. This system does not work satisfactorily. If the householder neglects to pay the contractor, the latter retaliates by refusing to remove the nightsoil. The result is obvious. It is always far better for a Council to undertake the work, and pay for it out of the general rates. The work is better done, it costs less, and is under more responsible supervision. In the Borough of Petone this work is admirably carried out under the supervision of the Borough Engineer. The removal costs a trifle over 3d. per pan.

Scarlet Fever.

The number of cases of scarlet fever notified in the district during the year ending the 31st March, 1903, was 1,143, as compared with 185 in the previous year. The number of deaths registered from this cause was only 9, compared with 2 in 1901–2.

Cases notified in Various Parts of District.

Wellington and suburbs, 780; Wairarapa district, 127; Rangitikei district, 62; Manawatu district, 33; Wanganui district, 53; Taranaki district, 88. Of the 780 cases notified in the city and suburbs, 521 occurred in the city alone, with 4 deaths, as compared with the 90 cases and 2 deaths of the previous year.

	Cases notified.	Deaths.	Case-rate per 1,000.	Case-mortality per Cent.
District	1,143	9	5·6	0·7
City	521	4	11·3	0·7

In the city the epidemic followed on that of last year, when 81 cases were reported; but, as may be seen in the accompanying chart, it was not until the last week in December that the disease assumed epidemic proportions, which were practically maintained until the last week in February.

Age and Sex Distribution.

The following table shows the case and mortality rates for the year. It will be noticed that, as is usually the case, the disease has attacked more females than males.

Males.				Females.			
Age-period.	Cases.	Deaths.	Case-mortality per Cent.	Age-period.	Cases.	Deaths.	Case-mortality per Cent.
0–1	1	..	..	0–1	1	..	..
1–5	17	1 (3 years)	5·9	1–5	15	1 (2 years)	6·7
5–10	34	..	..	5–10	59	1 (5½ yrs.)	1·7
10–20	73	..	..	10–20	120	..	..
20 upwards	55	..	..	20 upwards	72	1 (22 yrs.)	1·4
Ages unknown ..	39	..	..	Ages unknown ..	35	..	..
All ages	219	1	0·45	All ages	302	3	0·99

The unusual proportion of cases among persons from ten years upwards will be noticed. But this is undoubtedly due to the fact that, New Zealand being until recently so free of the disease, a

larger portion of the adult population is susceptible to scarlet fever than those of similar age in the Old Country.

Scarlet Fever and School Attendance.

One hundred and ninety cases, or 34 per cent. of the total cases, occurred in children of school age—from four to fourteen years of age. There is, however, nothing to show that the disease was spread by school attendance. In fact, the notifications actually increased during the summer holidays. The records of cases during the winter holidays were not kept so exactly, but very few cases were being notified about that time, and many medical men did not fill up the ages in the notification forms.

Dissemination of Infection by Milk.

Throughout the year attention was paid to the possibility of this means of disseminating the disease, and the dairies supplying milk to the city were carefully watched. It was not until the 24th December that anything happened to show suspicion on milk as the means of carrying infection. On that date seven cases were notified in houses which were all supplied with milk from the same dairy. Inspector Watson was accordingly despatched to the farm, where he found that one of the employees who had been milking until quite recently had been ill with a sore throat—he was subsequently found to be "peeling." Another employee developed a rash and sore throat on the following day. The milk was seized, and the dairy closed that afternoon. Altogether fourteen cases were subsequently traced to this dairy.

"Return Cases."

Scarlet fever has reappeared in fifteen houses after disinfection, a proportion of 3·09 per cent. to the total of houses infected. It would be misleading, however, to term all these sixteen cases "return cases," as in no less than four instances infection was evidently derived from the primary case, the second case having developed within a week of the removal of the first patient to the hospital. In six instances the second cases have been reported within the first month, and before the first patient returned from hospital, so that infection may have been obtained from the same source. The five remaining cases may undoubtedly be termed "return cases" in the true sense of the word, for they developed within a few days of a patient's return from hospital—a proportion of 1·3 per cent. of the total cases.

Mode of Dissemination.

There is no doubt that a great deal of scarlet fever was spread by ignorance, and in many cases by the carelessness of persons who should have known better. Allowances must be made for ignorance, but nothing can be urged on behalf of educated persons in charge of infectious cases who allow the latter to be exposed in public places or vehicles, or on behalf of a dairyman who supplies milk from an infected dairy. Nor is there any excuse for medical men who do not inform their patients when they are suffering from infectious disease. A few judicious prosecutions have had a very salutary effect.

MEASLES.

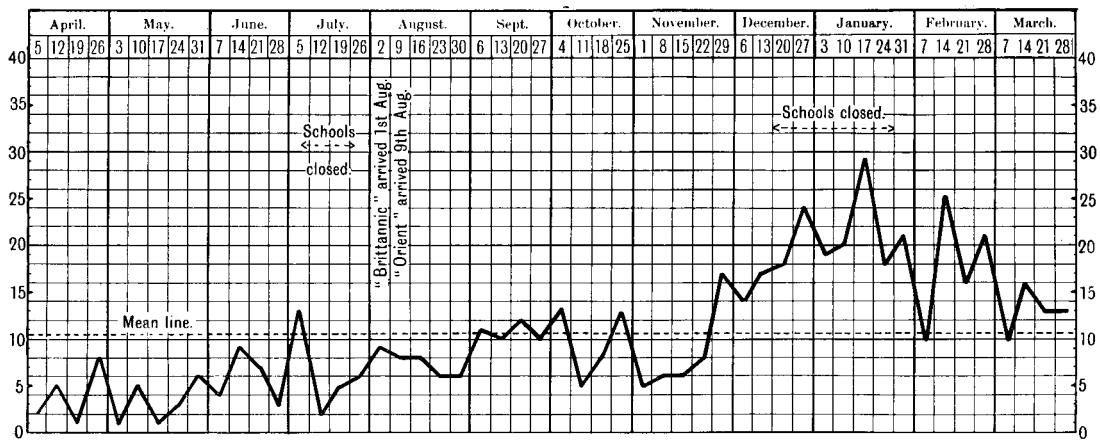
Between the 1st August and the 30th November 1,689 cases of measles were notified in the city. Since 1893, when nearly one thousand cases were reported, the city has been singularly free of this disease, and there is no doubt that a sufficient proportion of susceptible persons had accumulated in this interval to favour the spread of the disease when once introduced. In this country, unfortunately, there are no data to show how often these epidemic cycles recur, but from what I can gather from some of the older practitioners of the colony, measles assumes epidemic proportions about every seven years.

The course of the epidemic may be conveniently followed in the accompanying chart.

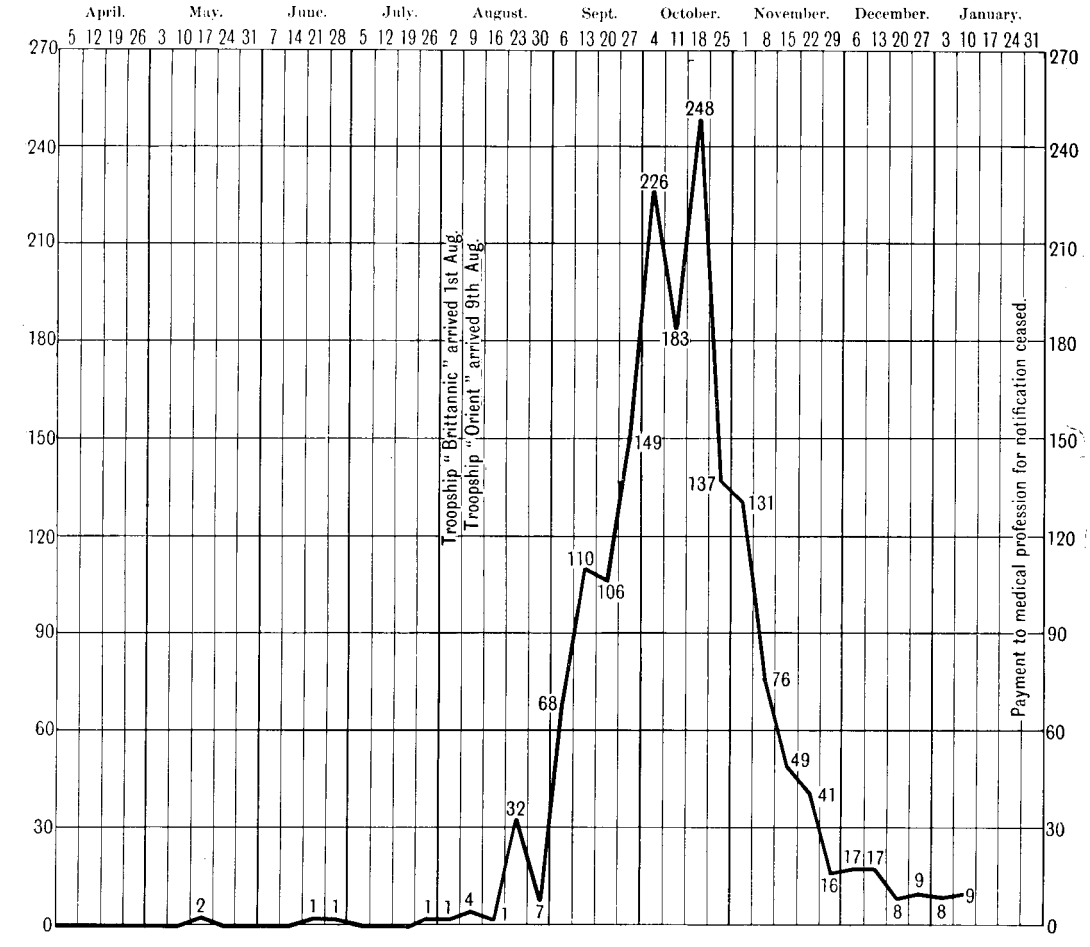
In another part of this report mention is made of the probability that the original infection was introduced by returned troopers. Of this there is little doubt, but at the same time it must be noted that four cases of measles were reported in the city during the second week of August, which could scarcely have derived infection from the disbanded troopers. It is possible, therefore, that the city was on the eve of an epidemic independent of the arrival of the troopships. In the third week of August, however—three weeks after the arrival of the "Britannic"—thirty-two cases were notified. On the fourth week the cases notified were only seven. The "Orient" troopers were released from quarantine on the 13th August; three weeks afterwards the cases rose to sixty-eight. From that date (4th September) onward cases gradually increased, with two slight intermissions, until the third week in October, when 248 cases were notified in the city. From that date the epidemic declined very rapidly. During the last week in November only sixteen cases were reported.

Mortality.

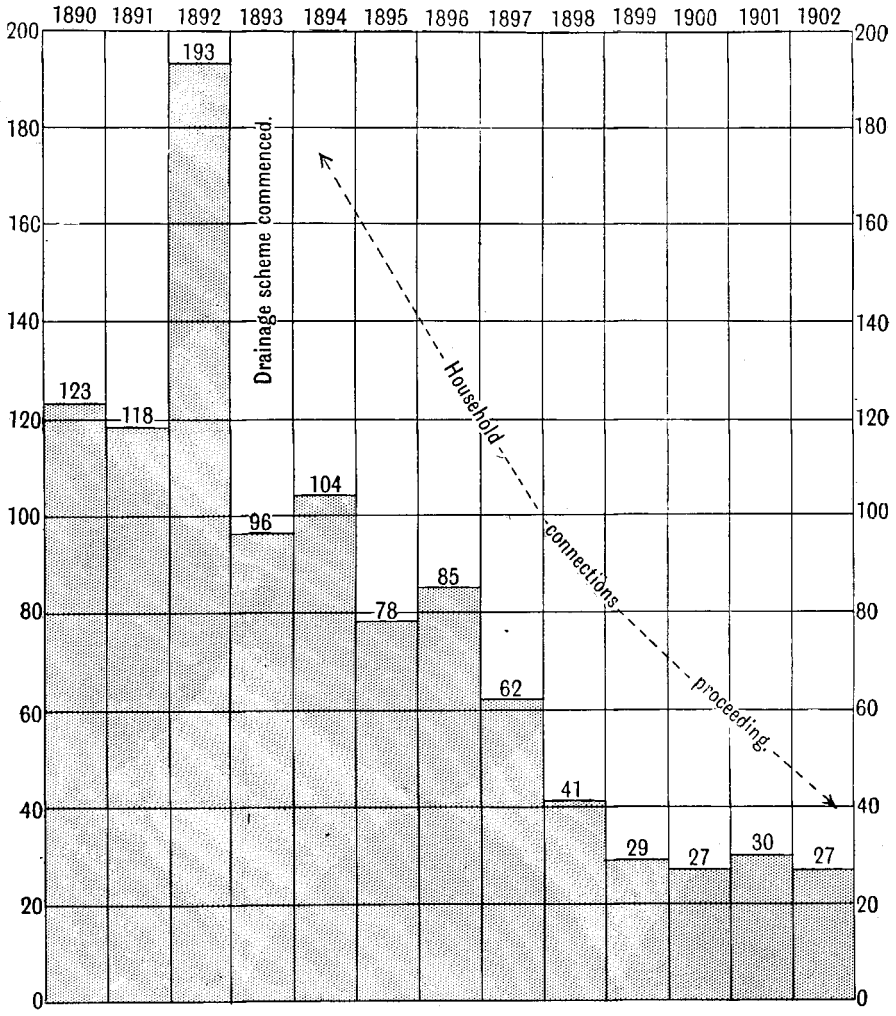
The heavy mortality among the "Britannic" troopers (21·6 per cent.) occasioned much alarm. It was feared that the disease was of an extremely malignant type, and that considerable mortality would be occasioned in the city and district. Fortunately, however, such did not turn out to be the case—in fact, the mortality-rate as compared with that of the United Kingdom goes to prove that the epidemic was an extremely mild one, the death-rate at all ages being only 2·6 per 1,000. The total deaths in the city recorded between the 1st August and the 31st December amounted to forty-six. Throughout the whole colony 134 deaths were registered, as against 525 in 1893.



Scarlet Fever, 1902–1903.



H. 31. Measles. [*Face page 42.*



H.—31. Enteric in Wellington, 1890–1902. [*Face page 43.*

The following table shows the deaths in Wellington City for the months from August to December, inclusive, at the various ages given:—

Months.	Ages.						Total.
	0–2.	2–5.	5–10.	10–15.	15–20.	20–30.	
August ...	...	...	...	...	...	11	11
September	1	...	...	...	...	1	2
October ...	9	4	5	...	...	1	19
November	5	2	...	...	..	...	7
December	5	...	1	1	...	...	7
	20	6	6	1	...	13	46

The large adult mortality will occasion comment. Of the thirteen deaths recorded, twelve were those of "Britannic" troopers, in whom septic pneumonia developed within a few days of contracting the primary disease.

Owing to the fact that some of the notifications were so loosely made, I am unable to classify the mortality at different age-periods in porportion to the cases notified; but it will be observed from the table that, despite the large adult mortality, 56 per cent. of the deaths were of children under five years of age, and 41 per cent. were of children under two years. As a rule 90 per cent. of the deaths from measles occur in children under five years of age. It would be difficult to show more conclusively how overcrowding and insanitary surroundings, combined with carelessness as to exposure, may turn a comparatively mild disease into one that exacts a heavy mortality.

In spite of the preponderance of adult mortality, the death-rate (2·6 per cent.) compares very favourably with death-returns in the United Kingdom, which vary from 1·5 to 3·6 per cent. at times, even rising to 10 per cent. If the cases notified among the troopers, and the attendant mortality were eliminated, the death-rate would have amounted only to 1·8 per cent.

Fifty-seven deaths from measles were reported in the entire district. This gives a mortality of 3·3 per cent., but against this it must be remembered that the statistics are not so reliable for the large area as for Wellington City alone. There is no doubt that many cases of measles that occurred in the up-country districts were not notified.

Diphtheria.

The number of cases of diphtheria which were notified in the district was 169. Of these, eighty-nine occurred in the City of Wellington. The total number of deaths registered in the district was eight, of which two occurred in the city. The death-rate, therefore, of the whole district amounted to 4·7 per cent., that of the city being 2·2 per cent.

There is nothing special to be recorded about this outbreak; the majority of cases occurred in the months of June, July, August, and September. There is no doubt that the disease was spread by school attendance. On examining the scholars at one school which I had reason to suspect, I discovered one child with diphtheritic membrane actually in the throat, and out of the swabs taken from some 170 children three gave bacteriological evidence of Löffler's bacillus. All the houses where the disease showed itself were carefully examined. In many insanitary conditions were found and rectified, such as faulty drainage arrangements, stagnating water, and absence of ventilation under the building.

Enteric Fever.

Seventy-one cases of enteric fever were notified; of these, twenty-four occurred in the City of Wellington. The total number of deaths registered in the district was ten; of these, six occurred in the city. The death-rate in the city was thus 25 per cent., and for the district 14·08 per cent.

The four deaths recorded in the city occurred in adults between the ages of eighteen and thirty-eight.

The houses where the disease occurred were carefully examined. Though in the majority of cases insanitary conditions were found, yet only one case calls for special comment. In an up-country town, where typhoid had been particularly non-existent, a case developed in the person of a child who, on the Inspector making the usual inquiries, it was found had recently been wearing some undergarments belonging to a trooper lately returned from South Africa. This trooper had had enteric fever when on service, and brought back to the colony some of the very clothes which he had worn when convalescing. These clothes he gave to his brother's child. This is a strange coincidence, if nothing more.

Typhoid in the City.

Typhoid was not a notifiable disease until the inauguration of this Department three years ago, and we have therefore no reliable data as to the attack-rate on the population. Through the courtesy of Dr. Ewart, however, I have been able to obtain some very interesting data from the case-books of the Wellington Hospital. In an accompanying chart is shown the admissions to the Wellington Hospital for the thirteen years 1890–1902, inclusive. The diminution in cases admitted from the date of the installation of the drainage scheme is very striking, and a tendency to decrease is shown as the drainage system is extended. In the year 1892—immediately prior to the inauguration of the drainage scheme—193 cases were admitted to the Hospital. When this

diminution is considered in conjunction with the rapid increase of population it is still more significant. In 1890 the population was 31,021, the attack-rate being nearly 4 per 1.000; in 1891 it was 3 per 1,000; in 1892, 5 per 1,000; in 1894—one year after the installation of the drainage scheme—2·9; in 1896, 2·2. Since that year it has gradually decreased, until in 1902 the attack-rate was only 0·6 per 1,000. This, it must be remembered, applies to the Hospital statistics only, and if it had been possible to obtain the record of the number of cases that occurred in the city there is little doubt that the diminution would be still more striking.

Diarrhœal Diseases (excluding Typhoid).

Eighty-seven deaths from diarrhœal diseases were notified in the district. Of these, seventy-two occurred in children under five years of age. In Wellington City alone nineteen deaths occurred at this age-period.

Tubercular Diseases.

The following deaths occurred from tubercular disease: Tabes mesenterica, 10; tubercular meningitis, 19; phthisis, 118.

The death-rate from phthisis in the city was a large one, no less than fifty-eight deaths being recorded, showing that one death in nine was due to this disease, or if all tubercular diseases are included the proportion amounts to one death in eight.

Only 169 cases of tubercular disease were notified in the whole district during the year. Of course, this is not naturally in proportion to the number of deaths registered; but the Department has decided not to rigorously enforce notification, provided that the medical man in attendance is satisfied that all possible precautions are being taken to prevent the spread of the disease. A certain section of the public are inclined to look upon a person suffering from phthisis as a species of pariah. For this reason it has been considered better to leave notification largely to the discrimination of the practitioner.

Wellington City.

Population, 45,419; birth-rate, 25·29; death-rate, 12·58; deaths from infectious diseases—typhoid 6, phthisis 58, other forms of tubercular disease 12, diphtheria 2, scarlet fever 4, measles 46.

If the sanitation of the city has not been improved during the past year, it is certainly not due to the want of thorough and systematic inspection. Besides those made by the Inspectors in the employ of the Corporation, no less than 880 inspections were made by the Department. These inspections revealed nuisances and defects of varying kinds, which with few exceptions were promptly rectified. This satisfactory state of affairs is almost entirely due to the good understanding which exists between the executive officers of the Corporation and the Department. There is now none of that divided authority in the sanitary administration of the city which has in the past been so harassing to the public and annoying to the officials concerned.

Until the beginning of September, the Inspectors of the Corporation and of the Department performed their duties independently of each other. This practice led to much confusion, annoyance, and loss of time, for on occasions, and within a short period, the same ground would be gone over by Inspectors under the two distinct authorities. Naturally, a householder who had been reproved in the morning by a Corporation Inspector for a breach of the city by-laws did not like to be rebuked in the afternoon by a departmental Inspector for a breach of the Public Health Act. In a similar manner, confusion arose in carrying out disinfection. Disinfection at the best is not a pleasant process, and some householders object to have their premises disinfected twice. On the absurdity of the position being represented, the Corporation decided to allow the Department the services of two of its Inspectors. This decision was most opportune, for at the time the epidemic of fever was at its height and it would have been difficult for either the Corporation or the Department to do independently all that was necessary to cope with the epidemic. The arrangement worked very well. With four Inspectors available (two municipal and two departmental), inspection and disinfection were carried out promptly and, there is every reason to believe, efficiently. The Department suggested that the arrangement should be made permanent. Finally it was agreed that the Corporation should undertake all sanitary inspection and disinfection, and remedy all nuisances notified by the Department or otherwise. The Corporation also agreed to place the services of any of its Inspectors at the disposal of the Department when they were required by the latter for any special purpose. The Department agreed, on its part, to undertake the inspection of infected houses, to make arrangements for the removal of infectious cases to hospital, and to furnish the Corporation with a monthly report upon the general sanitation of the city. This system is working well, and is likely to work admirably. I take this opportunity to thank the Mayor and Town Clerk for their cordial assistance, and for their many valuable suggestions relating to the sanitation of the city.

Hospital Accommodation.

Two hundred and seventy cases of scarlet fever, or a proportion of 48 per cent., were admitted to the Hospital during the year. The want of sufficient hospital accommodation was very often acutely felt, and it is not too much to say that had such accommodation been provided the epidemic would not have assumed such proportions.

Some two hundred of the 486 stricken houses contained less that five rooms. It is, of course, next to impossible to isolate infectious cases in such houses, and the only chance of preventing the disease spreading to the other inmates lay in the prompt removal of the patient to the Hospital. Unfortunately this could seldom be done.

It is true that during the year additional accommodation has been provided at the Hospital for scarlet-fever cases. A large ward has been erected capable of holding twenty-seven cases; but even this, in addition to the twelve beds at Berhampore, is not enough. An infectious-diseases

hospital, with accommodation for not less than fifty beds, is urgently required for the city and suburbs.

At the end of the third week in December the infectious-diseases wards were full, fresh cases were being notified, and it was very evident that additional accommodation was urgently required. The Mayor kindly authorised the erection of additional accommodation at Berhampore. Being Christmas week, it was almost impossible to obtain workmen or material, but owing to the Town Clerk's cordial assistance two tents capable of holding seventeen persons were erected and equipped within the space of three days, and convalescent male cases were drafted into them, thus relieving the congestion in the wards. During Christmas Day these convalescents amused themselves by flooring the tents and making them generally comfortable. There were a few complaints as to the tents being cold, but otherwise this improvised accommodation answered its purpose very well. With the advent of cold weather the tents were pulled down.

Drainage.

The 880 inspections revealed minor defects in house-drainage, which were in most cases promptly rectified. As a whole the house-drains are well laid, and the plumbing is satisfactory.

It is to be regretted that so many "wash-out" closets are being fitted in new buildings. The Council should insist upon a more modern form of closet.

Refuse-removal.

In last year's report mention was made of the unsatisfactory manner in which the scavenging of the city was performed. This is due to the fact there is no depot where rubbish can be disposed of. It is all very well to tell a person that he must not allow stable manure to accumulate on his premises, but it is difficult to proceed further when there is no place within reasonable distance of the city where it can be deposited. A few years ago the Manchester Corporation acquired waste land in the neighbourhood of that city for the disposal of its refuse. The refuse has so improved the quality of the land as to make it of first-class agricultural value. Would it not be possible for the Corporation to try the same experiment with some of the sand-wastes in the neighbourhood of this city?

A certain amount of refuse is put through the destructor, but a plant of more modern design is urgently needed.

Condemned Buildings.

Twelve houses were condemned as unfit for human habitation, and two stables were also condemned as insanitary.

Hotels.

Of the thirteen hotels inspected, four were condemned. Of the remainder, some are in such a state as to be hardly worth repairing.

During the ensuing year considerable attention will be given to the hotel accommodation in the city.

Disinfections.

In almost every one of the 380 disinfections formalin was the material used; and, so far as can be seen, the results were satisfactory, only three "return" cases being reported.

In March last I wrote to the Corporation suggesting that the charge of 10s. for disinfecting premises should be reduced to 2s. 6d. per room, or, better still, that no charge be made. Formalin used in disinfecting 223 houses cost £18 5s., so that a charge of 1s. 6d. per room would more than cover the actual cost of material. The present charge is much too high; it falls heavily on the poorer classes, and as the work is done in the interests of the public the very smallest charge, if any, should be made.

Food.

The manner in which some articles of food are stored calls for comment. With few exceptions, inspections of butchers' shops, bakeries, and dairies showed the proprietors to be fully alive to the importance of cleanly premises; but such was not the case with the

Fruit-shops.

In concluding his report upon forty-seven of these places, Inspector Watson states that, whereas the celestial is in the habit of displaying his goods in a tempting manner, he makes no attempt to keep clean that part of his premises not exposed to the public eye. I quite agree with the Inspector that stringent by-laws should be drawn up dealing with fruit-shops, as at present they are kept in a very unsatisfactory manner.

Lodginghouses.

On the 30th March I submitted, for the consideration of the Corporation, Inspector Watson's reports upon the sanitary condition of twenty-four of these houses. Of these, six were condemned. Having inspected these places personally, I was in a position to confirm the Inspector's statements, and with few exceptions to indorse his recommendations. The majority of these houses do not strictly conform to the conditions laid down in the city by-laws with regard to "common lodginghouses," as many accommodate permanent rather than casual boarders.

With few exceptions, the sanitary condition of these houses was extremely unsatisfactory. The rental of a house in good repair is evidently beyond the means of many of the lessees; consequently any fair-sized building not in a condition to let to a private person, and therefore of low rental, is likely to fall into the hands of the lodginghouse-keeper. In very few instances was the regulation with regard to the cubic air-space (500 cubic feet per lodger) conformed to. I recom-

mended the Corporation not to enforce the by-law too rigorously, especially in houses which were well kept, as it would only result in driving the evicted lodgers into other tenements, probably less sanitary.

In my opinion the regulation that the walls of rooms be plastered is too stringent, but that with regard to separate privy accommodation for the sexes should be enforced.

Owing to the scarcity of house accommodation in the city, and the high rentals obtaining, I suggested to the Council the advisability of erecting "model lodginghouses." As a means of education, the undertaking might prove of value, and at the same time it would not be entirely unremunerative.

WANGANUI.

Population, 7,334; death-rate, 11·1; infectious diseases, 233; notified deaths, 82—under one year 24, under five years 10, five years and over 48; deaths from infectious diseases, 17—measles 5 (all under five years), phthisis 6, tabes mesenterica 1, tubercular meningitis 4 (3 under five years), septicæmia 1.

The sanitary inspection of this town has been under the immediate supervision of this Department since the 1st May, 1902. Owing to the exertions of Inspectors Kendall and Schauer during the past year, the sanitary condition of the borough has been considerably improved; but despite this, although there has been nothing of the nature of an epidemic, the number of cases of typhoid notified have not decreased. Typhoid has been practically endemic in Wanganui for the past forty years, and the disease periodically manifests itself in epidemic explosions. There has, however, been nothing in the shape of a typhoid epidemic in Wanganui since 1897, when the source of a smart outbreak was traced to an infected dairy in the suburbs.

There is, however, one particular factor which greatly militates against the sanitation of Wanganui, and that is the unsatisfactory manner in which nightsoil and rubbish are removed from the borough. Although a drainage scheme has been in existence in Wanganui for the last thirty years, no less than 780 pans of nightsoil have to be removed weekly by the contractor, at a cost of £525 per annum. Owing to the limited water-supply, the Council has been greatly handicapped in its efforts to extend the drainage scheme. Until the Okehu water scheme is completed, it will be impossible to connect all the houses in the borough with the drainage system. Nightsoil is removed from the borough weekly, the contracter charging per receptacle. If occupiers of houses neglect to pay the contractor his well-earned dues, the latter retaliates by refusing to remove the receptacles. The results of this practice are obvious. There is no doubt that the removal of nightsoil could be more efficiently and economically performed if it were undertaken by the Corporation authorities. Unfortunately the Council cannot see this. The same may also be said of the removal of rubbish. The nightsoil contractor has the right to remove rubbish from premises at a cost of 1s. 6d. per cubic yard, but apparently his services are seldom used. In many instances the occupiers make their own arrangements for the removal of such refuse. In all cases that have come under their notice the Inspectors have insisted on a prompt removal of accumulated rubbish, but it would be far better for the Corporation to undertake the periodical removal of rubbish, rather than leave it to the discretion of a private individual or the peremptory demand of an Inspector.

Drainage.

As mentioned in a previous report, the "combined system" of drainage is in vogue in the borough; the large sewers that this system entails consequently become very foul in dry weather. Many complaints have been made concerning the nuisance caused by these sewers where they discharge into the river. There are twenty-eight in all. Unfortunately there is not sufficient fall for an intercepting sewer to be laid to take the drainage so that it would be discharged further down the river. The only way, therefore, to do away with the present nuisance is to carry the sewers down below the low-water mark. This the Council has undertaken to carry out.

Water-supply.

The supply from the Westmere and Victoria Lakes proving entirely inadequate, the Council has decided to obtain, at an expenditure of £60,000, a supply from Okehu, eighteen miles distant from Wanganui. Not only has the quantity from the above-mentioned lakes seriously lessened during the past five years, but the water has also deteriorated considerably in quality, a recent analysis showing it to be largely impregnated with vegetable matter. The shortage of water rendered it imperative for the Council to limit the water-supply to an intermittent service for about thirteen hours and a half out of the twenty-four. Analysis of samples of the Okehu water shows that the town is shortly to be supplied with excellent drinking-water.

Plumbing.

It is a pity that the recent by-law dealing with the licensing of plumbers and drain-layers has not yet been put into operation. A considerable improvement in the general sanitation of Wanganui would follow the enforcement of this by-law, as much of the plumbing and drain-laying is performed in a very primitive manner. The following is Inspector Kendall's epitome of work done during the year: Inspections made, 1,356; inspection of hotels, 11; inspection of butchers' shops, 7; inspection of bakers' shops, 11; requisitions served, 36; improvements effected, 33; infectious diseases cases visited, 160; complaints received, 26; nuisances abated, 25; disinfections performed, 50; cabs disinfected, 12; water-samples collected, 4; patients removed to hospital, 10.

Infectious-diseases Hospital.

Appended is a photograph of the infectious-diseases hospital which was erected by the Wanganui Borough and Wanganui and Waitotara County Councils.

New Plymouth.

Population, 4,405; death-rate, 9·7; deaths from infectious disease—phthisis, 5 (all over twenty); enteric fever, 1; tetanus, 1.

There has been a very marked improvement in the sanitation of this borough during the past year. Three hundred and twelve inspections have been made by Inspectors Kendall and Schauer. In the majority of instances their requisitions were promptly attended to.

The borough has decided to adopt, at a cost of £8,750, a modern system of drainage in connection with septic tanks, the effluent to be discharged into the sea near the outfall of the Huatoki Stream.

The present system of nightsoil-removal is performed in a fairly satisfactory manner, and the borough is about to undertake a better system for the removal of refuse from the more-populated portions of the town.

New Plymouth has been provided with an excellent water-supply for the last fifteen years.

Stratford.

Population, 2,027.

This town is provided with an excellent water-supply.

The new drainage system in connection with septic tanks is being rapidly pushed on, and considerable sanitary improvement should be expected during the course of the next year.

Inspector Kendall makes weekly visits to this town.

Eltham.

Population, 1,100.

The ratepayers of this borough have decided to raise a loan of £14,985 for the purpose of supplying the town with water and drainage.

Inspector Kendall visits this town weekly.

Inglewood.

Population, 1,100.

Inglewood has only just been incorporated as a borough. The Council has decided to adopt a system for the weekly removal of nightsoil.

Hawera.

Population, 2,131.

This borough has been provided with an excellent system of water and drainage for the past three years. Considerable extensions to the drainage are to be made during the ensuing year.

Marton.

Population, 1,101.

Owing to the exertions of Inspector Wilson, considerable improvement has been made during the year in the sanitation of this borough, particularly with regard to places where food is prepared.

At a cost of £1,700 the ratepayers have decided to have the town creek diverted, but not in the manner that I suggested. In my opinion the culverts provided in the plans will not be large enough to deal with a heavy rainfall; but as the loan was not raised under the Public Health Act it has nothing to do with the Department.

Rangitikei District.

Inspector Wilson has also done very good work in this district, for which he has been appointed by the Marton Borough, Rangitikei County Council, and Lethbridge Town Board.

Unfortunately there has been little improvement in the sanitation of Mangaweka—a township of seven hundred inhabitants, under the administration of the Rangitikei Council—the ratepayers having neglected to carry a loan for the purpose of adopting a simple system for water-supply and drainage.

Some improvement has been made in the Townships of Hunterville and Taihape, which are also under the administration of the Rangitikei County Council.

Feilding.

Population, 2,298.

The ratepayers have decided to adopt a system of drainage at a cost of £13,000. This is very necessary, although the sanitation of the borough is not by any means as bad as it is currently reported to be. The chief defect in the sanitation has been due to the stagnation of slop-waters, which are perforce discharged into the water-tables in the main streets.

Palmerston North.

Population, 6,534; deaths, 81; death-rate, 10·8; infectious diseases notified, 64; deaths from infectious diseases—phthisis 7, tubercular meningitis 1, typhoid 3, diphtheria 1, septicæmia 1.

Unfortunately there is very little sanitary improvement, if any, to report for the past year in this town. The borough has recently decided, at a cost of £20,000, to extend the drainage scheme. The drainage is to be received into a septic tank, from which the effluent will discharge into the Manawatu River. It is to be hoped that advantage will be taken of the new drainage to put the old house-drains in order and insure their proper ventilation.

Inspectors Perry and Dorizac have been recently appointed by Palmerston, Feilding, and the surrounding local bodies.

PAHIATUA.

Population, 1,209.

The ratepayers have decided to instal, at a cost of £10,000, a system of water and drainage in connection with septic tanks.

MASTERTON.

Population, 3,949.

Five hundred and sixty-three inspections have been made in this town during the past year.

Some two years ago the borough was provided with an excellent water-supply.

A certain portion of the borough is connected with a drainage system. The drainage is received into septic tanks, the effluent being discharged into the subsoil or by broad irrigation over a 15-acre paddock. The latter system is answering best. Masterton was one of the very first towns to adopt the septic-tank system, and the results have naturally been watched with interest. On the whole the tank is working well, but the sludge has accumulated rather more rapidly than was to be expected. The effluent varies considerably. On some occasions when I have inspected it it came up to all expectations; at others it was not so good.

Very great improvement has been made in the sanitation of this borough during the last six months. The Council have lately decided to considerably extend the drainage system. The Council have also decided to erect an infectious-diseases hospital in conjunction with the Masterton County Council. Owing to a mild outbreak of scarlet fever, a cottage was obtained in the borough for the reception of scarlet-fever cases, and it has been more or less in use for the past six months.

MASTERTON COUNTY.

The Masterton County has also erected a small building for the reception of scarlet-fever cases. I believe I am right in saying that this is the only instance where a county has, at its own expense, erected an infectious-diseases hospital under the Act.

CARTERTON.

Population, 1,205.

In the course of next year Carterton should be provided with an excellent water-supply, and I understand that the adoption of a drainage scheme is in contemplation.

GREYTOWN NORTH.

Several cesspools have been abolished in this town during the past year, and septic tanks substituted.

The manner in which nightsoil is removed is by no means satisfactory, it being left to the householder to notify the contractor when his services are required.

PETONE.

Population, 3,780.

The sanitation of this town is excellent. Under the superintendence of Mr. Jickell, the Borough Engineer, nightsoil-removal is carried out in an admirable manner. Slop-waters are admitted to sewers, and almost all the houses have been connected.

A system for the fortnightly removal of refuse has lately been instituted. The borough is about to instal a public water-supply.

LOWER HUTT.

Population, 1,822.

The borough has recently decided to adopt a system for the weekly removal of nightsoil.

ONSLOW.

Population, 1,499.

After much uncertainty as to the actual site of the nightsoil-deposit, this borough has at last selected one, and is about, I trust, to adopt a system for the weekly removal of nightsoil.

KARORI.

Several nuisances have been reported in this suburb, particularly as to the disposal of slop-waters.

There is at present no system for the removal of nightsoil, but I understand the borough contemplates the immediate undertaking of this necessary sanitary precaution.

CEREBRO-SPINAL MENINGITIS.

Four deaths from this disease have been recorded during the year.

To Dr. Dawson, of Pahiatua, I am indebted for drawing attention to six cases which broke out in a four-roomed house, occupied by eight persons, at Mangamaire. The house is situated in a valley with a high range of papa hills to eastward. The subsoil water is about 16 ft. from the surface. With the exception of overcrowding there were no special insanitary conditions about the premises. The K. family are Irish. B. K. was the first attacked, and all the other cases developed within a week. In every case the disease started with a cold and sore throat, hoarseness and dysphagia being marked. Within a few hours the neck and joints became stiff, and this was followed by severe pains in the limbs. Subsequently vomiting and delirium supervened.

I append Dr. Dawson's notes on the four cases admitted to the hospital:—

I first saw J. K. on the 17th August. His temperature was 103, his pulse 59. He was lying in bed all doubled up in a semi-unconscious condition, with a low muttering delirium. If he moved, he cried out, even on moving a hand he complained. No swelling of joints. Head retracted and pupils contracted. Many well-marked purpuric spots. Vomiting continued all night. There was the peculiar cephalic cry. From the above symptoms I concluded it was a case of ordinary meningitis. One could not examine very carefully, as he cried out so pitifully, even on pulling down bedclothes. On admission to the hospital the symptoms were much the same, only the rash was

disappearing and the pains in the limbs were not so marked. There was involuntary evacuation of urine and fæces. He remained in the hospital for two months, sometimes better, sometimes worse. The sickness disappeared on the second week; the cephalic cry continued at intervals for six weeks. At the end of the second month, when his temperature became normal, his mind became confused, and he appeared more or less idiotic. He could not straighten his right knee. When discharged from the hospital his father said his character had changed; he was not so sharp as formerly.

Second case, Mrs. R. K., age thirty-five years, was brought to the hospital three days later. Points of difference in her case were—no purpuric spots, no retraction of head, severe pain down the spine, herpes on mouth and lips, never became unconscious, more restless, and nervous phenomena more marked. Bowels constipated very badly. She was in hospital two months and a half. She left with no sequelæ.

F. K. was brought to the hospital a week later. His symptoms were the same as his brother's, although not so aggravated. Joint-pains in his case were very marked.

Winifred, age five, had only a mild attack.

The points to be noted in the above cases are the characteristic irregular temperature charts, purpuric spots, the resemblance of the disease to simple meningitis, joint-pains, &c. Although the disease ran a very long and troublesome course, all the patients got well, which is a very unusual result, as the death-rate is about 50 per cent.

ADDENDA.

Passengers examined, 2,901; teachers for South Africa examined, 11; public servants examined, 16; candidates for sanatorium examined, 8; school-children examined, 170; returned troopers examined, 509. Medical Boards attended, ; Pension Boards attended, . Reports forwarded to local authorities, ; number of local authorities interviewed, ; letters sent, . Vessels inspected—Steamers, 123; sailing-vessels, 15; vessels detained, 4; vessels disinfected, 37. Total inspections made in district, 4,210; total disinfections made in district, 798.

Prosecutions—Violation of quarantine regulations, 3; breaches of Act *re* infectious diseases, 5; for exposing milk for sale from an infected house, 1.

NELSON-MARLBOROUGH-WESTLAND DISTRICT.

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

ON the 6th August, 1902, I arrived in Nelson to take charge of the whole district, the Nelson portion of which had previously been administered by Dr. E. J. Roberts. Ending with the 31st March, 1903, I have but to report the work accomplished or attempted, and the thoughts actuated on projected administrative advances, during a period of less than nine months.

At the onset much time was taken up in initiation and organization, and in learning, in a very wide sense, the geography of a district previously unknown to me. All through, the time-absorbing task of the clerical work incidental to such a widely spread district has kept me much away from the more technical side of my duties. I must add, however, that there is not as yet sufficient continuous clerical work to necessitate additional aid.

The outbreaks of scarlet fever, and then measles—which latter arrived in Nelson City in due accordance with the periodicity previously established—along with the amount of work to be done to get my "base" (Nelson and surroundings) somewhat up to a more modern sanitary standard, have given me but little opportunity in these few months to devote adequate attention to the Sub-districts of Marlborough and Westland, which are under the able and direct superintendence of my colleagues the Acting District Health Officers, Dr. Anderson of Blenheim, and Dr. C. G. Morice of Greymouth, respectively. Nor have I been able to spare them the aid of the Sanitary Inspector, Mr. E. Middleton, who also has been tied to the Nelson area.

With the experience so far gained, I am satisfied these sub-districts cannot be administered in a manner satisfactory to the inhabitants, the local authorities, and our Department unless sanitary inspectors are appointed there to act under the Health Officers thereof. I would suggest the adoption of such a system here as has been found to work so well in the Wellington Health District. According to Dr. Valintine's scheme it would be necessary under the Public Health Act to combine the Counties of Westland, Grey, and Inangahua, with the contained Boroughs of Greymouth, Brunner, Kumara, Hokitika, and Ross, into one local authority. On a population basis they would contribute towards one sanitary inspector, who would *ipso facto* be an official of each of the constituent local bodies, yet appointed by and under the supervision of the Department of Public Health through the Acting District Health Officer. In the Marlborough Sub-district, the Counties of Marlborough and Sounds, with the Boroughs of Blenheim and Picton, would be the contributing parties. Such schemes are fraught with the least expense, and are the only ones whereby the Public Health Act can be efficiently administered, especially in such a widely extended district as that of Nelson-Marlborough-Westland, still more extended by the difficulties of access from one part to the other.

It had been my intention—and I hope, in time, to carry out that intention—to compile complete records of each town from the public-health standpoint—such a history, indeed, as one would build upon the lines—sewage, water-supply, refuse-disposal, precautions against infectious diseases, presence or absence of "slum" houses, &c.—as suggested by the circular of my colleague Dr. Ogston, District Health Officer of Otago. Time, however, has not allowed me to do much in this regard. But before entering upon such details as have been obtained or noted, reference will be made to some generalities affecting the district as a whole.

SANITARY INSPECTORS.

I am fortunate in having with me as Sanitary Inspector Mr. Ernest Middleton, who has been trained for and passed successfully the examinations of the Sanitary Institute of Great Britain for inspectorships in sanitary knowledge. He obtained the associateship of that institute in 1899. These facts might count for little had he not shown great readiness in adapting himself to colonial conditions, willingness to devote his whole energy, even much of his spare time to the details of his work, and, above all, his courteous behaviour towards the many persons with whom his duties have brought him in contact—duties too frequently requiring the combination of a very "broad back," with the exercising of the essentials of simple diplomacy. To myself personally he has given much willing assistance, for which I have pleasure in recording my thanks.

Inspectors are necessary for the Marlborough and Westland Sub-districts. Sanitary inspectors, as required by our Department, should be entirely different from the type usually styled "inspector of nuisances," with which the former name had become associated in the colony before 1900. Such men had numerous duties given them, dog-tax collecting and collar-distributing, cab-licensing, &c. —a heterogeneous conglomeration, of which pure sanitary-inspector work was but a trifling constituent. Such men—many of them in my district—are very excellent and worthy officers, but they themselves would be the first to acknowledge they are not conversant with such a knowledge of sanitary-inspectorship work as the Local Government Board, England, and as our departmental regulations specify as necessary. A certificate of the Sanitary Institute implies that its possessor has this expert knowledge. Without able sanitary inspectors of that specialised type the District Health Officer's work is greatly hampered, if not almost nullified. I would ask, then, that those to be placed in my district should be as far as possible on a parallel with the present Inspector. It is unfair to the man who has spent much time and money in educating himself for the special object of being a sanitary inspector to classify him with those of an inferior standing by entitling all and sundry "sanitary inspectors." I would respectfully request that the inspectors required be only appointed permanently on the condition that they obtain the certificate of the Sanitary Institute. I do not propose a problem without indicating its solution. This is simple. The Sanitary Institute has held such examinations in Sydney, and I understand they would be willing to arrange them at Wellington. I am greatly interested in the training of these men. I take to myself some of the credit of the success of my own Inspector's methods, and I am willing to help others to compete for these examinations. I sincerely hope you will give my suggestion your accord, for the sake of the inhabitants of Westland and Marlborough, and to keep our departmental inspectors at a standard equal to if not better than that required by the Local Government Board, England.

Inspection of Schools from the Hygienic Standpoint.

I may introduce this subject by stating that, as you are aware, the London School Board has a medical staff for the above purpose; that in Germany and France the superintendence of school hygiene in general, and the examination and approval of the plans of new school buildings, must be performed by an official—Kreis Physicus in Germany—having such qualifications and holding such a position as those of the District Health Officer here.

The Department of Education in New Zealand does not possess a hygienist staff, nor does it seem necessary when the District Health Officers of the sister Department are available. This, I presume, is the conclusion of the Department of Education, for I take as a precedent the request to me to examine and report upon the Millerton School, and that afterwards a grant was given by that Department provided the work was done to the satisfaction of the District Health Officer.

I do not think, however, that the status of the District Health Officer as hygienist is in such matters rightly understood by the Department of Education, by the Education Boards, nor, in truth, by myself. For instance, though I learn from the newspaper-cuttings that such, as stated above, has been the result of my Millerton inspection, yet I have not been advised or consulted thereon, though, as the statement would show, I am in a sense made responsible.

Obviously the simpler sanitary inspection of schools is a matter for the every-day work of our sanitary inspectors; but in higher matters such as the health or otherwise of the site, construction, ventilation, lighting, heating, proper build of desks, and prevention of spread of infectious diseases, what is the position? All these are vital matters which concern the specialist in school hygiene, but the last alone seems as yet to receive adequate attention.

For months I strove to bring about an improvement, on hygienic grounds, in the architectural features of a proposed school near Blenheim; yet, though convinced the Marlborough Education Board were with me, I was almost baffled in my desire to get a better system of ventilation and light for the scholars by the opposition of the architect on almost a mere question of length of studs. The Board ultimately upheld my opinion as being that of the expert with whom responsibility of questions of hygiene should rest. The Nelson Education Board have always agreeably received and acted upon our Department's suggestions.

So far my connection with school hygiene mainly consists in making a report after inspection Further action by me in the way of seeing if the specifications of that report are carried out, or if the work done meets with my approval, would, I fear, be deemed interference, and, as I say, I do not know if I have authority to take such further action. I therefore ask for an authoritative statement through the Department of Education as to with whom lies the responsibility of seeing that the hygienic conditions of schools, present and future, are efficiently improved and brought more up to date and in accord with modern requirements, and as to whether the approval of the District Health Officer, as the sanitary expert in the district, is to be received in the carrying-out of such improvements.

Diagrams of modern schoolrooms and modern school-furniture are absolutely necessary. I am aware that very few schools in the colony would pass the building rules of the Education Board of England or the German standard. I have done what I can to prevent continuation of a style of building in one part of my district which no hygienist could speak of too badly. These efforts could be rendered much less likely to be called the personal ideas of the District Health Officer if rules for the building of schools from the standpoints I have mentioned were issued by the Department of Education.

Registration of Plumbers.

I can see no reason why an inferior standard of plumbing-work should be considered good enough for the smaller towns. Defective or antiquated plumbing-fittings, with bad workmanship, is worse—that is, more a danger to the individual and public health—than not having these—certainly not sanitary—improvements at all. Again, the health of the individual, poor or rich, in a small town is of quite as much importance as in one of bigger status. Yet the fact remains that you rarely get Wellington and Christchurch samples of plumbing outside those cities. This is regrettably evident in my district.

Foremost in trades does that of the plumber most intimately concern the public health. Plumbers and drain-connectors should be, and very many are, our allies in the application of those principles in domestic sanitation and drainage which we are engaged in advancing.

A general standard of all-round efficiency can, I think, only be obtained by the registration of the plumbers of New Zealand on the lines of the National Registration of Plumbers in England, initiated by the Worshipful Company of Plumbers of London, which has now become the basis of a Bill before the Imperial Parliament. There are three parts in any such scheme of registration for our colony: (1.) The manner in which instruction in the trade shall be received; this will include apprenticeship or other way of gaining practical experience, and attendance at a technical school. (2.) The nature of the examination and the examining board; the former should be both theoretical and practical, including a *vivâ voce* and operative-work test. The examining board should have representatives of (*a*) the teaching bodies—that is, the master plumbers and the technical schools, (*b*) the registered plumbers as a body, (*c*) the local governing bodies, (*d*) the Health Department. (3.) The making, keeping, and control of the Register. This also concerns those fairly entitled to be registered as qualified plumbers who are already engaged in the trade.

It is only by some such scheme as the above that the technical classes for plumbers in smaller towns can be made of any real value. A New Zealand standard must be fixed. For it must be obvious that if the low standard prevailing in any small town—aye, even in Nelson City—is to be the criterion of a good plumber, then the technical teaching in plumbing in these places will be valueless—its end and aim entirely frustrated. It should be the object of each technical school in small towns to turn out plumbers quite on a par with those from the bigger towns. Such, however, is only attainable by uniformity in registration.

Much more could be written on this subject, but I make these outlines more particularly on behalf of the country plumber. It would give me much satisfaction in the future to be able to lecture on the relation of plumbing to sanitation and public health in all parts of my district to bodies of young plumbers who are candidates for registration.

It appears there are over eleven thousand registered plumbers already in England and Wales, although general registration is comparatively an innovation. Further, there is a very wide feeling at Home that the Plumbers Registration Bill, which has been before Parliament, should now be passed into law. It is held that registration "will raise the status of the trade and the standard of the work, consequently the remuneration." Also, this is a movement, in whatever part of the world it is made, for the public benefit and for the preservation of health.

Jos. P. Frengley, M.D., D.P.H.,
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, with a population of 159,059.

Vital Statistics.

The only statistics available are those compiled by the Registrar-General, which refer to Christchurch City and the four suburban boroughs—Sydenham, Linwood, St. Albans, and Woolston.

Birth-rate.

The birth-rate per 1,000 population for the colony in 1902 was 25·89; for Christchurch City, 25·84; for Christchurch City and suburbs, 26·36. The birth-rate for the city alone is therefore lower than the birth-rate for the colony, while the rate for the city and suburbs is higher. Christchurch, with and without the suburbs, has the second highest rate of the four chief cities.

Death-rate.

The death-rate per 1,000 population for the colony in 1901 was 9·81; Christchurch City, 13·11; for the city and suburbs, 12·77.

The following table, taken from the Registrar-General's report in the *New Zealand Gazette* of the 12th March, 1903, gives the returns for Christchurch and suburbs for 1902:—

	Census, March, 1901.	Estimated Mean Population, 1902.	Births registered in 1902.	Proportion of Births to the 1,000 of Population.	Deaths registered in 1902.							
					Males.			Females.			Total Deaths.	Proportion of Deaths to the 1,000 of Mean Population.
					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 ...	...	18,306	473	25·84	40	7	71	23	6	77	224	12·24
Linwood ...	...	7,035	217	30·85	18	3	34	11	4	43	113	16·06
St. Albans ...	57,041	7,073	168	23·75	4	...	33	5	3	26	71	10·04
Sydenham ...	...	12,042	323	26·82	26	3	44	17	5	40	135	11·21
Woolston ...	...	2,664	61	22·90	...	...	12	2	2	12	29	10·89
Totals ...	57,041	47,120	1,242	26·36	88	13	195	58	20	198	572	12·14

Zymotic Diseases.

Of the 209 deaths recorded in the four chief cities Christchurch is only responsible for 13, distributed as follows: 5 influenza, 3 whooping-cough, 1 diphtheria, 2 typhoid. This is very creditable for Christchurch, in spite of the fact that, as the measles epidemic started here much later than in the other towns, no deaths from measles were recorded in Christchurch in the year 1902, as, although measles was responsible for 92 of the 209 deaths from zymotic diseases in the other three towns, Christchurch was only responsible for 13 of the remaining 17 deaths.

Diarrhœal Diseases.

The statistics of deaths from diarrhœal diseases is not so favourable for Christchurch. Of the 125 deaths from diarrhœal disease Christchurch was responsible for 31, coming second highest in the list; 29 of these deaths occurred in persons under the age of five years. The number of deaths from infantile diarrhœa is regarded as one of the most important criteria in judging in the sanitation of a town.

Infantile Mortality.

Another important criterion is the infantile mortality—this is, the proportion of deaths of children under one year of age to every 100 births, and was 11·6 in Christchurch in 1902, giving Christchurch the third highest rate among the other cities. If, however, the mean of the last five years was taken the figure is 12·96, placing Christchurch the second highest in the list.

Phthisis.

The only other table that need be referred to here is that showing the number of deaths from phthisis. That gives Christchurch 57 deaths out of a total of 192—a larger number than any of the other cities.

INFECTIOUS DISEASES.

Table 1.

	Population.	Typhoid Fever.	Scarlet Fever.	Diphtheria.	Measles.	Septicæmia.	Influenza.	Tuberculosis.
Amuri County	1,142	...	...	...	1	...	...	...
Hanmer Plains	...	1	...	...	...	...	...	...
Culverden	...	...	...	...	1	...	...	...
Akaroa County	4,228	...	6	...	...	...	3	4
Ashburton County	13,644	...	...	..	...	...	...	...
Ashburton and suburbs	...	8	60	4	2	...	6	4
Rakaia ...	...	...	4	...	...	...	...	...
Methven	...	1	13	...	...	...	...	1
Ashley County	15,162	...	11	3	...	2	...	1
Rangiora	...	...	82	2	...	2	...	1
Kaiapoi ...	...	...	22	2	1	...	13	7
Oxford ...	...	...	34	...	1	...	6	...
Waikare	...	...	1	...	...	...	...	1
Amberley	...	1	3	...	...	...	1	...
Cheviot County	1,120	...	...	...	...	...	...	...
Cheviot ...	...	...	4	...	...	...	...	1
McKenzie	...	...	2	...	...	...	...	...
Geraldine County	7,456	...	...	...	...	...	...	...
Geraldine	...	...	8	...	1	...	...	1
Temuka...	...	4	21	3	...	...	1	1
Orari ...	...	...	4	...	...	...	...	...
Kaikoura County	1,765	...	8	...	1	...	...	1
Kaikoura	...	...	1	...	...	...	...	...
Levels County	11,920	...	5	...	...	1	...	1
Timaru ...	...	13	150	15	24	2	1	6
McKenzie County	1,642	...	..	...	...	...	...	...
Fairlie ...	...	...	8	...	1	2	1	1
Selwyn County	41,480	...	8	...	1	...	...	1
Christchurch	...	12	147	8	26	...	4	15
Woolston	...	...	21	...	17	...	...	...
Sydenham	...	2	98	5	7	...	4	4
St. Albans	...	5	29	2	11	...	3	3
Linwood	...	2	52	1	15	...	3	5
Avon ...	...	1	42	2	1	...	6	4
Riccarton	...	...	10	1	2	...	...	...
Heathcote	...	...	4	1	...	...	3	...
Addington	...	1	7	3	1	...	4	...
Dallington	...	...	6	...	...	...	...	1
Spreydon	...	2	9	1	...	...	...	...
Totals, Christchurch and district	...	25	433	24	81	...	27	33

INFECTIOUS DISEASES—*continued.*

Table 1—continued.

——	Population.	Typhoid Fever.	Scarlet Fever.	Diphtheria.	Measles.	Septicæmia.	Influenza.	Tuberculosis.
Brought forward	...	...	...	...	...	...	...	...
Templeton	...	...	5	...	...	...	...	...
Lincoln	...	...	1	...	...	...	...	...
Sumner	...	...	2	...	...	...	...	...
New Brighton	...	...	6	...	...	...	...	...
Lyttelton	...	1	37	46	1	2	9	5
Belfast	...	...	1	...	...	...	...	1
Styx	...	...	4	...	...	...	...	...
Southbridge	...	1	4	...	...	...	...	2
Leeston	...	...	9	...	...	...	...	...
Dunsandel	...	...	...	...	2	...	...	..
Waimate County	7,012	10	1	...	...	...	...	6
Waimate and district	...	3	86	...	...	...	...	...
Hakataramea	...	.	5	...	...	...	...	...
Waitaki County	14,253	..	14	...	...	...	...	...
Oamaru	...	2	28	...	2	...	...	1
Kurow	...	...	17	...	...	...	...	...
Duntroon	...	...	1	...	...	...	...	...
Herbert	...	...	2	...	2	...	...	...
Totals	...	70	1,095	99	120	11	68	78

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

SCARLET FEVER.

Table 2.

——	Apl.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Totals.
Christchurch	4	9	4	2	4	2	1	11	15	13	23	34	122
Linwood	1	2	...	1	1	...	...	2	1	4	12	21	45
St. Albans	1	...	2	2	2	...	2	1	...	3	2	12	27
Sydenham	3	4	4	3	1	2	5	5	8	7	16	19	77
Woolston	...	...	...	...	...	...	...	2	...	3	3	12	20
Avon	1	...	1	...	...	...	...	...	...	...	...	1	3
Addington	1	...	1	1	...	...	...	2	...	...	1	...	6
Papanui	...	...	1	...	1	...	...	...	...	3	3	11	19
Heathcote	1	...	1	1	...	...	...	...	...	...	...	...	3
Spreydon	...	...	...	...	...	1	2	...	...	...	1	2	6
Riccarton	...	1	...	2	1	...	...	...	...	1	1	5	11
New Brighton	...	1	1	1	...	...	...	...	...	...	...	2	5
Sumner	...	...	1	...	...	...	...	1	...	...	...	...	2
Lyttelton	1	1	...	2	1	...	1	1	7	1	8	4	27
Timaru	21	12	5	4	2	3	2	7	2	13	17	30	118
Oamaru	1	...	1	...	1	1	...	...	1	5	5	3	18
Temuka	...	1	2	4	...	1	2	...	...	3	2	...	15
Ashburton and suburbs ...	5	1	1	2	2	4	1	1	1	4	11	15	48
Waimate and surrounding districts	...	3	...	...	...	...	8	29	15	9	7	4	75
Rangiora	3	3	2	3	3	...	13	12	13	7	6	18	83
Kaiapoi	1	...	1	...	...	...	2	1	...	3	...	4	12
Akaroa County	...	1	...	...	...	...	...	...	...	...	3	2	6
Southbridge	...	1	...	...	...	1	...	...	...	1	...	...	3
Methven	...	3	3	1	3	...	1	...	1	...	1	...	13
Oxford	...	1	...	1	...	...	2	3	8	2	1	...	18
Kurow	...	...	...	1	...	...	...	5	5	1	...	...	12
Totals, Christchurch and district	12	16	14	12	10	5	10	23	24	34	62	117	339
Gross totals	44	44	31	31	22	15	42	83	77	83	123	199	794

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

Scarlet fever has been widely prevalent throughout the district during the last year, isolated cases occurring in most of the centres of population throughout the year in the district.

Monthly Distribution (Table 2).

The monthly totals show that the cases gradually diminished to a minimum in September, increased in October, and doubled themselves in November. During December and January the number of cases remained stationary, and it seemed possible that this district would escape more lightly than other districts. At the beginning of February, however, the cases began to quickly increase in numbers; this increase might reasonably be put down to the reassembling of the schools, being perhaps assisted by the hot dry weather. The cases increased again in March to a maximum, and have decreased considerably in April. It has been observed in England that the number of cases is at a minimum in March and April, corresponding to September and October here, and rise to a maximum in October, corresponding to April here. As to the meteorological conditions that are most favourable to the spread of scarlet fever, there is a wide divergency of opinion among authorities. Whitelegge states that "upon the whole it seems probable that the tendency to spread is increased by atmospheric humidity in absence of wind and rain." In this epidemic dry and hot weather seemed to increase the tendency to spread, and wet weather to diminish it. The state of atmospheric humidity without wind and rain is a meteorological condition that never continues for any length of time in Christchurch, so that it is possible that the tendency to spread might have been still greater under such conditions.

The population of the Canterbury Health District is 159,059, of which about 57,000 are resident in Christchurch and suburbs. It might be expected therefore that the Christchurch returns would influence the gross returns, so as to make the gross monthly totals resemble the monthly totals for Christchurch and suburbs. This is not so, however, as the monthly totals for Christchurch and suburbs, and for the part of the district outside Christchurch, and the gross totals have all practically the same relative monthly distribution—that is, a gradual decrease to a minimum in December, and a rise to a maximum in March.

The figures for Timaru show a rise to a maximum of twenty-one in April, 1902 (there having been seven cases reported in the previous March), then a decrease during the winter, occasional cases being still reported, and another outbreak in the summer and autumn, 1903, with a maximum of thirty cases in April.

Waimate forms a marked exception to the other towns, as there the epidemic was at a maximum in November, and there was no increase in the number of cases reported in the autumn.

Oamaru is the only large town in the district in which scarlet fever has not been prevalent in epidemic form at any time of the year.

Age.

As the age of the patient is not entered on the notification form, and it is impossible to send an Inspector to every case to obtain the age, no reliable information has been obtained on this point. In Christchurch, however, more information has been obtained about the ages; and 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.

Sex.

Here, again, the information obtained from the notifications is incomplete, as in many cases the surname only is given, or a surname with an initial of the Christian name. Of the 846 numbers recorded where the sex is known, there have been 361 males and 485 females. This is in accordance with the statistics of other epidemics, where it has been found that more females are attacked than males.

Mortality.

In Christchurch and district there have been 339 cases notified and 16 deaths recorded during the year. This gives a case-mortality of 4·7 per cent. Of these deaths 1 occurred in Sydenham in January, 1 in Christchurch in January; in March—2 in Linwood, 2 in Papanui, 2 in Woolston, 3 in Christchurch. The notifications received in these districts in January, February, and March number 174, so that, putting the case-mortality in the most unfavourable light, it is only as high as 6·3 per cent. Even this percentage of deaths is a low one. In some epidemics in England it has been as high as 30 per cent.

Though the type of the epidemic has been mild throughout the district, it would be a great error to assume, as has been done by many people who have only come into contact with mild cases, that there have been no severe ones. Several of the cases that I have seen at the Hospital have been of a very severe type, and would have afforded a useful object-lesson to those people who think it unnecessary to take any precaution to prevent its spread.

Hospital Accommodation.

The epidemic found the local authorities totally unprepared to cope with the epidemic by providing sufficient hospital accommodation.

Christchurch.—Attached to the Christchurch Hospital is a separate building accommodating sixteen patients suffering from infectious disease, which has been made to accommodate eighteen patients, owing to the continued pressure for accommodation arising from the epidemic. There are no facilities for administering it apart from the General Hospital, and in the past cases of scarlet fever have occurred in the general wards, the occurrence of which has been put down to the two buildings having to be administered by the same staff in many ways.

In October a meeting of the representatives of local bodies in the district of the North Canterbury Hospital Board was held at the Christchurch City Council Offices, at which the local authorities agreed to delegate their responsibilities and powers under sections 37 to 41 of "The Public Health

Act, 1900," to the Hospital Board, and to hand over the existing hospital at Bottle Lake to be administered by them. This was certainly a great advance, but not so great as was hoped at the time, as the Hospital Board had no legal power to spend any money on the buildings for administration, so that all expenses in the matter were guaranteed by the City Council. There was, therefore, a dual control of a somewhat indefinite character. The most economical plan would have been to have immediately erected an administrative block suitable for the requirements of the district. As the City Council, representing the other local bodies, had no authority from the local bodies to do this, another meeting of the representatives of the local bodies must have been held. The Hospital Board could not, of course, erect buildings on its own authority, as it had no power of raising the money. The accommodation at Bottle Lake consisted of seven tents—one used for cooking and store room, another for dining-room and dispensary, and another for nurses, leaving four tents, with the capacity of 1,400 cubic feet each, for the reception of patients. Each tent would take two adults, so any large increase in the number of tents for patients meant a corresponding increase in the administrative accommodation. Although the tents were of excellent design and exceedingly comfortable as tents, it was found that more accommodation could be provided for the same money by the erection of wooden buildings, and that such buildings would have a longer life than canvas.

I consider that it is most important that suitable provision should be made for the reception of cases of infectious disease in the different centres of population. As in most cases connected with sanitary administration, the difficulty raised is the money one. The cost of erecting the building and of administering it can be put down in plain figures in black and white, and published abroad in the newspapers. The loss of money to the community that occurs through sufficient hospital accommodation not being provided is one that cannot be calculated from exact data as the cost of building-materials and labour can; but I think that if a little consideration were given to the matter it must be perfectly obvious that the occurrence of infectious disease means loss of money to the community in many ways. In the first place, if it is granted that some precautions must be taken, and that an individual suffering from scarlet fever cannot be allowed to roam at large, that individual must cease being a wage-earner until he is free from infection supposing he or she is an adult. If, therefore, such a person can be saved from becoming infected by the isolation of other infected persons, there is so much money saved. Furthermore, if there are children in the house they have to cease attending school for a period of at least six weeks; in many cases schools have had to be closed during the last year, owing to the occurrence of scarlet fever, and there must have been a considerable amount of interference with the education throughout the district. In one case in a country district a schoolmaster's child caught scarlet fever, and there being nowhere to move the child to, and the schoolmaster being unable to obtain lodgings elsewhere, the school had to be closed. Isolation in a four-roomed house in which there are children is practically impossible. In a house where proper isolation is impossible some precautions must be taken to prevent the spread of infection occurring through other inmates of the house following their usual occupations. It is impossible to carry the precautions out to their logical conclusion, and prevent any member of the household having any communication with the outside world, as in the majority of cases such interference would mean starvation before the period of infection was over.

In the case of those occupations in which there was a special danger of the workers spreading the disease—such as any employment connected with the handling of clothing-material, or the preparation or handling of foods for sale, such as milk, butter, &c.—strict precautions have had to be enforced, and the employee has had to cease work in some cases. In the carrying-out of these precautions in the case of the factories making clothing, &c., I have received great assistance from the Factory Inspector, Mr. Lomas; and the factory employers have also cordially co-operated with the Health Department. In the case of dairies I have received great assistance from the Inspector of Dairies, Mr. Macpherson. He furnished me with a list of all the dairies in the neighbourhood of Christchurch, and by comparing the notifications received with this list it has been possible to take suitable precautions immediately, as the notification by the dairymen to the Stock Department of the occurrence of infectious disease was a very unreliable means of information, many of the dairymen being very remiss in this respect. In all such cases as the above it is safer, and causes less inconvenience to the wage-earners, if the patient can be at once removed to a hospital. Preference has been given to such cases as these, but the accommodation provided has not been nearly sufficient for even selected cases.

The sooner suitable provision is made in the other centres of population the better it will be for the district. What is required is an administrative block and sufficient ward accommodation to take a few cases of scarlet fever or diphtheria immediately they occur. In this way an epidemic may be nipped in the bud, but if in spite of all precautions an epidemic does occur additional accommodation can be put up at short notice. At present no attempt can be made to cope with an epidemic. If there was an attempt made it would have to be a costly one, as administrative buildings and wards of a temporary character would have to be put up at short notice; and such buildings are always unsatisfactory, both from a financial and a sanitary point of view. In the winter the tents would have been difficult to keep warm, and if acute cases were to be received, as the intention was, there would have been difficulties in the nurses attending to acute cases which were accommodated in separate wards. This accommodation was made use of in February to receive male convalescents who were sent on from the Christchurch Hospital.

Early in February plans were drawn up by Mr. Collins, of Messrs. Collins and Harman, of a building providing a kitchen (store and larder), dining-room for each sex, two wards accommodating six patients each, nurses' room, bath-rooms, wash-house, disinfecting-chamber, &c., and suitable provision made for hot- and cold-water supply and drainage. The erection of this building must not be looked upon as the final solution to the problem of providing sufficient accommodation for cases of infectious disease. When the building is completed and opened, the provision of kitchen,

water-supply, bath-rooms, &c., already made would be sufficient to serve for a certain amount of increased ward accommodation, if the same were urgently required; but suitable provisions have not been made for the housing of the staff, as the nurses, ward-maids, and doctor have still to be accommodated in tents. This can be dealt with by the Hospital Board when the contemplated legislation giving them power to deal with these matters is an accomplished fact.

Ashburton.—At Ashburton there is a small building adjoining the Hospital, for the purpose of taking cases of infectious disease. There is no provision made for administering this hospital as a separate institution from the General Hospital.

Timaru.—At Timaru they were in an unfortunate position. The ward which had been used for cases of infectious disease was being rebuilt, so that they had no accommodation at all for the reception of such cases.

Oamaru.—At Oamaru there is a small building in the Hospital grounds sufficiently removed from the General Hospital.

Waimate.—At Waimate there are two wards detached from the main building.

Akaroa.—No accommodation at all.

TYPHOID FEVER.

Table 3.

——	Apl.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Totals.
Christchurch	2	2	...	...	1	...	...	2	...	1	...	4	12
Avon	1	...	...	...	...	...	...	...	...	...	...	...	1
Sydenham	...	1	...	...	...	1	...	...	...	...	..	...	2
St. Albans	...	...	...	1	1	...	1	...	...	...	1	1	5
Linwood	1	...	...	...	...	...	...	...	...	...	...	1	2
Spreydon	...	...	..	...	...	...	...	1	...	...	...	1	2
Addington	...	...	...	...	...	...	...	...	1	...	...	...	1
Lyttelton	...	...	...	...	...	...	1	...	...	...	...	...	1
Southbridge	...	...	...	...	...	...	...	...	...	...	...	1	1
Amberley	...	...	...	...	...	...	...	...	...	...	1	...	1
Waimate	1	..	...	...	...	...	...	...	...	2	...	...	3
Waimate County	...	...	...	...	4	1	1	1	...	1	1	1	10
Oamaru	...	1	...	1	...	...	...	...	...	...	...	...	2
Hanmer Plains	...	...	1	...	...	...	...	...	...	...	...	...	1
Ashburton and suburbs ...	4	...	...	...	...	...	...	...	1	1	1	...	7
Methven	...	...	...	1	...	...	...	...	...	...	...	..	1
Rangiora	...	...	...	...	...	...	1	...	...	...	...	..	1
Temuka	...	...	1	...	...	...	...	...	...	...	...	2	3
Timaru	5	3	...	2	1	1	...	1	...	...	...	...	13
Wakanui	...	...	...	...	...	1	...	...	...	...	...	...	1
Totals in Christchurch and suburbs	4	3	..	1	1	2	1	3	1	1	1	7	25
Gross totals	14	7	2	5	6	5	4	4	3	5	4	11	70

The cases of typhoid fever in the district reach the number of seventy. Christchurch and suburbs, Waimate County, and Timaru take the most prominent position. Of the monthly totals March and April are the two highest. Of the twenty-two cases in Christchurch two died. If the number of cases could be taken as a true indication of the sanitation of the district the inference would be very creditable to the district. The freedom of the district from typhoid fever I should be inclined to put down to the good water-supply which most towns possess. Shallow wells and lack of drainage for household slops, &c., are the conditions most favourable for the development of typhoid fever. This combination is fortunately absent in most towns. Waimate, however, is still in this unfortunate position, and, although the town itself has escaped lightly this year, it has suffered severely in the past, and there have been several cases in the district.

At Morven, in the Waimate County, there has been an epidemic among the Maoris. There are six houses situated at intervals along a road about two miles long, a mile or two from the coast. The houses are small, having one living-room about 1,000 cubic feet, and a sleeping-room about 500 cubic feet. The roof is of galvanised iron, but no water is collected from it. For the water-supply they are entirely dependent on surface wells, water being found at a depth of from 20 ft. to 30 ft. In May, 1902, there was a heavy flood, which flowed over all the surrounding country; the wells were, of course, filled up by surface water. In August there were four cases of typhoid in three of these houses; in September another patient in another house was attacked; and in October a boy in another house was attacked. The occurrence of these cases would point to a common cause, such as the contamination of the water-supply. The water proved on analysis to be not of good quality, but there was no evidence of specific contamination by sewage. It is difficult to imagine where the specific contamination of the water by the typhoid bacillus could have come from. It is possible that the disease was communicated from patient to patient, though the origin of the first case would still be left unexplained by this theory.

In December, at Studholme Junction, two cases occurred in the Stationmaster's house. In January two nurses who had been nursing in the house were also attacked. The water-supply came from the storage-tanks used for supplying the water to the engines, into which it was

pumped from a well. The same water was supplied to an hotel and another house, but no other cases of typhoid occurred. The milk was supplied from the hotel. There seemed no possibility of the well becoming contaminated by sewage, and chemical examination, though it pointed to some organic contamination, indicated that this contamination was probably of vegetable and not animal origin. A bacteriological examination of a specimen sent to the Pathologist at Wellington did not show any evidence of contamination by sewage. Pending the results of the analysis being obtained, all persons using the water for drinking purposes were advised to boil it, and the supply to the passengers on the platform was cut off. In February the Stationmaster was attacked, making a total of five persons from one house. Dr. Barclay had given careful instructions to prevent the spread of the disease from patient to patient, and these were, I believe, carried out as carefully as possible. In spite of this, the evidence seems to point to the fact that, whatever the source of infection of the first case, the subsequent cases were infected through the first case, and that there was no common cause, such as the water-supply or milk-supply, which was the source of infection in all the cases.

DIPHTHERIA.

Table 4.

——	Apl.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Totals.
Christchurch	2	...	1	...	2	1	2	..	...	...	...	...	8
Linwood	...	1	...	...	...	...	...	...	...	...	...	...	1
St. Albans	1	...	...	...	...	...	...	1	...	...	...	...	2
Sydenham	1	...	...	1	1	...	1	...	...	...	1	...	5
Addington	1	...	1	...	...	...	...	1	...	...	...	...	3
Surrounding district	...	...	...	1	...	1	...	...	1	1	1	...	5
Lyttelton	1	2	5	5	3	2	3	10	7	...	1	7	46
Timaru	5	3	...	1	...	...	...	3	...	...	2	1	15
Ashburton and suburbs ...	...	1	2	...	...	...	...	...	...	...	1	...	4
Temuka	...	1	2	...	...	...	...	...	...	...	...	...	3
Waimate	...	1	2	...	...	...	...	...	...	...	...	...	3
Rangiora	...	...	...	...	2	...	...	...	...	...	...	...	2
Kaiapoi	...	...	...	...	...	...	1	1	...	...	...	...	2
Totals, Christchurch and district	5	1	2	2	3	2	3	2	1	1	2	...	24
Gross totals	11	9	13	8	8	4	7	16	8	1	6	8	99

Christchurch has been comparatively, fairly free from this disease, but it has been again prevalent in Lyttelton, and also, though to a less extent, in Timaru.

MEASLES.

Up to December there had been about forty cases of measles reported. In December seventy-four cases were reported, Christchurch and district being most affected. In January, up to the 10th of the month, when notification of measles was discontinued, forty cases had been reported. After that date, though the information obtainable was not so exact as when notification was in force, the prevalence in the district seemed to increase for a time, and after February to decrease.

Practically the only weapon that can be used against an epidemic of measles is the closure of schools, and this step had to be taken in several cases. This weapon is a poor one when an epidemic has started, but may be a most effective one if employed before the cases have become numerous, and for this reason the continuance of the notification of measles when not present in an epidemic form would be most useful. School committees are generally prepared to close a school when an epidemic of measles is already in existence, but my impression is that this is generally done too late in the case of measles. The question of when to close is often a difficult one, and in the case of a country school the local medical practitioner is often in the best position to judge, as he may know of numerous cases in the district, whereas he may only have professionally attended very few, and those few are generally the only ones that the Health Officer gets to know of, as notification by the householder is carried out very casually.

TUBERCULOSIS.

Of the seventy-seven notifications of phthisis received during the year thirty-one have occurred in Christchurch and suburbs. In Christchurch and suburbs there were fifty-seven deaths. This is sufficient to show that the notifications received are of no statistical importance. The object of the Health Department has been not to treat phthisis on the same lines with other infectious diseases, but to encourage notification of cases which are dangerous to the public health, or in which the interference of the Health Department might be advisable. When a case of phthisis is notified the Inspector or the Health Officer calls and leaves a pamphlet issued by the Health Department, and, if from the nature of the case it seems advisable, disinfection of the rooms occupied by the patient is offered. As it was very desirable to disinfect any room or house in which a patient suffering from consumption had died, and there existed no machinery by which the Health Department could receive information of the deaths of such persons, the Registrars of the various registration districts in the district were written to and requested to fill in a form and send

it to this office when any death from consumption was registered. In this way several houses have been disinfected by the Health Department after a death from consumption; and the local authorities have been advised of any death occurring in their district and requested to disinfect when the Health Department has been unable to do so. There is great need for the establishment of a sanatorium for the treatment of consumptives. In such a sanatorium presumably only suitable cases—that is, those who would be likely to benefit from treatment—would be received. The establishment of such a sanatorium would leave another class of consumptives entirely unprovided-for. An advanced case of consumption, whose recovery is practically hopeless, is likely to be left in a terrible plight. If poor and without relations, the general hospital is practically the only refuge, and a more unsuitable case for a general hospital can hardly be imagined.

NOTIFICATIONS OF INFECTIOUS DISEASE.

Notifications of infectious disease to be of any value must be as prompt as possible. I have reason to believe that there is still some laxity in this respect, though considerable improvement has taken place. As soon as medical men realise that some action is immediately taken by the local authority on receipt of the notification, and that it is not merely filed until the next meeting of the local authority, which may be a month later, there will not be much to complain of in this respect in this district.

Complaints about the multiplicity of forms to be filled in are still made by medical practitioners. The notification to the householder cannot very well be omitted, unless the law is altered so as to make the notification of the medical practitioner to the local authority and the Health Department sufficient proof that the householder was aware of the occurrence of infectious disease on his premises. In the larger centres it would be of great advantage if the local authority were to take advantage of their powers under "The Municipal Corporations Act, 1902," and appoint a Medical Officer and prescribe his duties. Such Medical Officer would act as an intermediary between the Health Department and the local body, and all notifications could be sent to him, thus doing away with the dual notification of the Health Department and the local authority. The local Medical Officer would have to make weekly or monthly returns as might be required to the Health Department, and any urgent matter that the local Medical Officer had no power to deal with could be referred to the Health Officer. If in the centres of population the single notification could be substituted for the triple notification, fuller details such as age, sex, name of school, and any other particular circumstance in connection with the family, such as employment in a dairy or drapery establishment, could be reasonably asked for. The local Medical Officer would also be able to enforce the provisions of the Act, by being resident on the spot, better than the Health Officer residing at a distance or travelling elsewhere. He would also, being better conversant with the local conditions of an epidemic, be in a better position to take prompt steps in advising the closing of the school if it appeared to him that the school attendance was causing a spread of the disease. There are certain objections to this plan, such as the local Health Officer getting into trouble with his patients and fellow practitioners through being responsible for enforcing the Act; but in any case of difficulty the District Health Officer could be made responsible. The clause in the Public Health Amendment Act of 1902 empowering the local authority to employ a medical practitioner to visit any house in which there is suspicion of infectious disease has proved very useful, and has been taken advantage of by the local authorities on several occasions.

PROSECUTIONS.

To carry out the clauses in the Public Health Act which safeguard the public from the spread of infectious disease to the letter it would be necessary to employ an army of inspectors. While legal proceedings are taken in every case where a wilful breach of the Public Health Act is committed which seriously endangers the health of the public without the excuse of ignorance, it is obviously impossible to take proceedings in the numerous instances of breaches of the Act, which in a large number of cases are caused by ignorance. Successful prevention of the spread of infectious disease can only be brought about through the intelligent co-operation of the public with the Health Department.

At Timaru, in January, a man staying at an hotel contracted scarlet fever in a mild form. Two days later, in spite of being warned, he left the hotel, apparently with the connivance of the landlord, and travelled by train to Dunedin, and thence to the plains at Invercargill. He was successfully traced, and was subsequently fined £2 and £3 costs. Proceedings are also being taken against the landlord under section 32, subsection (3).

In March a barman at a Christchurch hotel, in spite of being warned not to mix with the public for six weeks since the day he got scarlet fever, continued to frequent the hotel. He was removed to the Hospital, and was subsequently fined £1 and costs under section 32, subsection (1), a heavy penalty not being pressed for, as it was the first proceeding of that kind to be taken.

At present there is considerable excuse in many cases for breaches of the Act, owing to insufficient hospital accommodation being provided by the local authorities.

DISINFECTION OF INFECTED PREMISES.

The Christchurch City Council were the only local authority in the district who were at the time of my appointment taking any steps to see that premises in which infectious disease had occurred were disinfected.

In November a letter was written to the five boroughs and the five Road Boards which comprise Christchurch and district pointing out their responsibilities under the Health Act in the matter of disinfection, and that non-disinfection of infected premises must be largely responsible for the spread of infectious disease. The formalin method was recommended, and they were

informed that full instructions in disinfection generally, and the formalin method in particular, would be given to their inspectors, or the persons they appointed to carry out the disinfection, at this office or at any house in their district which needed disinfection. The Borough of Woolston immediately acceded to my request, and undertook the disinfection of infected premises. One Road Board sent their Clerk to have a look at the apparatus, but apparently he was not much impressed by his visit, as that was the only action taken by them in the matter. The other Road Boards, as far as I know, took no notice whatever of my communication. The only inference to be drawn is that they did not consider themselves the proper authorities to undertake this work. In this, I must say, I entirely agree with them, as they have no staff or facilities for doing such work. The remedy is, of course, the combination of such bodies under one larger body, and the appointment of an inspector properly trained and qualified. As the amalgamation of other boroughs to form a Greater Christchurch was pending, they did not feel inclined to make any new departure for the short time that they were still to be in existence. The disinfection was in the meantime carried out by the Inspector of the Health Department. As the cases continued to increase in February, the Health Department was unable to cope with this work, and at my suggestion the boroughs that it was proposed to form into Greater Christchurch agreed to appoint a special inspector to carry out this work. Inspector Preston was then appointed, and his time has since been fully occupied in visiting the cases as soon as notified, and carrying out disinfection when the cases had recovered. The outlying districts in the Road Boards the Health Department has continued to look after, and this work has occupied a considerable portion of the Inspector's time. This work is not, strictly speaking, the business of the Health Department; but it seemed the only course to adopt until a suitable combination of local bodies in the district could be made, and a suitable inspector appointed.

The cards issued by the Department to be left at the house by the Inspector on his first visit, which are to be filled up and returned by the householder when the period of infection is over and the premises are ready for disinfection, have proved of great service. The certificates of efficient disinfection also issued by the Department have proved very useful. Endeavours are being made to prevent the readmission of scholars to school, or factory employees to a factory, unless the scholar or the employee can show to the schoolmaster or the manager such a certificate signed by the Inspector.

The chief towns where infectious disease has been prevalent throughout the district have, on their responsibilities in the matter being pointed out, undertaken the disinfection of infected premises. The necessary apparatus for disinfecting with formalin vapour and spray have been supplied through this office, and the Department's Inspector has in each case shown the Inspector of the local authority the proper method of disinfecting premises.

DISINFECTION OF SCHOOLS.

As measles and scarlet fever had been prevalent in Christchurch and district before the schools broke up in December, it was thought advisable that the schools in those districts where these diseases had occurred should be disinfected before the scholars reassembled. The North Canterbury Board of Education and the School Committees gave the Department every assistance in making arrangements for having disinfection carried out, and twelve schools were disinfected by the Department's Inspector.

General Sanitation of the District.

Detailed remarks on this subject had better be referred to a future report, as the period, five months, during which I have been in the district—the greater portion of which has been taken up by the prevalence of infectious disease—has been too short to do more than obtain a general acquaintance with the main details of the sanitation of the chief towns and the majority of the small ones.

Christchurch.

A most important event in the past year has been the amalgamation of three adjoining boroughs with the city to form a Greater Christchurch.

Though it might be considered somewhat egotistical on the part of the Health Department (if a department of any kind can be egotistical) to imagine that the main object of amalgamation was for sanitary purposes, yet it is difficult to exaggerate the benefits that should result to the combined districts from a sanitary point of view. The provision of a high-pressure water-supply has had a first place in all programmes of new works that it has been proposed the new Council should undertake.

The present individual artesian water-supply is bristling with disadvantages, not so much from the quality of the water itself as from the quantity. The water itself is probably not directly responsible for causing any specific disease, as the water is in most cases a good water (though samples have been obtained from wells which smell offensively, and appear to be contaminated with organic matter of vegetable origin, and these waters might have a prejudicial effect on health), but the lack of an abundant supply has always been reckoned as a most important defect in the sanitation of a large town.

The possibility of the completion of a constant water-supply introduces another possibility—the completion of the water carriage of sewage. The sealed-pan system at present in use within the old boundary of the city is an immense advance on the other system; but the water-closet system, if carried out on modern principles, is a still greater advance on the sealed-pan system. A sanitary earth-closet system is an unattainable ideal in any large town; an insanitary pan-closet is the reality that occurs; a sanitary water-closet is an attainable ideal.

The city destructor will now destroy the rubbish of the whole city, and not the rubbish of the central portion only.

The following statistics, compiled from the census returns 1901, are sufficient to show how closely Sydenham and Linwood approximate to Christchurch in density of population:—

Name.	Density.						Rooms.				
	Area.	Population.	Houses.	Houses per Acre.	Population per Acre.	Population per House.	One.	Two.	Three and Four.	Five and Six.	Over Six.
Christchurch	1,249	17,538	3,441	2·86	14·04	5·09	33	88	981	1,246	1,093
							0·95%	2·55%	28·48%	36·21%	31·76%
Linwood ...	659	6,737	1,389	2·19	10·22	4·85	None	25	346	None	328
								1·79%	24·9%	49·67%	23·6%
Sydenham ...	1,190	11,404	2,315	0·2	9·57	4·9	5	46	902	1,036	324
							0·21%	1·98%	38 96%	45·61%	13·99%
St. Albans ...	1,500	6,607	1,370	0·94	4·4	4·09	2	35	384	566	381
							0·01%	2·55%	28·02%	41·31%	27·81%

The figures for St. Albans do not fairly represent the facts. Some portions are probably as densely populated as the other boroughs, but the inclusion of a large area within the borough which is very sparsely inhabited materially brings down the average.

Even with the inclusion of these boroughs there remain just outside the boundaries many areas so densely populated that from a sanitary point of view they require the same administration as the parts inside the boundary of such matters as nightsoil-removal, inspection, and disinfection of premises after infectious diseases.

When it is realised that there are no natural boundaries separating these districts, but that the streets are absolutely continuous, it is evident that, whatever may have been the objections to amalgamation from other points of view of local government, the sanitary interests of the districts were identical.

Drainage and Disposal of Sewage.

The by-laws of the Christchurch Drainage Board relating to the system employed of putting in house connections have been adversely criticized. As the matter is still *sub judice* further remarks are unnecessary.

Septic Tanks.

A septic tank, constructed from plans furnished by the Health Department, has been installed at St. Mary's Home, and is working very satisfactorily, without any offensive smell being perceptible. A septic tank almost identical in size and construction put in at the Ashburton Hospital has not been very satisfactory, as the effluent and the filter-beds smell offensively at times. Precautions are taken against any large quantity of disinfectants being admitted into the tank, but possibly the small quantities that must enter from the Hospital are responsible for its imperfect action. As it has only been in use a short time, and the bacteriological action is often unsatisfactory and incomplete at first, time may, however, effect a cure.

I have seen septic tanks, so called, which cause more nuisance and purify the sewage less than a cesspool—in fact, the septic-tank principle, the success of which depends on a right construction and some knowledge of the circumstances which favour or retard the purification of the sewage, seems likely to be much abused by being used as an excuse for draining sewage into rivers, streams, ditches, and side channels. A properly constructed and worked septic tank with any self-respect would, I am sure, disclaim any connection with many structures which have been dignified with that name. In one case that I inspected there was a closed tank, but without any efficient filtering-beds, the effluent was allowed to flow on to the side channel, and naturally was offensive and a cause of complaint. In another case the plan of construction appeared to be satisfactory, but the gardener who attended to it was in the habit of flushing it out occasionally to the great detriment of the organisms on which the purification depends—the effluent from the filter-beds was extremely foul and offensive.

Hugh E. Finch, M.B., D.P.H.,
District Health Officer.

OTAGO AND SOUTHLAND DISTRICT.

Department of Public Health, Dunedin, 16th July, 1903.

The Chief Health Officer, Wellington.

I have now the honour to hand you a report on the sanitary work accomplished in the Otago-Southland District during the year ended the 31st March, 1903.

Places visited.

In addition to several special visits to parts of my district, I was enabled this year to make a more close survey of that part of it which lies in and to the west and north-west of Invercargill, and also of the town and suburbs of Invercargill. I further made a more minute survey of that part which may be roughly described as being served by the Tapanui–Heriot Railway. The townships to which I thus paid particular attention were—Invercargill and its suburbs, East, North, and South, Avenal, Gladstone, Waikiwi and Wallacetown, and Bluff, Nightcaps, Orepuki, Otautau,

Riverton, and Winton in the southern portion; Balclutha, Clinton, Crookston, Heriot, Kelso, Middlemarch, Mosgiel, Owaka, Sutton, Tapanui, Waipahi, Waitahuna, and Waitahuna Gully in the centre; Arrowtown, Glenorchy, Kinloch, Palmerston, Queenstown, and Waikouaiti in the northern part. Besides these, I visited, on behalf of my colleague the District Officer for Canterbury, the fishing village of Moeraki. Altogether I or my Inspectors have visited some seventy-six places in the district, several of them on more than one occasion—viz., Arrowtown, Balfour, Balclutha, Bluff, Brighton, Broad Bay, Clinton, Colac, Crookston, Edendale, Fortrose, Gap Road, Glenorchy, Gore, Grassmere, Green Island, Heriot, Hyde, Hindon, Invercargill, Kaitangata, Kelso, Kinloch, Lawrence, Lumsden, Makarewa, Mataura, Moeraki, Menzies' Ferry, Middlemarch, Milton, Mount Cargill, Myross Bush, Nightcaps, North-east Harbour, Opiro, Orepuki, Otakaia, Otautau, Otara, Otatara, Outram, Owaka, Palmerston South, Pine Hill, Port Chalmers, Purakanui, Portobello, Queenstown, Riversdale, Riverton, Round Hill, Sandymount, Stirling, South Hillend, Sutton, Taieri Beach, Tapanui, Tisbury, Tomahawk, Waikouaiti, Waipahi, Wendonside, West Plains, Waitahuna, Waitahuna Gully, Waikiwi, Wallacetown, Waitati, Winton, Whitechapel Flat, Woodend, Woodlands, Wyndham. The city and suburbs of Dunedin have also received a good deal of attention.

A general synopsis of the work which has come under the notice of this district may be of interest as the introduction to a more minute description of the duties we have performed: Defects in house and other drains, 258; drainage-areas examined, 8; privies found defective, 90; refuse-tips looked after, 25; nightsoil, complaints regarding non-removal, &c., 12; piggeries ordered to be cleaned, &c., 34; dirty stables ordered to be cleaned, &c., 31; fowl-runs ordered to be cleaned, &c., 12; complaint of dogs kept in a house causing a nuisance, 1; dilapidated or insanitary houses examined, &c., 78; examination of men's quarters on steamers (by request), 14; disinfection of premises personally looked to, 42; nuisance from exposure of decaying offal looked to, 23; gutter-scrapings used to repair streets interdicted, 1; nuisances of various kinds, 168; shops, factories, &c., inspected for various reasons, 150; hotels examined, 38; public halls found requiring improvements, &c., 2; freezing-works examined, &c., 5; restaurants examined, &c., 6; boiling-down and manure works examined, &c., 7; abattoirs and slaughter-yards examined, 12; diseased meat, prosecutions for keeping or selling, 2; fish-traffic wagons examined, 2; fish and fruit sales attended, 35; examination and disinfection of imported articles, &c., 5; taking samples of liquor from hotels for analysis, 33; taking samples of jams for analysis, 6; schools examined, principally for infectious cases, 57; reported cases of scarlet fever visited, 264; reported cases of diphtheria visited, 29; reported cases of measles visited, 13; reported cases of typhoid fever visited, 15; examination of a suspected leper, 1; examination of returned troopers, 300; examination of men from Public Works office, 5; examination of men from Post-office, 4; examination of a passenger *ex* "Papanui" for phthisis, 1; examination of sputa, 2; vaccination of "Orient" troopers, 302; visits to "Orient" troopers at Tahuna Park camp, 5; visits to "Orient" troopers at Quarantine Island, 5; visits to Quarantine Island, for various reasons, 8; visits to Immigration Barracks (emergency hospital), 3.

We sent out the following circulars:—

To medical men: *Re* inculcating precautions in infectious disease; with printed circular. *Re* registered deaths from cancerous diseases; asking information.

To local authorities: *Re* danger of allowing new buildings to be placed on sites where the ground-area is too small; from Municipal Corporations Act. *Re* attending to disinfection of houses, &c., after infectious disease. *Re* furnishing statistical information about boroughs, townships, &c.

To the Secretary of the Education Board: *Re* periodic cleansing of slates, &c., used in schools, and the danger of allowing the miscellaneous use of pens, pencils, &c., in schools; with a request that it be sent to all schoolmasters. *Re* not permitting children to resume school attendance after absence, without a certificate that the cause was not infectious disease either to themselves or in the household.

To schoolmasters: *Re* systematic examination of children, to insure that they may not be suffering from infectious disease in any stage.

I made the following examination of places for various purposes: A piece of ground under offer to the City Council, at Abbotsford, as a site for a new cemetery; the property known as "The Camp," on the Peninsula, offered as an old men's home, or sanatorium, to Government; Mr. Scott's farm, at Sutton, Upper Taieri, offered to Government as a site for a sanatorium for consumptives; Mr. Ewing's farm, Halfway Bush, offered to Government as a site for a sanatorium for consumptives; a house used by Miss Stronach as a private hospital for consumptives, near Moeraki (by request of the District Health Officer, Canterbury); Tahuna Park, Musselburgh, as an isolation ground for troopers *ex* "Orient" under quarantine for small-pox; the Immigration Barracks, Caversham, as a temporary hospital for infectious disease; the septic-tank installation at the Benevolent Institution, Dunedin (at the request of the Engineer of the Drainage and Sewerage Board); the place where oysters are stored at the Bluff.

I instituted prosecutions against (obtaining convictions): — Georgeson, for having rotten fish and meat in his freezing-chamber; — Higgenson, for exposing for sale parts of a cow which had died after injuries, and which was in an unhealthy condition and unfit for food; — Newmark, for not reporting himself while under quarantine; — Stanton, for going at large while suffering from infectious disease.

The proposed by-laws of the Dunedin Drainage and Sewerage Board were submitted to me for approval; and I met the Works Committee, and went over the by-laws, considering various points which I considered to require alteration.

I had two consultations with Mr. Parata, M.H.R., *re* provision for consumptive Maoris, and exchanged letters with Dr. Pomare *re* same.

Our record-book of specimens of various kinds does not show much work. We have had occasion to submit for examination to the Government Analyst only some twenty-six substances. Eleven were of colonial beer to ascertain if they contained lead. Eight of these were reported by the Analyst to have more or less of this substance in them, mostly as traces, one as very strong traces, while two contained none. On investigating this we found that the lead had got access to the beer from the lead pipes which connected the casks in the cellars with the draw-off taps in the bar. It was also found that it was the first beer drawn off in the morning which was contaminated with lead, and it was therefore concluded that the beer lying in these pipes overnight had taken up the lead. As the lead contamination was evidently the result of accident, and the hotelkeepers expressed themselves anxious to do anything we suggested to avoid its occurrence in future, I judged that a prosecution was unnecessary, and obtained a promise—which has been carefully carried out—that the pipes should be emptied of beer each morning, the beer thrown away, and the pipes carefully washed out before any beer was served to customers. This subject was touched on in my last year's report, but I advert to it again this year to inform you that we have been following up the matter, and that we are keeping the subject still in view.

I have had several samples of whisky examined on more than one occasion, in response to complaints, but have been able to obtain no evidence of contamination sufficient to warrant further proceedings.

At your request I obtained samples of jams from several sources, but though slightly suspicious evidence was found of foreign substances having been added to the fruit from which they were professed to be manufactured, it was not sufficient to warrant prosecutions.

Only two specimens of water were sent to the Analyst for examination, one of them being from Winton, which might have been the origin of a case of typhoid fever, and the supply was ordered to be disused as it was suspicious. The second was Dunedin water taken from a tap. This was found to be so very bad that further examinations are now being made, which are not yet complete.

Only two specimens were sent me for microscopical examination, both of which were pronounced phthisical.

Returned Troopers ex "Orient" quarantined for Small-pox.

Perhaps the chief event of the year was the having to collect and keep under supervision over three hundred troopers returning from South Africa by the "Orient," in which vessel a case of small-pox had been detected at Wellington, as it put to the test the fitness of the Department generally to prepare for and meet at short notice an epidemic of considerable magnitude. For, though the disease did not spread beyond the single case with which it originated in the colony, the precautions we had to take were such in every respect as we should have had to observe had the disease really been found in many of the centres of population. So far as this district was concerned, the time given for preparation was of the shortest. And what made the task more difficult was the fact that the next day was a close holiday throughout the colony on account of the coronation of His Majesty the King. But by dint of working pretty hard, though the telegram ordering me to collect and provide for between two hundred and three hundred troopers who might be in my district only came into my hands at 2 p.m., I was able to wire to you at Wellington that every preparation had been made for one hundred and fifty men or more by 5 p.m., and that all that might turn up later could be received in good time as they came from the more distant parts of the district.

Realising that there was only one place near Dunedin which could be used on an emergency for an isolation camp, I requisitioned the show-ground known as Tahuna Park, which being used only at times, and being enclosed in a high impervious fence, was, as it were, already prepared. The Military Department did all they could to assist, giving me the use of all the tents they had in stock; but, as these were not enough to house all the men we expected, I made use of the stalls in which horses were generally put during show times, had them cleaned down to the sand, filled up with new straw, covered in front and sides where necessary with corrugated iron and tarred paper, thus converting them into very comfortable sleeping-rooms. With these we were able to accommodate over three hundred men, and could have easily taken in a hundred more.

The catering was taken in hand by a Mr. Treacey, who generally caters for the Volunteers when they are in camp, who had prepared dinner for some one hundred and fifty men on Friday evening, the day we got orders to prepare camp. With only one little hitch, which was got over by preparing a second dinner for some of the men, everything worked smoothly in this matter.

We had 286 men in this camp, besides nineteen who had been taken to Quarantine Island suffering from measles, and the whole of these were vaccinated, showing in time more or less good marks.

The camp was put in charge of Dr. Falconer, who had himself returned from Africa with the "Orient," and was by him most efficiently managed, offences against discipline being very few and only trifling, though, of course, it was not possible to keep strict military discipline.

We had very little sickness in camp, and that of a trivial nature; but one of the men on Quarantine Island developed a rash on the forehead, which was a little suspicious at first, though it later resolved itself into a manifest herpetic rash, extending over the backs of the arms. As, however, it did not involve the wrists, was not shotty, and as it was accompanied by a smart attack of articular rheumatism, the case was clearly enough one of rheumatic herpes, and nothing more.

Drainage of Towns, etc.

Several of the towns in my district have been during the year attending to their drainage.

In Dunedin the Drainage and Sewerage Board have been preparing and discussing their general plan of drainage, and have improved many parts of the town and suburbs in which drainage was deficient.

In Gore a general plan is being gradually carried out, which, when completed, will much improve that rising town.

In Otautau the drainage has been completed, and appeared to be working well when I visited it in January.

In Riverton the drainage plan has been carried out, but the septic tank for the hospital had not been erected at the date of my last visit in January.

Invercargill is contemplating a main-drainage scheme, which presents many difficulties owing to the flatness of the ground and a general want of fall to the outlet.

Numerous defects in particular drains were looked to by us, and ordered to be put right, generally being referred to the local authorities, who have seen to them.

Refuse-tips, principally in Dunedin, have been frequently examined, and have been found now generally well conducted.

A goodly number of complaints regarding privies, fowl-runs, stables, piggeries, and suchlike in the towns, and throughout the country, have been received and attended to during the year.

Factories, Workshops, etc.

Many of these were examined, frequently at the request of the Inspector of Factories, and defects in the matter of cleanliness, or of deficient privy accommodation, &c., were required to be put in order.

In Dunedin, and frequently when visiting places in my district, the sanitary arrangements in hotels were found to need improvement, and the suggestions I made were always attended to cheerfully.

Slaughter-yards when visited were mostly well kept, but in one or two cases where they were not in good condition, structurally or from neglect, the Agricultural Department, to whom I reported on what I had observed, have had matters put right.

Infectious Diseases.

The epidemic of scarlet fever, or German measles, which had died away to a great degree towards the spring, again broke out as summer advanced, and, with the resumption of the schools in January, was widely spread throughout Dunedin, having apparently been diffused among children who had played together during the holidays in public places. With a view to limit it, if possible, we instituted a systematic inspection of the town and suburban schools, finding in several cases that children were returning to the schools while still peeling. A circular was then addressed to the head schoolmasters, to be read in their schools, warning children, and through them their parents, that they would render themselves liable to a penalty for exposing children in a public place while suffering from an infectious disease. In one school ten children had to be sent away from that cause, and several in others. The schoolmasters and Inspectors gladly welcomed our action, and did their best to carry out our instructions.

I also wrote to the Otago Education Board requesting them to issue a circular to their teachers, to prevent children resuming school attendance until they were certified by a medical man or by their guardians free from infection. But, I regret to say, the Board informed me that they would do no such thing. I therefore took the matter in my own hands, requesting teachers to exclude such children. At a subsequent meeting, in discussing a letter I wrote to the Board, regretting their want of action, a resolution was passed resolving to assist me in this matter as far as they could; but, so far as I can learn, they have made no motion to carry the resolution to practical issue. I am still, therefore, sending out my circulars (of which the following is a copy) in all school districts from which I have returns of cases of infectious diseases, and I find that the schoolmasters are backing me up loyally:—

Department of Public Health, Dunedin, , 1903.

As I have recently had notification that cases of scarlet fever are occurring in your school district, and have reason to fear that disinfection is not being properly attended to, will you be good enough to read out to your scholars, in school assembled, the intimation that they must not return to school, after absence from illness, without a certificate from parent or guardian that they, the house and its contents, have been efficiently disinfected, and that no sickness of an infectious nature exists in the household. , District Health Officer.

The Headmaster, School.

The question came up several times as to whether schools should be shut up during the prevalence of the epidemic. It seemed to me that such a procedure in towns would mean that children would play together in public places, and so spread the disease more freely than before. In country districts, where the children might live at considerable distances apart, the case is different, and in some of these I consented, and encouraged the closing of schools for a time, with the result that the spread of the disease was stopped or lessened.

I have been endeavouring in every way possible to get local authorities to carry out the work of supervision and disinfection in infectious cases; but, except in a few instances, where they are doing good work, the most of them either neglect my requests or do the work in a very imperfect manner. This is in part due to the fact that they have no conception of their responsibilities, or have no inspectors to carry out the duty of visitation and disinfection. It might facilitate the carrying-out of these duties did the Department issue a general circular to all local authorities calling their special attention to sections 16, 28, and 30 of "The Public Health Act, 1900," and to sections 3 and 6 of the Public Health Amendment Act, as I find the local authorities, as a rule, ignorant of their responsibilities in these respects.

I am sending herewith a chart showing the occurrence of notifiable diseases in Dunedin and suburbs, in Invercargill, and in the counties of my district. With it I also send a small chart of these diseases as notifiable for Greater Dunedin (town and suburbs taken as one), with the total number of cases, and the deaths, calculating the death-rate per cent.

I have also added an outline map of my district, showing graphically the months at which the disease of scarlet fever attained its greatest number of cases, with an attempt to indicate how and from what points the disease appears to have radiated. From this map we have some indication that the disease, in what seems to me to have been a different phase, took a start from the northern border of my district in November, reaching Dunedin in January, and radiating outwards with a fair degree of regularity. You will be able to follow this from the map which shows the disease in November in Waikouaiti, Waihemo, and Maniototo counties; later, in January, in Dunedin; then in Bruce and Clutha in February. It would appear from the map also that the disease was carried from the Lake County to Invercargill and Southland generally, there being a direct line of communication by rail between these localities. This, which appears a new source of spread of infection, has some significance, as apparently the disease has this time assumed more the appearance of true scarlet fever, and not so much that of German measles which it formerly showed to my mind.

The death-rate of scarlet fever and of measles shows again a curious correspondence (for Dunedin), in the former being 3·2 and in the latter 3·1 of the recorded cases. Enteric fever shows a very high death-rate, 30 per cent., and diphtheria, almost as high, 28·5; but the number of cases recorded as having occurred is very low, ten in the former and twenty-one in the latter. Tuberculosis shows a curiously high death-rate, 115 per cent. of the recorded cases, indicating how imperfect the notification is. We had only seventy-three recorded, and eighty-four deaths appeared in the books of the Registrar of Deaths. Again only seven cases of blood-poisoning were notified, while the Registrar's books showed that eight deaths had taken place. I shall have to follow up these indications in future more closely, as they show that we are not getting the proper amount of information regarding these probably preventible diseases in our towns at least.

Mr. Belcher, secretary to the Seamen's Union, having reported that the quarters provided for some of the sailors on board of some of the intercolonial steamers were in a filthy condition and neglected, I sent Inspector Gunn on board some fourteen of these as they arrived at Dunedin to examine into the truth of the allegations. He found that there were some grounds for them, but the neglect apparently was the result of a variation of opinion as to whose duty it was to keep the quarters clean while in port, so we contented ourselves by ordering that the quarters should be cleaned, leaving the decision as to whom the duty belonged to be settled between employers and men.

You will see by my summary that a great deal of miscellaneous work has been accomplished difficult or useless to classify or to mention in detail, but which indicates that our Department is being found to be useful to the public, and that it is being made use of to inculcate and carry out sanitary work in many directions which had hitherto been frequently neglected for the want of any one to see that it was done.

In accordance with your scheme whereby the various District Health Officers should pay attention to a special branch of sanitary science, I have been paying special attention to that relating to the storage, distribution, and general treatment of the food-supply of the colony; but, though I have already collected a goodly amount of information on these points, it is not yet, owing to the many interruptions during the year which have taken me to pressing duties, such as will allow of being gathered together in the form of a special report. I shall, however, follow up the matter throughout this year, and hope to have, in a little time, some details worth presenting to you.

Frank Ogston, M.O., Aber.,
District Health Officer for the Otago-Southland District.

Return showing Number of Notified Cases of Infectious Diseases from the 1st April, 1902, to the 31st March, 1903.

Disease.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Total.
Dunedin.													
Scarlet fever	..	3	1	..	1	1	13	37	52	58	59	60	285
Measles	..	3	3	..	3	..	4	26	23	9	1	1	73
Tuberculosis	1	2	3	6	1	..	6	1	4	2	3	3	32
Enteric fever	..	1	..	..	..	1	..	..	..	..	2	1	5
Diphtheria	3	3	1	1	..	1	..	..	..	2	..	..	11
Blood-poisoning	..	..	..	..	..	..	..	..	..	1	..	..	1
South Dunedin.													
Scarlet fever	..	..	..	..	..	1	8	15	23	16	9	10	82
Measles	..	..	1	..	..	1	10	15	10	8	..	..	45
Tuberculosis	..	..	..	..	..	..	1	1	1	..	2	..	5
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	1	..	..	..	..	..	1
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
Caversham.													
Scarlet fever	..	..	..	..	..	..	7	14	11	15	2	9	58
Measles	..	..	..	..	1	1	5	13	13	3	1	..	37
Tuberculosis	1	3	2	1	..	..	2	1	1	3	..	..	14
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	1	..	..	1
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
Mornington.													
Scarlet fever	..	..	..	..	2	1	3	4	11	7	4	7	39
Measles	..	..	..	..	..	..	3	..	2	1	..	..	6
Tuberculosis	..	1	..	..	..	..	1	..	2	1	1	..	6
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	1	..	..	..	..	1	..	2
Roslyn.													
Scarlet fever	..	..	..	..	..	..	7	3	14	16	16	10	66
Measles	..	..	..	..	..	..	..	1	4	..	..	..	5
Tuberculosis	..	..	..	..	1	1	2	..	..	..	1	..	5
Enteric fever	..	..	..	1	..	..	..	..	..	..	..	..	1
Diphtheria	..	..	..	..	..	..	..	..	..	1	..	..	1
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
St. Kilda.													
Scarlet fever	..	..	..	..	..	2	3	5	7	14	3	1	35
Measles	..	..	..	..	..	..	..	1	1	2	..	..	4
Tuberculosis	..	..	1	..	..	..	..	..	1	..	..	..	2
Enteric fever	..	..	..	..	..	..	1	..	..	..	..	..	1
Diphtheria	..	..	1	1	..	..	..	1	..	1	..	..	4
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
North-east Valley.													
Scarlet fever	..	..	..	..	..	..	4	8	4	9	4	10	39
Measles	..	..	..	..	..	..	1	5	5	2	..	..	13
Tuberculosis	..	..	2	..	2	..	..	..	..	..	2	..	6
Enteric fever	..	..	1	..	..	..	..	..	..	..	..	..	1
Diphtheria	..	..	..	..	..	1	..	..	..	1	..	..	2
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
Maori Hill.													
Scarlet fever	1	..	..	..	..	..	..	1	2	4	1	4	13
Measles	..	..	..	..	..	..	..	..	2	..	..	..	2
Tuberculosis	1	1	..	..	..	..	..	..	..	..	..	..	2
Enteric fever	..	..	..	..	..	..	..	..	..	1	..	..	1
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	1	..	..	..	..	..	..	1
West Harbour.													
Scalet fever	..	..	..	..	2	..	1	1	1	5	2	3	15
Measles	..	..	..	..	..	..	..	..	..	..	..	..	..
Tuberculosis	..	..	..	1	..	..	..	..	..	..	..	..	1
Enteric fever	1	..	..	..	..	..	..	..	..	..	..	..	1
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
Port Chalmers.													
Scalet fever	3	..	1	1	..	..	..	1	2	10	11	8	37
Measles	..	..	..	..	..	..	..	..	..	..	1	..	1
Tuberculosis	1	..	..	..	..	..	..	..	..	1	..	1	3
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	1	..	..	..	..	..	..	..	..	..	1
Blood-poisoning	..	..	..	1	..	..	..	..	..	..	1	1	3
Southland County.													
Scalet fever	1	1	..	..	..	..	..	1	5	5	5	4	22
Measles	39	6	4	3	4	5	13	1	..	..	1	4	80
Tuberculosis	1	2	4	3	3	1	..	2	1	..	..	..	17
Enteric fever	..	..	..	..	..	..	1	..	..	..	..	..	1
Diphtheria	..	1	..	..	..	..	1	..	..	3	2	..	7
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
Invercargill.													
Scalet fever	..	..	..	..	..	..	..	..	3	16	16	26	61
Measles	18	..	..	..	..	..	..	1	2	2	1	1	25
Tuberculosis	..	1	..	4	2	4	..	..	1	..	..	..	12
Enteric fever	..	..	..	1	..	..	..	..	..	..	..	..	1
Diphtheria	..	..	..	..	..	..	..	..	..	1	..	..	1
Blood-poisoning	..	..	..	..	..	..	..	..	1	..	..	..	1
Tuapeka County.													
Scarlet fever	..	1	..	..	..	..	..	..	..	10	..	..	11
Measles	..	..	..	..	1	..	..	..	1	..	..	..	2
Tuberculosis	1	..	2	..	..	..	..	..	..	..	..	..	3
Enteric fever	..	..	2	..	1	..	..	..	..	..	..	..	3
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
Bruce County.													
Scarlet fever	..	..	..	..	..	4	1	..	1	10	16	8	40
Measles	..	..	..	..	..	..	7	1	5	4	..	..	17
Tuberculosis	1	..	..	..	..	1	..	1	1	..	1	1	5
Enteric fever	..	..	..	..	1	..	..	..	..	..	..	..	1
Diphtheria	..	..	..	..	..	..	..	..	..	..	1	..	1
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
Taieri County.													
Scarlet fever	..	..	..	..	1	1	1	1	5	4	13	23	49
Measles	..	1	..	..	3	..	1	2	18	9	3	2	39
Tuberculosis	1	..	..	1	..	..	1	1	2	2	1	..	11
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	1	..	1
Waikouaiti County.													
Scarlet fever	..	..	1	..	3	..	..	8	1	..	..	2	15
Measles	..	..	..	..	..	..	..	..	..	..	..	..	..
Tuberculosis	1	..	4	..	..	1	5	2	1	..	..	..	14
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
Maniototo County.													
Scarlet fever	..	..	..	..	..	..	1	4	..	2	..	..	7
Measles	..	..	..	..	..	..	..	..	1	..	..	..	1
Tuberculosis	..	1	1	..	2	1	..	..	..	..	2	..	7
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
Wallace County.													
Scarlet fever	..	..	..	..	..	..	..	..	..	1	4	5	3	13
Measles	1	..	..	..	..	..	..	..	..	1	13	..	..	15
Tuberculosis	..	1	..	1	..	..	..	..	..	2	..	2	..	6
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Lake County.													
Scarlet fever	..	..	..	..	..	..	1	..	..	..	1	..	2
Measles	..	..	..	..	..	..	..	..	1	3	..	2	6
Tuberculosis	..	..	1	..	..	1	..	..	..	..	..	1	3
Enteric fever	1	..	..	1	..	..	1	1	..	..	..	..	4
Diphtheria	..	..	..	..	..	..	1	1	1	..	..	..	4
Blood-poisoning	..	..	..	..	1	..	..	..	..	..	..	..	1
Clutha County.													
Scarlet fever	..	..	..	..	..	..	..	..	..	..	4	4	8
Measles	..	..	..	..	..	..	..	..	..	1	4	..	5
Tuberculosis	..	..	..	1	..	..	..	..	1	..	1	..	3
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	1	..	..	..	..	..	..	..	..	1
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
Vincent County.													
Scarlet fever	..	..	..	..	..	..	..	..	..	4	..	4	
Measles	..	..	..	..	..	..	..	..	..	..	..	..	
Tuberculosis	..	1	..	..	..	..	1	..	..	..	..	2	
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	
Di phther a	..	..	..	..	..	1	..	..	..	..	1	..	2
Blood-poisoning	..	..	..	..	..	1	..	..	..	..	..	..	1
Waihemo County.													
Scarlet fever	..	..	..	..	..	..	..	8	2	..	..	..	10
Measles	..	..	..	..	..	..	..	..	1	..	..	..	1
Tuberculosis	..	..	..	..	1	..	..	..	..	..	..	..	1
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
Peninsula.													
Scarlet fever	..	..	..	..	..	..	..	..	1	3	1	..	5
Measles	..	..	..	..	1	..	..	..	2	1	..	..	4
Tuberculosis	..	..	..	..	..	..	..	..	..	..	..	..	..
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	2	..	..	..	2

DUNEDIN AND SUBURBS.

Disease.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Total.	Death-rate.
Scarlet fever ...	4	3	2	1	5	5	46	93	127	154	111	122	673	22 = 3·2
Measles	...	3	5	4	2	6	23	61	60	25	3	1	193	6 = 3·1
Tuberculosis ...	3	7	7	8	4	1	10	3	12	6	9	3	73	84
Enteric fever ...	1	1	1	1	...	1	1	...	...	1	2	1	10	3 = 30
Diphtheria ...	3	3	3	1	2	1	1	2	1	4	...	...	21	6 = 28·5
Blood-poisoning ...	...	...	...	2	...	1	...	...	...	1	2	1	7	8
Total number of diseases in each month	11	17	18	17	13	15	81	159	200	191	127	128	977	...

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

Dr. Mason, Chief Health Officer.

IT seems but yesterday when I was making out my last annual report, so quickly has the time passed away.

A considerable amount of time and energy has been expended in getting the Village Councils throughout the Islands started. The fact was recognised that when the machinery of the Native Councils was properly trimmed and started, it would be a power that would materially affect the Maoris. The question of having some local authority to see to the carrying-out of all the sanitary recommendations has been a long-felt want. For this and other purposes the entire colony has been visited, meetings have been convened, the Act fully discussed, plans of sanitary work laid down, a general enlightening as to the best methods of active work for the Village Committees to follow has taken place, and a detailed report of each village visited has been sent in, with suggestions for improvements in water-supplies, drains, closets, dwellinghouses, kautas, meeting-houses, fowl-yards, pig-sties, &c. All this has entailed a great deal of work, and as there has been practically only one man for the whole colony, without even a single sanitary inspector to do the inspecting, the marvel is that we have been able to accomplish as much as we have. No one can doubt for a moment the good work which was commenced. Many would like to see quicker strides in the improving of Maori kaingas, but when one knows the racial and tribal prejudices, the tenacity of certain customs, the influences of the old traditions, the communistic system of living, it is only then that one realises the immensity and difficulties of the work and recognises how marvellous indeed is that which has been done.

The aid of sanitary inspectors will be the fulfilling of a long-felt want, as it has been almost impossible for one man to do justice to such a large field. One Inspector has been transferred from the Native Department, and I trust more will be appointed almost immediately. The following regulations concerning these inspectors were drawn up:—

DUTIES OF SANITARY INSPECTORS FOR THE MAORIS.

1. He shall by inspection of the district, both systematically at certain periods and at intervals as occasion may require, keep himself informed in respect of the nuisances existing therein that require abatement.

2. He shall make a house-to-house inspection of the Maori whares in a pa, and note their condition in respect to the fences, maraes, location, water-supplies, closets, drains, floors, windows, chimneys, beds, number of people sleeping in whares, ventilation of dwelling and meeting houses, kautas, or any other matter that might affect the health of the residents.

3. He shall wherever practicable see that Maori corpses are not allowed to remain unburied for a longer period than that specified in the district by-laws or the Public Health Act.

4. He shall, upon receiving notice or becoming aware of the existence of any nuisance or the breach of any regulations, as soon as possible visit the spot and inquire into the alleged nuisance or breach of regulation. He shall immediately advise the occupier of the premises in writing of the precautions and alterations which he considers necessary, providing the cost of alteration or destruction of any property does not exceed £5; otherwise he is first to consult the Health Officer to Maoris or the Chief Health Officer. He shall also notify the Council controlling the district.

5. He shall persuade and advise that no putrid food, such as rotten corn, rotten potatoes, or any other food that may be injurious to health, is partaken of by the native inhabitants of any kainga or village. He shall, if in any case doubt arises in his mind concerning anything which he may think inimical to the Maoris' health, report the matter to the Health Officer for the Maoris with a view of obtaining his advice thereon.

6. He shall give immediate notice to the Health Officer for the Maoris of the occurrence within his district of any contagious or infectious disease, or concerning any indigent Native who is a fit subject for a hospital and who desires to go to one.

7. He shall inform the Health Officer for the Maoris whenever any occasion arises where he considers his intervention is required in consequence of the existence of any danger to public health, due to nuisances, the overcrowding of houses, &c.

8. He shall meet the Komiti Maraes whenever possible, and impress upon them by example and persuasion how urgent it is that they give their fullest attention to the by-laws and regulations laid down under the Act.

9. He shall enter from day to day in a book to be provided particulars of his inspection, and of the action taken by him in the execution of his duties. He shall also keep a book or books, to be provided by the Health Department, so arranged so as to form as far as possible a continuous record of the sanitary conditions of each of the kaingas in respect of which any action has been taken under the Public Health Act, and shall keep any other systematic records that the Health Officer to the Maoris may require.

10. He shall at all reasonable times, when applied to by the Health Officer for the Maoris, produce to him his books, or any of them, and render to him such information as he may be able to furnish with respect to any matter to which the duties of Inspector under the Act relate.

11. He shall, if directed by the Health Officer for the Maoris to do so, superintend and see to the due execution of all works which may be undertaken under his direction for the suppression or removal of nuisances within the district.

12. In matters not specially provided for in this Order, he shall observe and execute all the lawful orders and directions of the Health Officer for the Maoris or the Chief Health Officer.

As soon as we can have more Native doctors it will be a wise move to have them appointed as local Health Officers, having similar duties as the present Health Officer to the Maoris, only restricted to certain provinces, and each having a staff of inspectors, so that full justice can be done to each locality. However, we can only go on at the present as we have heretofore done.

The Far North.

During the past year I have travelled over every part of the far North, and visited every pa of consequence. The usual ignorance and carelessness *re* sanitary and hygienic matters were noticeable; but, though these Natives are still living in the ancient whare, they at least sleep on raised bedsteads, which is a decided advance on their former custom of lying on the bare ground. One is not surprised at the low condition of life amongst some, seeing that they live in the gum regions, where the scum and slush of civilised societies congregate, and teach the poor Natives the evils which in a great many cases have helped to bring themselves down in the scale of civilisation. Yet, on the other hand, one must not conclude hastily, and brand them all with vice and degradation. The influence for evil has verily been there, for evidences are legion; and yet so has the influence for good: evidences of that may be seen also in the ruined churches standing alone on some hills, keeping watch over the memories of a faith which has been.

The general condition of the homes in the far North is fair, compared with that of those in richer districts. Most of the Native land is very poor and unproductive. Almost the only source of income is the gum-digging industry, and that now does not yield much, as the gum is very nearly exhausted. In working with these Natives we have not aimed at too many things, but we have rather endeavoured to improve their present condition with the material found at hand. We have tried to make the Native whare do—only larger, higher, and more roomy, with floors, windows, and chimneys. I do not think it wise to overload these Natives too much at the commencement, but rather to improve upon what they have, and so bring a gradual change for the better in their methods of living. The extreme poverty of some makes it very difficult to do much. However, even this drawback has its benefits, for in order to live at all the Northerner has literally to earn his bread by the sweat of his brow, and this is productive of much good. Having no fat rents to collect, as is often the case with our more favoured southern Natives, he has to work.

Now, one must not imagine that the northern Maori is a paragon of virtue, for I have been much grieved to see the way some of the younger Natives hang around the saloons wasting their time and squandering their money at the billiard-tables and revelling in idleness. One would not mind so much if the games were limited to a little after-dinner enjoyment, but when they are being played all day long, and part of the night, they certainly become a curse. We have endeavoured to get the Councils to religiously watch these gaming-tables, for I am certain they have been the cause of much harm.

Gum-digging as an occupation has its disadvantages, for it entails exposure in winter and very hard work to those making a living out of it. It is thus doubly hard for the poor Maori women who have to do the digging. The children are neglected and often taken away from the schools, their associations are not of the most moral type, and the result is disastrous to health, to intellect, and to morality. Knowing, then, these conditions, what can be done to mitigate the evils? After considering these things well, I have come to the conclusion that perhaps if the Government started a grape-farm, employed Natives as workers, and taught them how to tend the grapes, in a comparatively short time they would learn how to manage for themselves, besides helping to start the Government vineyards. I am sure the Maoris would be willing to co-operate in this, and I am certain it would also promote an industry which at the present is much neglected, and would more than pay for the expenditure. The good started would be far-reaching; it would give some Natives constant employment, which is mostly needed, and it would in time make them independent, instead of paupers and a burden and hindrance in the State. What the Maori needs at the present time is constant employment. Vine-growing would in a great measure meet the demand, and thus mitigate many of the existing evils. We need not limit fruit-growing to the grape alone, as I understand that almost any kind of fruit could be remuneratively cultivated. Perhaps if I may be allowed to suggest, the waste barren land of the North could be also utilised for growing wattle for tan, and so, again, more employment could be meted out, in the planting, skinning, and making into tan of these trees. I have had meetings with the great Ngapuhi tribes, and I have been assured of a hearty co-operation in these matters if the Government would only lend a helping hand, and I am sure that unless something of this kind is done to stimulate the Natives to try other work than gum-digging the future of the northern Maori is almost hopeless.

The Natives on the whole are living in very small settlements, and in scattered places, so to visit them I had to do a great deal of horseback riding. The village "Komitis" were taken around, and the needs of each place pointed out. The meetings were all well attended and appreciated, and from the Councillors' and chiefs' speeches, I feel sure there will be a great deal done within the near future. The enthusiasm and willingness to comply with the law in regard to sanitation is phenomenal. I expected this, but I also expected a reaction within a year or two. It is bound to come, but the knowledge we have is a provision for the emergency, and instead of being discouraged we will be stimulated to successfully cope with the difficulties ahead. After they are passed a steady current will set in, and a favourable breeze of industry that will waft the Maori on to progress in perpetuity. To obtain good and lasting results we only need to keep the Maori interested in himself; and this must be done by some one who would constantly guide and advise him.

Chatham Islands.

Since 1902 I have made two visits to these Islands. Upon my first arrival I found the Natives in the thraldom of Te Whiti, the great Taranaki prophet. The report of this visit is attached. For years back this tribe has furnished Parihaka with all the delicacies of Maori taste,

which meant the impoverishing of the senders and their children in order to gain the goodwill of the renowned prophet. It was only the winter before I was at these Islands that a disastrous boat accident happened while the Natives were getting albatross for Parihaka, in which nine of the most promising young men were lost.

I landed quite expecting to have great contentions concerning Governmental matters, and I was not disappointed. I gathered the entire Native population together, and, with Sir William Steward and Mr. Florance, the local Stipendiary Magistrate, I spoke to the Natives. Sir William Steward and Mr. Florance both made impressive speeches in regard to the Councils Act. This meeting was continued for a whole week, during which time I spoke constantly day and night. Needless to say that at the end of the week the Maoris were persuaded to have a Maori Council, which meant the breaking of the power of Te Whiti, at least in these Islands. Members for the Council were there and then elected.

The Council since that time has done excellent work. The condition of the Maoris in these Islands has materially changed for the better since the formation of the Council. Instead of sending their all as an offering to Te Whiti, thus inviting poverty, they have now sufficient food and clothing to keep them and their children in a healthy state. Many of the suggestions concerning sanitary matters have been carried into effect. Many are being considered, and many will soon be enforced. I am very happy to state that there have been far fewer deaths from any cause these last two years than has ever been known in the history of the Islands.

The first time I visited the group I noticed that there were very few Maori children attending the Native school. This was, no doubt, due to the Te Whiti influence, for Te Whiti does not believe in European education. Upon my second visit to the Islands I found only two families who kept their children away, but since my last visit, I am glad to say, every family in the Islands is represented in the school. I cannot speak too highly of the gentlemen who have this branch under their control, for their influence for the betterment of the Maori has been most satisfactory. It is hoped that the Government will find room for some of the brighter scholars in our larger Native colleges.

The drugs which the Government so kindly gave to the Islanders, and which were put into Mr. Sigley's hands (the schoolmaster), have been a boon to the sick Natives. In this connection I might say, considering the fact that there is no medical man in the group, it would be most advantageous and beneficial to the Islanders if the Government were to send a doctor there two or three times a year; or, upon their next appointment of a Magistrate, to select a medical man to fill the place. I am sure, after my experience, it would be the best thing to do, and perhaps many lives could be saved by so doing. I found the pamphlet on small-pox had stirred the Natives to the vaccinating-point. So when I arrived, I had no difficulty whatever in getting all the children vaccinated, both Natives and Europeans, which all resulted most excellently.

I am glad to state that the Chatham Islands have awakened to better things. Under the Council's influence, the Maoris have improved the sanitary condition of their homes, acres of sand-hills have been planted with the marram-grass, and the Natives have been stimulated to go into the pig industry, giving them constant occupation, and thereby making them healthier and better contented.

The following notes of the first meeting were taken by Mr. R. S. Florance, S.M., and the object of it was to discuss the question of electing a Maori Council for the Islands under "The Maori Councils Act, 1900": —

About three days before the meeting the Hon. Major Steward and Mr. Florance were invited to be present and to speak. Accordingly on the 8th January, 1902, directly the passengers per "Toroa" for New Zealand had left for the ship, these gentlemen proceeded to the pa. On arrival they found that chairs had been placed for the doctor and the other visitors in front of the residence of Mr. Pomare, the doctor's brother.

It was not long before the doctor made his appearance, amid hearty handclapping from the numerously attended gathering. In rapid and well-rounded sentences, the force of the reasoning of which could be read in the faces of the speakers and hearers alike, although the address was delivered in Maori, the doctor spoke of the past history of his people, and especially those of the Chatham Islands, amongst whom the early years of his life had been spent, and of whom he had lasting and pleasing recollections. He spoke feelingly of their somewhat recent sorrow—namely, the unfortunate boat accident, which occurred whilst getting food to send to Te Whiti, in which so many valuable lives were sacrificed in a valueless cause. Then he touched upon the future in store for his people, and the love and brotherly sympathy which their pakeha fellow-colonists had extended to them one and all; their endeavours to give them equal rights and liberties with the rest of the people of New Zealand; their recent legislation in relation to public health and local self-government, &c. He said that the Government of New Zealand confidently hoped that the Native race would grow up a healthy, law-abiding, and noble people, whose industry and probity would become an object-lesson among the great nations, and who would ultimately learn to bless the day that brought them under British rule. He hoped the day was not far distant when ignorance and superstition would vanish from among them as the night vanishes before the day. Wherever he had been—and they must allow he had travelled far, and seen much of the world since he left them—he had found no place where the aboriginals were treated better or more liberally governed than in their own New Zealand. Equal rights, equal laws, equal affection, was the rule not the exception among the Europeans; why then, he asked, should not the Natives' inherent love of fair play lead them to throw off the yoke of separatism and racial enmity and join hands in making one great people. "Let their people be your people, their God your God." "You sent for me, and I have responded to your call. I have come in my own person, and with the law of your own choosing in my hands; let me not return empty. Let me carry to far-away Taranaki and the whole of the Maori people the good news that I, Maui, your

old friend and associate, of your own tribe and blood, have successfully performed my mission amongst you, to stop your tears, to make you healthy, wealthy, and wise. Without your health all your wealth and wisdom will be of little worth to you; therefore, adopt this measure which will make you wiser and better men, in your homes and out of them, in the school and in the State." Thus argued the speaker, waxing eloquent as his theme opened before him, and his auditors appreciated his earnestness and desire to improve the social and moral condition of his people. "Do not blame the pakeha for your vices which you have voluntarily accepted, but for the future choose the good and eschew the evil. Take what is given you for your comfort and advancement, learn to govern yourselves well, so that you may ultimately share in the good government of the beautiful and fertile country which you have the privilege to occupy for the span of your existence." The speaker then sketched the main provisions of the Maori Councils Act, and its many advantages, pointing to the serious consequences which flow from the neglect of the laws of health, inattention to cleanliness, and the like, the effect of insobriety, with its debasing characteristics, the excessive use of tobacco, &c. He urged that they should not delay the good work, but should at once do everything which would insure the election of a trustworthy representative Council before his return to the mainland; and he likewise urged that that Council should earnestly perform the duties which would devolve upon them. This was his night-and-day dream, and the desire of his life; let them see that the love he bore them should be reciprocated, and that he should return to the Government of New Zealand and to their Maori brethren throughout the length and breadth of the land with the joyful tidings that they had decided to lead new lives, to be foremost in the van of progress.

These remarks were received with approbation, and soon one Native speaker after another followed, giving his view of the movement, and generally supporting the adoption of the Act. All the speeches were markedly courteous, and replete with good sense, and displayed a wonderful grasp of the subject of discussion.

The Hon. Major Steward was then called upon to address the meeting, and did so, Dr. Pomare acting as interpreter. He told of the high appreciation in which the Native race was held by the people of New Zealand, and of the efforts made to elevate them and teach them to understand and appreciate the advantages of social reform. He passed in review the various enactments which had been introduced from time to time in the Parliament of New Zealand to improve the condition of the Natives, and finally dealt with the Maori Councils Act itself, section by section, making running comments thereon as he passed. He urged them to adopt that Act, and so apply it to themselves that its practical utility would soon become apparent to all coming in contact with them; and, in conclusion, he thanked the meeting for its attention.

The Stipendiary Magistrate, Mr. Florance, next addressed the meeting. He spoke of the pleasure he experienced at being present on this memorable occasion when a new *régime* was about to be brought in which would bring the Maori and pakeha into much closer union of thought and action than heretofore. The speaker complimented the Natives of the islands upon their high moral tone, and the manner in which they had backed him in the performance of the manifold duties of his office during his three years' sojourn with them. He felt confident, judging from the past, that the pleasant relationship which had hitherto existed would continue, especially as they knew how anxious he was to do everything necessary for their welfare. He hoped they would look upon him as their friend and adviser in any difficulty which the Council might meet with in the early stages of its existence. They might rest assured that their desire to improve their conditions of life would always meet with the hearty support of any representative of the Government who might be there; indeed, it was tacitly understood that no officer in charge of this district should do anything antagonistic or detrimental to the well-being of the community at large. They ought not to neglect the opportunity now offered them of managing their own affairs effectually and successfully. He urged them not only to take immediate action to constitute the Council, but also to take such further steps as would set that body in actual working-order with the least possible delay, and thus prove their earnestness and their full acceptance of the benefits offered them through their old friend and fellow-citizen, who to look upon was to respect and admire, for he practised what he preached, and was a walking exemplification of the good results which follow from better conditions of life. There was a place in the world—in the arctic regions—where the sun rose slowly day by day until it melted the ice barriers under its beneficent rays; and in like manner, in these islands, the light was slowly, yet surely, increasing in the hearts and minds of the Maori people, and leading them on to the perfect day when all hearts would be joined in one, and Maori and pakeha would become one people. The speaker concluded by thanking the doctor for his kindness in acting as interpreter, and the people for a patient hearing freely accorded.

Major Steward and Mr. Florance were invited to partake of refreshments in the Chief's residence, which invitation they accepted; and they then retired well pleased with what they had seen and heard.

Morioris.

This unhappy race is all but extinct. There are only eight pure Morioris living. The youngest is a man about twenty, and there are no women of his age, or that he could marry; thus he becomes the last of his race.

In 1862 a census was taken by the Morioris. A copy of the original document is now in my possession. According to this census, there were 945 males and 727 females living when the Maoris landed in 1836.

The history of the decay of this race can easily be traced. Apart from the few who were slaughtered by the New Zealanders upon their arrival, the diseases which were introduced, both by the pakeha and Maori, carried off the majority. It is stated that long before the Maori came a ship was wrecked near the Islands coast. Several of the survivors were received by the Natives.

Some of these men had an unknown disease, which they gave to the Morioris. According to the descriptions of it I am led to believe that it was small-pox. Many of the aborigines died at this time. Then again about the years 1855–56 an epidemic broke out, which was in all probability meningitis; at any rate scores and scores of both the Moriori and Maori died. In 1866 measles appeared. It is stated by some of the old Natives that the Hauhaus brought it over; at all events many more died, probably more from the mode of treatment than the actual disease, for the cold plunge bath in some river or spring was the favourite mode of combating the disease. After this another epidemic visited the Islands, but the descriptions of it are very vague, and though it carried off many I was unable to find out what it was. In 1891 *la grippe* carried off a few more, till at the present the total Maori population does not exceed two hundred, and the Moriori but eight.

It is hoped that improved sanitary conditions will bring about a decided change, and I have no doubt it will, at least as far as the Maoris are concerned.

Alcoholism.

It is most gratifying to report the steady improvement that is setting in in this respect. Many convictions have resulted in consequence of cases of drunkenness in the pas being handed to the Councils to deal with. The improvement has been quite noticeable in the Taranaki District, where once the Natives drank most excessively. There was hardly ever a tangi where large quantities of spirituous liquors were not consumed by men, women, and often children. It is somewhat different now: the wholesome fear of being fined by the Council, or locked up in gaol for failing to pay the fine, is having a good effect in stopping this great evil. It is, however, far from being entirely stopped; but the mana of the Council is being established, and drunkenness is on the decrease. There are, however, a few districts where the Maoris still drink excessively, but they take care not to return to the pas while in an intoxicated condition, as the mana of the Kaunihera is supreme there. If the European part of the community objected to have drunken Maoris parading their streets, and took steps to have them arrested every time they thus misbehaved, I think they would soon learn to dread the lock-up as they now dread being fined by the Councils. During the past year the Maoris have realised as never before the evils of alcohol, and as a result many are desirous of asking the Government to prohibit the sale of it to any Maori whatever.

The Wanganui Natives sent us a petition asking that alcohol be not sold to the Natives by the steam-packets along the river. The following was written at the time concerning the petition, and referred to the Hon. the Minister of Public Health:—

Sir,—

I have just received the attached petition from Natives living along the Wanganui River concerning the selling of liquor to Maoris on the steam-packets. The petition deals with the advisability of prohibiting the sale of alcoholic beverages along the river to any Maori. You will notice that it is signed by forty-three Natives.

In regard to the liquor question amongst the Maoris I think we ought to encourage sobriety wherever possible. The Maori Councils, I am pleased to state, have made a united stand in trying to root out this evil from Maori kaingas. The Natives have at last awakened to their doomed condition—the universal cry is for better things; and so at the commencement of this new-born impetus to improve themselves, and while they of their own free will so earnestly pray that the sale of liquor be prohibited to Maoris, we can only, in duty bound, lend them every available aid that is possible for us to give in order to forward them on to soberness, industry, and progress; and, mark, they were not without consideration for their pleasure-seeking white brother, for they express the wish that it be not prohibited to him; but they stipulate that should the white brother violate his bond by giving any Maori alcoholic drink, then let the sale of it be entirely stopped in the district to either Maori or pakeha.

Drink, as you are well aware, has been and is a terrible curse to the Maori. It has been the means of depriving many Natives of food, clothing, homes, and lands. It has rendered scores quite destitute of the comforts of life. It has swamped many with degradation, poverty, laziness, and disease. It has brought ruin and death, and now, in this blazing sun of civilisation and advancement, it even threatens the Maori with extinction. The Maoris have a proverb, "While the word is still warm with the breath of my body, speak." And so, while this great desire is still within them let us speak to them by heeding this their supplication, and thus help to keep away one of their greatest enemies, alcohol.

Trusting you will look into this matter,
Dr. J. M. Mason, Chief Health Officer.

I have, &c.,
Maui Pomare, M.D.

The subsequent action of the Wanganui Licensing Committee you are already aware of, and I need make no comment.

In regard to the King-country Maoris and alcoholism I am afraid that when the Natives do get liquor, which they quite often do in some mysterious way, it is of such a poisonous character that if it does not kill them outright it soon would do so. It makes one pause and think it would be perhaps more advantageous to have pure liquor under good control than to have as at present bad liquor under no control.

If in such districts as the Waitotara and Taranaki, where a great deal of money is annually paid to the Natives by the Public Trust Office, the money was obliged to be spent in the improving of the homes instead of being allowed to be squandered in drink, billiards, and horse-racing, it would be far more beneficial to the Natives than it is at present.

Closets.

In olden days the pas were all supplied with closets, which were called *paepaes*. These were generally built at the top of some steep place, hole, or cliff, and were oftentimes elaborately carved. It was only when war ceased, and the Maoris began to descend to the low levels to live, that neglect in regard to this matter crept in.

In some localities the prejudice against closets has been so great that it was with extreme difficulty that we were able to persuade the Natives to build these much-needed houses of convenience. We have so far tried to lead and not to drive the Maoris, but the importance of this matter is so great and the safety of not only the Natives but also of the pakeha is so involved that in some districts we have now to enforce the erection of these houses. It is gratifying to note that

Maoris are now quite awake to the importance of the matter, for at the recent General Conference of the Maori Councils a resolution to form a general by-law enforcing the erection of closets was unanimously carried.

Tohungas.

Though the influence of the tohunga is much broken, yet the Maori mind is still steeped in superstition. We have yet to stamp this evil completely out. The open practice of dipping patients in cold streams has been almost stopped, but, like the many-headed Hydra, tohunga-ism has arisen in multitudinous forms, and each of the new forms is full of vitality. Of late years many *tohungas* have arisen and each has flourished awhile and then quietly died out, but the mischief which had been done still remains and is irreparable. A *tohunga* soon gathers a following. They go from pa to pa professing to cure all manner of ills. They stay long enough to eat all the food in the place, besides running the residents into debt; then they move on, carrying the germs of disease with them and leaving poverty and starvation behind. The law of hospitality is so strong among the Maoris that they would rather die than have it said of them that they turned strangers away. It is useless for me to relate the works of these *tohungas* separately, for they all more or less work upon the superstition of the Maori.

The term *tohunga* is a very broad one, and it may mean any kind of specialist. The Natives were much exercised over herbal baths a short time ago, and those who professed supreme knowledge along these lines reaped a good harvest. After considering this craze well over, we came to the conclusion that it really did good in some respects, though not from the medicinal properties of the herbs and leaves as much as the cleansing effects of the baths. In several instances we stopped the bathing because of the insanitary condition of the bathing-houses, and the filthy state of some of the baths, the same water being used for several patients. Quite an ingenious plan is that of a certain *tohunga*, who gives a warm bath without the herbs, but each *turoro* is made to throw into the bath silver or gold, and the more that is thrown in the quicker the patient recovers. Tohunga-ism stretches from the ancestral incantations directed to the ancient gods to the dipping of patients in cold or hot water, and down to the more modern form of mixing all the spirituous liquors known and using this mixture as a cure-all. The latest craze is the laying on of hands.

I have watched all these *tohungas* at work, and have come to the conclusion that, unless Parliament passes a stringent law prohibiting the practice of any kind of *tohunga*, we shall always have a great many Maoris dying from the effects of tohunga-ism. It is true that many Maoris go to *tohungas* because they have no other alternative. They either live in districts where there are no doctors, or, if they asked a doctor out, the charges are so extravagant that Maoris cannot possibly afford to pay the fees. The result is inevitable—they go to the *tohunga*. What we need to do is to pass a law to prohibit tohunga-ism and to subsidise properly qualified men in districts where there are no doctors; and, where this cannot be done, to have medical men make periodical visits to these localities. I was greatly gratified, at the recent meeting of the Councillors' representatives at Rotorua, to find that the Natives were quite anxious to have cottage hospitals erected in their districts, and they further desired that their daughters be educated as nurses in the way we have suggested. If hospitals were erected for them, the Maori girls taught and graduated as nurses, the doctors liberally subsidised to do Maori work, the Native lands individualised and each one made to work constantly on them, and sanitary reforms strictly carried out, I am certain the Maori would never die out.

Infant Mortality.

Perhaps some would think it exaggeration to say that more than half the Maoris die before they are four years of age. This seems a serious statement to make, but it was only after very careful observation and figuring that we came to this conclusion. And one is not surprised to find this state of affairs when inquiry is made into the infant life of the Maoris. The marvel is that more do not die.

Lucky is the baby who has a mother's breast, for it at least has a better chance of living than the unfortunate baby who has to be brought up on the bottle. Thrush, gastro-enteritis, and a host of other unavoidable diseases generally snatch away the lives of these infants, who perhaps could have been saved if the mothers were enlightened as to how to feed the babies. Then, again, after the babies are weaned the food they get is very often unsuitable for such tender digestive organs as theirs. Potato, kumara, and meat of some kind is generally the fare.

The Maori huis and prolonged tangis are no doubt great curses, and are to blame in a great measure for the infant mortality. The people congregate, bringing their children with them. Their crops are often left neglected just because some *whanaunga* a hundred times removed has died, and by custom they have to attend. The result is overcrowding of badly-ventilated whares, with the resulting evils, and Tamata returns home with a bad cough, the seeds of consumption well planted in his lungs, his wife in the same way, and, alas, the poor baby almost dead with the repeated attempts on its young life by asphyxiation. They return to find their crops all spoiled, and so the winter sets in, and they have to live on half-rations. These useless huis and tangis ought all to be abolished, except when there are important matters to discuss, and then only the men should be allowed to attend, and the children should be absolutely forbidden to be taken. It is no wonder that the infant mortality is great when we have these little mites taken into badly ventilated, overcrowded, smoke-filled whares, their meals given them at irregular hours, their clothing often so scanty and ragged that it is not sufficient to keep them warm.

We have endeavoured to touch these things in our lectures, but what is really needed is to have some mother in Israel to go among the Natives to teach them how to look after the baby, how to cook for the invalid, and how to administer the simpler remedies. I am convinced that if this were done the alarming infant mortality would be greatly reduced.

Enteric Fever.

Owing to the non-registration of Maori deaths we are in the dark concerning correct figures, but from my experience I am convinced that this terrible disease is much more prevalent than we imagine. I have known of actual cases where enteric was treated as simple diarrhœa, and I have seen the patient walking about and the rest of his family sleeping with him at night. Of course, we are bound to have a high death-rate where Hygeia's laws are so openly disregarded; but it is hard to absolutely isolate any Maori case, unless one is there to constantly watch it.

Enteric is mostly due to the lack of a proper system of drains, closets, and water-supplies, and the too close proximity of the *poakas*. The *pun-a*, or shallow well, which generally receives all the surface drainings, must of necesssity be a constant source of danger; but I am glad to say that the Maoris are now commencing to see the evils of shallow wells, and are resorting to the use of tanks, and in instances they have been aided by the Department in getting pipes to bring in pure water from some adjacent creek.

I know that many cases are lost through ignorance and the want of proper care and nourishment. This could be greatly relieved if an ample provision were made by the Government for the education of our girls as nurses, so that they could be called upon at any time to nurse needy cases throughout the country. I have often seen patients die because we were unable to get English nurses to care for them, and the patients being unwilling to go to the hospital has made these cases most difficult to deal with. I am sure that if we had competent Native nurses in our European hospitals to draw upon, we should be able to save many lives. The urgency of this matter compels me to suggest that we ought to have a larger number of Maori girls admitted to the hospitals throughout the colony at once. At present I think there are only three Native girls in training. There should be more, and the competent ones should be so ruled that where necessity demanded we could get them without delay or hindrance to do work for their own people. I am sure that if this state could be brought about it would mean the salvation of the Maori race. Sanitation is good, but people must and do get ill, and, even if it is only a cold, that cold may lead to disastrous results, especially where Maoris are concerned. So these nurses are needed to nurse and advise the sick, to teach the well, and to be leaders in the van of progress and health. The Maoris are dying by hundreds for the need of them, the children are pining away for lack of their attention, the babies never mature because of the ignorance of their mothers, who could be easily taught how to look after their children. I firmly believe that if we had an efficient and reliable lot of Native nurses, who could be called upon in cases of sickness to go out and help their brothers and sisters, it would reduce the Maori death-rate by half. I would respectfully suggest that one or two Native nurses be admitted to each of the local hospitals throughout the country, and be in readiness to be called upon for any needy case that may arise in that district. If this be done, and the knowledge of sanitation propagated throughout the homes, I feel certain that within a few years the census would show a marked increase in the Maori population.

Tuberculosis.

Much is stated and written about tuberculosis in these days. Undoubtedly, the great white plague has had a great sway in Maoriland. If we were to ask any practitioner who has had experience with Maori cases as to the termination of ordinary diseases, I am sure the answer would invariably be, "Consumption." I have seen consumption in all its forms amongst the Maoris. The death-rate from consumption is far more than we ever dream of. This is due, as in nearly all the other cases, to ignorance and neglect.

The matter of isolating Native cases is a particularly hard one to deal with. One is not confronted with a family, as in European cases, but a whole tribe has to be consulted, pleaded with, and argued with before one can effectually isolate any patient suffering from an infectious disease; and even then the trouble does not end, for it is most difficult to keep any Maori for any length of time by himself, for the superstitions of his ancestors concerning the night have still a great hold upon his mind. The only way I can see where much good might be accomplished is for the Government to add a special ward to the Cambridge Sanatorium for Native consumptives; or, failing this, to have a small hospital erected at some central location exclusively for Maoris. This would be valuable from many standpoints: we should be able to isolate cases completely; the Natives could be treated with the latest lines of treatment, and they could get better care and good nourishment; having Maori nurses would do away with feelings of strangeness amongst pakehas; there would be more likelihood of having cases sent to the hospital; hospital prejudice would be greatly obviated; it would be a great factor in moulding and changing Maori life and ideas.

The spread of tuberculosis amongst the Maoris is undoubtedly due to the non-isolation of cases, the huddling together in small, ill-ventilated places, infrequent bathing, exposure, lack of proper clothing, overheating one day and exposing to cold the next, expectorating about the *maraes* and homes, and the lack of proper food. I may state, in conjunction with this, that much good has been accomplished by the few pamphlets that we have been able to put into Maori and circulate throughout the country concerning some of these diseases and the way to treat the sick; but through the constant demands of the work, and the lack of a clerk to do our correspondence, we have been prevented from doing more of this much-needed work.

Small-pox.

It has long been recognised that if an epidemic of small-pox were to visit New Zealand the Maoris would be quite helpless to meet it. Knowing this deplorable state of affairs, we wrote a pamphlet in Maori pointing out the dangers of non-vaccination, the advisability of being vaccinated, the effects of the vaccine lymph, &c. The pamphlet was circulated throughout the colony, and as a result a deep desire to be vaccinated was created. Consequently, a large correspondence ensued, and a demand for public vaccinators in the outlying districts had to be met, and, though

Case of Leprosy.

H. – 31. Case of Leprosy. *Face page 73.*

this has only been lately adjusted, yet over 2,250 were vaccinated, and 1,728 of these were done by us. We noticed that the lymph had different effects upon different children, the scar being most deep and pronounced in the pure Maori, not so deep in the half-caste, and least of all in the quarter-caste, proving, perhaps, the immunity that has been established by successive years of vaccination. From the present outlook we hope to have the Native population safe by the end of another year—at least, as far as small-pox is concerned.

LEPROSY.

The traditional obnoxiousness of leprosy has been so well handed down to us that we shriek out most terribly against it, and yet it is not half as bad as consumption. Perhaps if tuberculosis took on the hideousness of leprosy more stringent measures would be taken in regard to its spread.

Leprosy has long been known in New Zealand—at least, amongst the Maoris. The earliest mention of it dates back to the migration from Hawaiki, and perhaps that is why it sometimes went by the name of *tu Hawaiki;* and if the Maori truly came from Hawaii, as some ethnologists would lead us to believe, this would in a measure prove that theory, as leprosy is most common in the Hawaiian Islands. If tradition is to be credited it must have been fairly common at one time, but perhaps the strict laws of the ancient Maori concerning the isolation of these cases were vigorously carried out, and that is why it is not so general now. I have been informed by Captain Mair and some old Maoris that it has always been known in the Taupo district. There is the well-known pathetic legend concerning Te Rohu, a once renowned beauty of the inland seas. It is related that she was smitten with leprosy, and forthwith she composed a most touching lament concerning her lost beauty and prestige. This lament may still be heard sung in the quiet of the evenings along the shores of the great lake by some of her lineal descendants. Leprosy went under the different names of *ngerengere*, *mate*, *tu whenua*, *tu Hawaiki*, and *mutumutu* amongst the Maoris, and was generally supposed to be the work of some evil *tohunga*, so if the incantations of another *tohunga* could be found more potent than the bewitching one the effects became counteracted, and thus the patient was cured. Whether any got well in this manner we can only leave to conjecture.

The alarming report which was circulated a while back that there were forty or fifty cases amongst the Maoris proved to be untrue. During the past year I have examined a number of alleged cases of leprosy, but found them to be mostly cases of *lupus vulgaris*, syphilis of the tubercular form, gangrene, and ichthyosis. We have, however, come across three typical and true cases of leprosy—one in the Raglan district, one up the Wanganui River, and one—a woman—in the Taupo district. Complete isolation has been attempted in all three cases; but, knowing the utter impossibility of completely isolating Maoris, we can only feel safe when all the lepers in the country are deported to some island where they can be carefully looked after, and be secure from spreading the disease. Attached are the photographs which I took of two of the cases.

Case A.

My attention was first called to this case by Mr. Wilkinson, the Government Agent at Otorohanga, King-country. As soon as I was able I went to find the patient, but was informed that he had gone away. I left instructions to have him brought to Rangiriri on the following week, so that I could see him. I went back on the 28th May, and found the patient awaiting me. I then proceeded to make an examination. I visited this case again on the 12th June with Dr. Makgill, when a further examination was made, and smears were taken from the nodules and sections for bacteriological investigation. We made careful examination of the smears, and found the bacilli of leprosy. A section of an ulcerated nodule was sent to Mr. Gilruth, and the result of his examination revealed granulomatous tissue with typical bacilli of leprosy. The Natives were persuaded to isolate him, and with that purpose in view they erected a small raupo whare for him apart from the rest. They promised to burn everything that would come in contact with his sores, and they also promised to carry out all the suggestions that were made *re* his care, &c.

Age about fifty-four years. Married. Has children who are grown up, and three little ones, the youngest being about eight years of age. All are healthy except the youngest child, who was ill with pneumonia when I examined her father.

Ætiology.—Always been healthy (as far as Maoris are), except once when he had "*mate o te ao*" (probably gonorrhœa or syphilis). Has drunk some and smoked; has, in fact, lived like most of the Maoris—crowded whares, bad ventilation, irregular meals, bad nutrition, &c.

History of Present Illness.—About six years ago he noticed a small white blister-like swelling on his right knee, which eventually broke, and an indolent superficial ulcer resulted. From this time on bulbous eruptions came on different parts of his body, principally on his hands and fingers, which at the present are much swollen and very vascular. He has small white patches of skin in parts. His face is much swollen, and presents the typical leonine appearance. His nose is discoloured and swollen out of proportion. The eyes are much inflamed and the voice husky. The reflexes are lost, and there is anæsthesia of the feet and hands. The fingers have become rotten at the tips and around the nails, and are nearly always bleeding. There are scattered nodules all over his body, and in parts these have broken down, leaving ulcers which bleed very freely. There is some atrophy of his legs and arms.

Case B.

My attention was first called to this case about a year ago by some Natives, who, however, would not or could not enlighten me as to the sufferer's whereabouts, and the matter was passed over for a case of syphilis, as he had been treated for that malady previously. On the evening of the 6th December I again heard of his case from Mr. Taylor, a schoolmaster of Raurikia, and I

proceeded to that place the next day and found the patient basking in the sun. I made a thorough examination, and found him to be undoubtedly suffering from anæsthetic and tubercular leprosy. I made arrangements for his immediate isolation. Two or three days afterwards I again visited him, and this time the Natives, with Mr. Taylor and I, cleaned out the old whare, about 150 or 200 yards across the gully, for his reception. The patient is exceedingly poor, having to live entirely on the charity of a poor old woman, who alone looks after him. Patient has no parents living. A brother is away at Parihaka, but cares nothing for his welfare. Perhaps a little help from us in the way of clothing, two or three blankets, and food would help this poor woman to keep him more comfortably while he lives. She has worked very hard to keep the patient and herself going for the past few years, as none of his relations, who are distant, would go near him. Thus the burden has fallen upon his present keeper, who is very remotely connected with him. The second time I went up to see the case I took with me the notice which we had printed on canvas, and had it nailed to the front of his whare.

Age 28 years, unmarried.

Previous History.—Used to smoke incessantly. Drank and got drunk quite frequently years ago. Would not admit any previous history of specific affection. Had children's diseases and *la grippe* about fifteen years ago, but managed to pull through them quite well.

History of Present Trouble.—In the year 1895 his present trouble commenced; first, by the appearance of a small white spot, about the size of a shilling, on the right heel, which he described as very hard, something like a corn. This was cut open by him with a knife, and it bled profusely. From that time on it commenced to spread all over the foot. His whole leg then began to swell. It eventually ate away the right little toe, the rest beginning to drop off one after another. After all the toes came off it started on the left foot in precisely the same manner as on the right, and the toes on this foot are also eaten away, excepting the big one. Then it commenced on his hands, and started in bullæ-like eruptions, which broke and became putrid sores. It then spread along to his thighs and all over his body, leaving it in a somewhat dry scaly sort of condition, with here and there a spot of soreness and patches of white skin.

Physical Examination.—Conjunctivitis in both eyes, eyeballs very prominent, lower lids drooping. Usual leonine face, and mouth droops a little to the right. Cervical glands very much swollen on the left side, not very much on the right. Right hand: All fingers sloughed off excepting the small finger and thumb; middle two fingers have raw ulcers. Left hand also is being gradually eaten away; badly distorted, but not as bad as right; as yet no finger has completely dropped off; first three fingers have ulcers on them. Right foot: All toes sloughed away to the second joint; the second last toe and the small toe are eaten away to the third joint; no stump remaining; big toe and next two down to the second joint; the whole leg is swollen, having a terrible appearance. Left foot: Open sore on big toe; all the rest of toes sloughed off to the last joint, and the leg is bad to the knee. The body is fairly well preserved, but with macular and white blotches. There is one big sore on the right thigh, and dry sores from the knee up to hips. Anæsthesia on right hand up to the wrist, also to 4 in. above the wrist on left hand. On left foot anæsthesia up to 4 in. below the popliteal space; the same on the right.

Case C.

Age about forty-six years. One child (male) living. Great-maternal ancestors supposed to have had leprosy. The alternate generations have had the disease. The parents had no trace of it, but the grandmother on the mother's side died of it. Two cousins (a boy and girl) had leprosy: the girl died of it, but the boy is said to have been cured by a *tohunga*. Has also three other cousins by another aunt, but all are healthy. Was very healthy when a child, and even to womanhood. She had ten brothers and sisters: all died of pneumonia or some lung-complaint except three, a boy and two girls; these have grown to maturity, but have never developed any signs of the disease. A great many of her cousins have died of consumption. Father died of asthma, and mother of consumption. Patient has been an inveterate smoker, and used to drink spirituous liquors; still smokes, but has given up drinking. Son is about twenty-two years of age, and in perfect health. Both he and the husband are living with the patient.

About the year 1894, the patient noticed a small round white spot, which she describes as being like a blister from a burn. This appeared in the palm of the hand. Shortly afterwards her fingers became sore and distorted, and then she lost all sensation up to the elbow on the left hand and arm. A few weeks after this, the same thing commenced on the right hand and arm. About two or three years ago her feet were attacked, the right foot being the first to be eaten away. Physical examination reveals the following: Much atrophy in arms and legs. On the left hand the fingers are all eaten down to the first joint except the small finger; they are also distorted and fixed towards the palm; the patient is quite unable to straighten the fingers. On the right hand the small and third fingers have sloughed down to the second joint; the rest are much distorted, with three ulcers on the upper borders. The left foot is stumpy; most of the toes are gone, and there are indolent ulcers on them. The right foot is in a worse condition, two of the toes being completely gone (the small and second toe); the big toe has sloughed down to the last joint, and the third down to the second joint. There is anæsthesia to the knees on both legs, and to the elbows on both arms. Appetite is good. Bowels regular. Conjuctivitis in left eye. Slightly leonine face.

Number of patients examined and prescribed for, 273; number of patients operated upon, 8; number of lectures given, 58; number of Natives vaccinated, 1,728.

In conclusion, I may here quote the old Roman saying, *Dum spiro spero*. The disease has been truly well looked into and diagnosed. The remedy has been discovered, and in trying to administer it to the patient we have not so far spilt any of the potent drug; but the question is,

will the patient swallow the bitter draught? In some places his teeth have been fixed by the superstitions and teachings of his forefathers, but the general symptoms are good and hopeful, and so, even if we have to force his jaws ajar, it will be for his benefit and restoration to life. Wherever the Councils are working the Maoris have certainly made vast improvements in their home-surroundings. With all the suggestions herein contained fully carried out, the time will not be far distant when the decay of the Maoris will have merged into the realm of the what might have been, and the extinction of the race will have been averted, and a new era will have commenced, wherein the light of the Maori will shine as brilliantly in every calling of life as that of the pakeha.

MAUI POMARE, M.D.

APPENDIX.

REPORT OF PATHOLOGIST.

SIR,— Pathological Laboratory, Wellington, July, 1903.

I have the honour to report on the work of the laboratory during the past year.

The materials received for examination totalled 505.

The number of specimens of sputum submitted for examination as to the presence of tubercle bacilli was 178, of which 51 proved to be definitely tubercular.

For examination as to the presence of diphtheria bacilli 55 throat swabs were received, and of these cases 25 proved positive on bacteriological examination.

Of urethral discharge for gonorrhœa, 18 specimens were sent, in 11 of which the gonococcus was definitely demonstrated.

For typhoid, but 9 examinations were made by Widal's method, in only two cases any reaction resulting.

For plague, 20 suspicious rats were examined *post mortem*, also specimens from 5 suspicious human cases.

For malaria there were 7 examinations, and for anthrax, 10; while for such material as foodstuffs, vomits, fæces, fluids, &c., 55 examinations were conducted, and 28 specimens of urine were tested and examined.

For leprosy there were 7 examinations, in 3 of which *Bacillus lepræ* was present.

Only 12 samples of potable water were submitted for examination by the Department.

Of tissue for pathological examination there were 101 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, 15 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.

The following is a detailed list of the specimens as they arrived :—

Nature.	Source.	Suspected Condition.	Result of Examination.
Sputum	Lungs	Tuberculosis ...	Negative.
"	"	" ...	"
Membrane ...	Throat	Diphtheria	Positive.
Swab	"	"	"
"	Abdomen	Tuberculosis ...	"
Culture	From excised gland of patient	Plague	"
Guinea-pig ...	Inoculated from patient	"	"
Swab	Throat	Diphtheria	"
Tissue	Liver	Tuberculosis ...	Negative.
"	Kidney	" ...	"
"	Spleen	" ...	"
Pipettes, blood ...	Heart	" ...	"
Rat	Wellington Corporation	Plague	"
"	"	"	"
"	"	"	"
"	"	"	"
Urine	Bladder	Tuberculosis ...	"
Sputum	Lungs	" ...	"
Swab	Throat	Diphtheria	"
"	"	"	"
Drop of blood ...	Ear	Typhoid	Positive.
Rat	Wellington Corporation	Plague	Negative.
"	"	"	"
Sputum	Lungs	Tuberculosis ...	"
Swab	Throat	Diphtheria	Positive.
"	"	"	Negative.
"	"	"	Positive.
"	"	"	"
Cat	Lambton Quay ...	Plague	Negative.
Rat	Wellington Corporation	"	"
"	"	"	"
Swab	Throat	Diphtheria	Positive.
"	"	"	Negative.
"	"	"	"
"	"	"	"
"	"	"	"
"	"	"	"
"	"	"	"
Sputum	Lungs	Tuberculosis ...	"
Semi-purulent fluid ...	Not given	" ...	"
Sputum	Lungs	" ...	"
Rat	Wellington Corporation	Plague	"
Sputum	Lungs	Tuberculosis ...	"
Whitish material ...	Bladder	" ...	"
Sputum	Lungs	" ...	"
Tumour	Intestine	Malignant	"
Sputum	Lungs	Tuberculosis ...	"
"	"	" ...	Positive.
Material coughed up	"	Hydatids or tuberculosis	Negative for both.
Rat	Wellington Corporation	Plague	Negative.
Tissue	Finger	Leprosy	Positive.
Tumour	Rectum	Malignant	Negative.
Smears, blood ...	Not given	Anthrax	"
Pipettes, blood ...	"	"	"
Smears, blood ...	"	"	"
Sputum	Lungs	Tuberculosis ...	"
Tissue	Inguinal gland ...	Plague	"
Smears, blood ...	Not given	Anthrax	"
Pipettes, blood ...	"	"	"
Tumour	Jaw	Malignant	Positive.
"	"	"	Negative.
Sputum	Lungs	Tuberculosis ...	"
Urine	Bladder	" ...	"
Sputum	Lungs	" ...	Positive.
Rat	Wellington	Plague	Negative.
Smears, blood ...	Not given	Anthrax	Positive.
Pipettes, blood ...	"	"	Negative.
Tissue	Lung	"	"

LIST OF SPECIMENS—*continued.*

Nature.	Source.	Suspected Condition.	Result of Examination.
Tissue	Liver	Anthrax	Negative.
"	Spleen	"	"
Tumour	Throat	Malignant	"
Discharge	Vagina	Gonorrhœa	Positive.
Sputum	Lungs	Tuberculosis	Negative.
Tumour	Skin	Malignant	"
Rat	Wellington	Plague	"
"	"	"	"
Smear	Not given	Leprosy	"
"	"	"	Positive.
Rat	Wellington	Plague	Negative.
Sputum	Lungs	Tuberculosis	"
Swab	Throat	Diphtheria	Positive.
Sputum	Lungs	Tuberculosis	Negative.
Swab	Throat	Diphtheria	"
Sputum	Lungs	Tuberculosis	"
Rat	Wellington	Plague	"
"	"	"	"
Urine	Bladder	Gonorrhœa	Positive.
Discharge	Urethra	"	Negative.
Rat	Wellington	Plague	"
Tumour	Femur	Malignant	"
Swab	Throat	Diphtheria	Positive.
Discharge	Uterus	Mucoid material	"
Swab	Throat	Diphtheria	"
Pus	Urethra	Gonorrhœa	"
Sputum	Lungs	Tuberculosis	"
"	"	"	"
Scrapings	Tongue	Malignant	Indefinite.
Tumour	Lip	"	Positive.
Tissue	Sigmoid Flexure	"	"
Sputum	Lungs	Tuberculosis	Negative.
Swab	Throat	Diphtheria	Positive.
Urine	Bladder	Gonorrhœa	Negative.
Rat	Wellington	Plague	"
Smear, discharge	Urethra	Gonorrhœa	Positive.
" "	Vagina	"	"
Sputum	Lungs	Tuberculosis	Negative.
"	"	"	"
"	"	"	"
"	"	"	"
Material coughed up	"	"	"
Swab	Throat	Diphtheria	"
Tissue	Stomach	Malignant	Positive.
Membrane	Chest	Tuberculosis	Negative.
Tumour	Scalp	Malignant	"
Sputum	Lungs	Tuberculosis	"
"	"	"	"
Tissue	Pancreas	Malignant	Positive.
Urine	Bladder	Tube-casts	Negative.
Tissue	Endometrium	Malignant	"
Swab	Throat	Diphtheria	"
Smear	Urethral discharge	Gonorrhœa	"
Sputum	Lungs	Tuberculosis	"
Swab	Gland	Plague	"
Sputum	Lungs	Tuberculosis	"
Tissue	Jaw	Malignant	Positive.
Tumour	Uterus	"	Negative.
Sputum	Lungs	Tuberculosis	"
Fluid	Tumour	Unstated	Indefinite.
Smears	Spleen	Plague	Negative.
Urine	Bladder	Tuberculosis	"
Sputum	Lungs	"	"
"	"	"	"
Swab	Throat	Diphtheria	"
"	"	"	"
"	"	"	Positive.
Sputum	Lungs	Tuberculosis	Negative.
"	"	"	"

List of Specimens—*continued.*

Nature.	Source.	Suspected Condition.	Result of Examination.
Sputum	Lungs	Tuberculosis	Positive.
"	"	"	"
Swab	Throat	Diphtheria	Negative.
Tumour	Neck	Malignant	"
Culture	Auckland	Typhoid	Positive.
Sputum	Lungs	Tuberculosis	Negative.
Blood	Not given	Typhoid	"
Sputum	Lungs	Tuberculosis	"
Swab	Throat	Diphtheria	"
Sputum	Lungs	Tuberculosis	"
Tissue	Passed from uterus	Fœtus	Positive.
Sputum	Lungs	Tuberculosis	"
Swab	Throat	Diphtheria	"
Sputum	Lungs	Tuberculosis	"
"	"	"	"
"	"	"	"
Swab	Throat	Diphtheria	Negative.
Sputum	Lungs	Tuberculosis	"
Gall-stones	Liver	Bile	"
Fluid	Pleura	Tuberculosis	"
Sputum	Lungs	"	"
"	"	"	Positive.
Fluid	Pleura	"	Negative.
Sputum	Lungs	"	"
"	"	"	"
"	"	"	"
Pus	Pleura	"	"
Urine	Bladder	Albumen	"
Sputum	Lungs	Tuberculosis	Positive.
"	"	"	"
Urine	Bladder	"	Negative.
Blood	Not given	Typhoid	"
Fluid	Chest	Tuberculosis	"
Vomit	Stomach	Pus, hooklets, or tuberculosis	" in all three.
Swab	Throat	Diphtheria	Positive.
Sputum	Lungs	Tuberculosis	Negative.
Smear	Urethral discharge	Gonorrhœa	Positive.
Tumour	Mammary gland	Malignant	"
"	Tongue	"	Negative.
Scraping	Cervix uteri	"	Indefinite.
Sputum	Lungs	Tuberculosis	Negative.
Cyst	Mammary gland	Nature of cyst wanted	Involution cyst.
Tissue	"	Malignant	Positive.
Sputum	Lungs	Tuberculosis	Negative.
Urine	Bladder	"	"
"	"	"	Positive.
Tumour	Œsophagus	Malignant	"
Tissue	Bronchial gland	"	"
Sputum	Lungs	Tuberculosis	"
Swab	Throat	Diphtheria	"
Tissue	Liver	Malignant	"
"	Spleen	"	"
Rat	Wellington	Plague	Negative.
Tumour	Not given	Hæmatocele	Positive.
Sputum	Lungs	Tuberculosis	Negative.
"	"	"	Positive.
"	"	"	Negative.
"	"	"	"
"	"	"	"
"	"	"	Positive.
Urine	Bladder	Tube-casts	Negative.
Sputum	Lungs	Tuberculosis	"
Swab	Throat	Diphtheria	"
"	"	"	"
"	"	"	"
Sputum	Lungs	Tuberculosis	Positive.
Tumour	Breast	Cyst	Involution cyst.
Urine	Bladder	Tube-casts	Negative.

LIST OF SPECIMENS—*continued.*

Nature.	Source.	Suspected Condition.	Result of Examination.
Blood	Lung	Tuberculosis or pyæmia	Negative.
Smear	Liver	"	"
"	"	"	"
"	"	"	"
Tissue	Mammary gland ...	Nature of nodules ...	Involution cysts.
Sputum	Lungs	Tuberculosis ...	Negative.
"	"	" ...	Positive.
Tissue	Uterus	Unstated	Fibrous tissue with hæmorrhages.
Urine	Bladder	Tube-casts	Negative.
Sputum	Lungs	Hooklets or tuberculosis	" in both.
"	"	"	"
"	"	"	"
Tissue	Cervix uteri	Malignant	"
"	"	"	"
Tooth	Mouth	"	"
Fluid	Chest	Tuberculosis ...	"
Sputum	Lungs	" ...	Positive.
"	"	" ...	Negative.
"	"	" ...	"
"	"	" ...	"
Tissue	Joint, finger... ...	Leprosy	Positive.
Tumour	Larynx	Malignant	Negative.
Sputum	Lungs	Tuberculosis ...	"
Urine	Bladder	Tube-casts	"
Sputum	Lungs	Tuberculosis ...	Positive.
Tumour	Os uteri	Malignancy	"
"	"	"	Negative.
"	Dorsum toe	"	"
Sputum	Lungs	Tuberculosis ...	Positive.
Urine	Bladder	" ...	Negative.
Sputum	Lungs	" ...	"
"	"	" ...	Positive.
"	"	" ...	Negative.
"	"	" ...	"
Hair	Scalp	*Tinea tonsurans* ...	"
Sputum	Lungs	Tuberculosis ...	"
Water	Tank	...	44,000 organisms per c.c.
"	Tap	...	48,000 "
Sputum	Lungs	Tuberculosis ...	Positive.
"	"	" ...	Negative.
Blood	Not given	Typhoid	"
Sputum	Lungs	Tuberculosis ...	Positive.
"	"	" ...	Negative.
"	"	" ...	"
"	"	" ...	Positive.
Tissue	Leg ulcer	Malignant	Negative.
Tumour	Superior maxilla ...	"	Positive.
Sputum	Lungs	Tuberculosis ...	"
"	"	" ...	Negative.
"	"	" ...	"
"	"	" ...	Positive.
Tumour	Cervix uteri	Malignant	"
"	Uterus	"	"
Tissue	Joint	Leprosy	Negative.
Smear	Blood	"	"
Swab	Throat	Diphtheria	"
Tissue	Mamma	Malignant	"
Sputum	Lungs	Tuberculosis ...	"
Pus	Source not given ...	Tuberculosis or actinomycosis	" for both.
Sputum	Lungs	Tuberculosis ...	Positive.
Discharge	Prostate	Gonorrhœa or tuberculosis	Negative for both.
Sputum	Lungs	Tuberculosis ...	Negative.
Discharge	Urethra	Gonorrhœa	Positive.
"	"	"	"
Tissue	Facial tumour ...	Malignant	Negative.
Sputum	Lungs	Tuberculosis ...	"
Smears	Urethra	Gonorrhœa	Positive.

LIST OF SPECIMENS—*continued.*

Nature.	Source.	Suspected Condition.	Result of Examination.
Smears	Urethra	Gonorrhœa	Positive.
"	Lungs	Tuberculosis	Negative.
Effusion	Pleura	"	"
Sputum	Lungs	"	"
"	"	"	"
Discharge	Urethra	Gonorrhœa	"
Sputum	Lungs	Tuberculosis	"
"	"	"	Positive.
"	"	"	Negative.
"	"	"	"
Food	Stomach	Ptomaines, presence of	"
Tissue	Joints	Leprosy	"
Smear	Blood	Streptococci, presence of	"
Pipettes	"	"	"
Sputum	Lungs	Tuberculosis	"
"	"	"	Positive.
"	"	"	"
"	"	"	Negative.
Tissue	Antrum	Malignant	"
Smear	Vagina	Gonorrhœa	Positive.
Sputum	Lungs	Tuberculosis	Negative.
"	"	"	"
"	"	"	"
Pus	Neck abscess	Tuberculosis or actinomycosis	" in both cases.
Sputum	Lungs	Tuberculosis	Positive.
Tissue	Mamma	Malignant	Negative.
Sputum	Lungs	Tuberculosis	Positive.
Discharge	Urethra	Gonorrhœa	"
Smear, blood	Ear	Chorea	Negative.
Tissue	Lung	Tuberculosis or pneumonia	Positive for pneumonia.
"	Cyst	Malignant	Negative.
Sputum	Lungs	Tuberculosis	"
Tissue	Scrotum	Tuberculosis or malignant	" in both.
Sputum	Lungs	Tuberculosis	"
"	"	"	"
"	"	"	"
"	"	"	"
"	"	"	"
"	"	"	"
"	"	"	"
Pus	Pelvic abscess	Streptococcic	"
Tissue	Mesenteric gland	Malignant	"
"	"	"	"
"	Vermiform appendix	"	"
Tumour	Neck	"	"
Urine	Bladder	Percentage of urea	0·94 per cent.
Swab	Throat	Diphtheria	Positive.
Tumour	Jaw	Malignant	"
Sputum	Lungs	Tuberculosis	Negative.
"	"	"	"
Swab	Throat	Diphtheria	"
"	"	"	"
Sputum	Lungs	Tuberculosis	"
Scraping	Hip-joint	"	"
Vomit	Stomach	Foreign material	Positive.
Tumour	Forearm	Malignant	Negative.
Urine	Bladder	Tuberculosis	"
Tissue	Skin	"	"
Blood	Not given	Typhoid	"
Fluid	Bowel	Tuberculosis	"
Tissue	Gland	Malignant	Positive.
"	Stomach	"	"
"	Gland	"	"
"	Tongue	"	"
"	Pancreas	"	"

LIST OF SPECIMENS—*continued.*

Nature.	Source.	Suspected Condition.	Result of Examination.
Fluid	Bowel	Tuberculosis ...	Negative.
Swab	Throat	Diphtheria	"
Smear, blood ...	Not given	Malaria	Positive.
Sputum	Lungs	Tuberculosis ...	Negative.
"	"	" ...	"
Fluid	Bowel	" ...	"
Tissue	Gall-bladder ...	Malignant	"
"	Pancreas	"	"
"	Liver	"	"
Water	Tank	Typhoid	"
"	Tap	"	"
Tissue	Uterus curettings ...	Malignant	Positive.
Fish	Nelson	Ptomaines	Negative.
Rat	Wellington	Plague	"
Pipette, blood ...	Not given	Leucocytosis ...	"
Urine	Bladder	Percentage of urea ...	·8 per cent.
Rat	Dunedin	Plague ...	Suspicious, but animals too decomposed to be satisfactory.
"	"	" ...	
Tubes, blood ...	Knee-joint	Streptococci or staphylococci	Staphylococci alone.
Sputum	Lungs	Tuberculosis ...	Negative.
"	"	" ...	Positive.
Fluid	Bladder	" ...	Negative.
Pillow-case stained with blood from throat	...	Goitre	"
Tissue	Stomach	Malignant	Positive.
"	Adjacent glands ...	"	"
Sputum	Lungs	Tuberculosis ...	Negative.
"	"	" ...	Positive.
"	"	" ...	Negative.
"	"	" ...	"
Ulcer	Tip of tongue ...	Malignant	Positive.
Tumour	Superior turbinate ...	"	Negative.
Sputum	Lungs	Tuberculosis ...	"
Water	Tank	Typhoid or coli contamination	*B. coli* present.
Sputum	Lungs	Tuberculosis ...	Negative.
"	"	" ...	"
Honey	Native bees	Ptomaines	"
Tissue	Mamma	Malignant	"
Sputum	Lungs	Tuberculosis ...	"
Urine	Bladder	" ...	"
"	"	" ...	"
Sputum	Lungs	" ...	"
Water	Well	...	Very bad.
Tumour	Back of neck ...	Malignant	Negative.
Membrane	Throat	Diphtheria	Positive.
Tissue	Frænum, tongue ...	Malignant	"
Sputum	Lungs	Tuberculosis ...	Negative.
Smear, blood ...	Not given	Typhoid	"
Swab	Uvula	Diphtheria	"
Sputum	Lungs	Tuberculosis ...	Positive.
Urine	Bladder	" ...	Negative.
Sputum	Lungs	" ...	"
Pipettes, blood ...	Not given	Malaria	"
Sputum	Lungs	Tuberculosis ...	"
"	"	" ...	"
Tissue	Testicle	" ...	Positive.
Swab	Throat	Diphtheria	"
Sputum	Lungs	Tuberculosis ...	"
Smear	Tip of tongue ...	Tuberculosis or actinomycosis	Negative for both.
Urine	Bladder	Percentage of urea ...	1·8 per cent.
Swab	Throat	Diphtheria	Positive.
Tubes, blood ...	Knee-joint	Streptococci or staphylococci	" for both.
Tissue	Tongue	Malignant	"
Pipette, blood ...	Not given	Typhoid	Negative.

LIST OF SPECIMENS—*continued*.

Nature.	Source.	Suspected Condition.	Result of Examination.
Tissue	Mamma	Malignant	Positive.
"	"	"	"
"	Kidney	Tuberculosis	Negative.
Swab	Throat	Diphtheria	Positive.
Smear	Not given	Malaria	Negative.
Pipette	"	"	"
Sputum	Lungs	Tuberculosis	"
"	"	"	"
Tumour	Sub-maxillary region	Malignant	"
Sputum	Lungs	Tuberculosis	"
"	"	"	"
Smears, blood	Not given	Malaria	"
Pipettes	"	"	"
Swab	Throat	Diphtheria	Positive.
"	"	"	"
Urine	Bladder	Tuberculosis	Negative.
Tumour	Mamma	Malignant	"
Sputum	Lungs	Tuberculosis	"
Swab	Throat	Diphtheria	"
Tumour	Mamma	Malignant	Positive.
Tissue	Axillary gland	"	Negative.
Sputum	Lungs	Tuberculosis	Positive.
Smears, blood	Not given	Malaria	Negative.
Tissue	Tongue	Malignant	Positive.
Swab	Throat	Diphtheria	"
Tumour	Bladder	Malignant	Negative.
Sputum	Lungs	Tuberculosis	Positive.
Swab	Throat	Diphtheria	Negative.
Urine	Bladder	Tuberculosis	"
Sputum	Lungs	"	"
"	"	"	Positive.
"	"	"	"
"	"	"	Negative.
Smear, blood	Not given	Typhoid	"
Sputum	Lungs	Tuberculosis	Positive.
"	"	"	"
"	"	"	"
"	"	"	"
Swab	Throat	Diphtheria	Negative.
Tissue	Not given	Malignant	"
Sputum	Lungs	Tuberculosis	"
Tumour	Buccal membrane	Malignant	Positive.
Urine	Bladder	Tuberculosis	Negative.
Sputum	Lungs	"	"
Urine	Bladder	"	"
Smears, discharge	Urethra	Gonorrhœa	"
Sputum	Lungs	Tuberculosis	"
"	"	"	"
Swab	Throat	Diphtheria	Positive.
Tumour	Neck	Malignant	Negative.
Sputum	Lungs	Tuberculosis	"
Tumour	Mamma	Malignant	Positive.
Swab	Throat	Diphtheria	Negative.
Tumour	Mesentery	Malignant	Positive.
"	Mamma	"	Negative.
Matches (formalin)	Inventor	Efficiency as disinfectors	Positive.
Sputum	Lungs	Tuberculosis	Negative.
Tissue	Mamma	Malignant	"
Sputum	Lungs	Tuberculosis	"
"	"	"	"
Urine	Bladder	"	"
Pipette, blood	Not given	Streptococci or staphylococci	"
Material passed from uterus		Unstated	Fibrinous clot.
Tissue	Forehead-skin	Malignant	Positive.
Sputum	Lungs	Tuberculosis	Negative.
"	"	"	"
Tissue	Superior turbinate	Malignant	Positive.
Sputum	Lungs	Tuberculosis	Negative.

LIST OF SPECIMENS—*continued.*

Nature.	Source.	Suspected Condition.	Result of Examination.
Tissue	Kidney	Malignant	Negative.
Sputum	Lungs	Tuberculosis ...	"
"	"	" ...	Positive.
Tissue	Lip	Malignan	Negative.
Smear, blood ...	Not given	Malaria	"
" " ...	"	"	"
Sputum	Lungs	Tuberculosis ...	"
Tumour	Dorsum hand ...	Malignant	"
Sputum	Lungs	Tuberculosis ...	Positive.
"	"	"	Negative.
Water	Pump	Bad quality	Positive.
"	Creek	" ...	"
"	Pump	" ...	"
"	Creek	" ...	"
"	Well	" ...	"
Sputum	Lungs	Tuberculosis ...	"
"	"	" ...	"
"	"	" ...	Negative.
Membrane	Throat	Diphtheria	Positive.
Sputum	Lungs	Tuberculosis ...	"
"	"	" ...	Negative.
Tumour	Hand	Malignant	"
Nodules	Amputation-scar, mamma	"	Positive.
Tissue	Mamma	"	"
"	Axillary gland ...	"	"
"	Mamma	"	Negative.
Sputum	Lungs	Tuberculosis ...	Positive.
Pus	Thorax	" ...	Negative.
Sputum	Lungs	" ...	Positive.
"	"	" ...	"
"	"	" ...	Negative.
"	"	" ...	"
Scraping from uterus	...	Malignant	"
Urine	Bladder	Tuberculosis ...	"
Tissue	Spleen	Plague	Positive.
"	Liver	"	"
"	Gland	"	"

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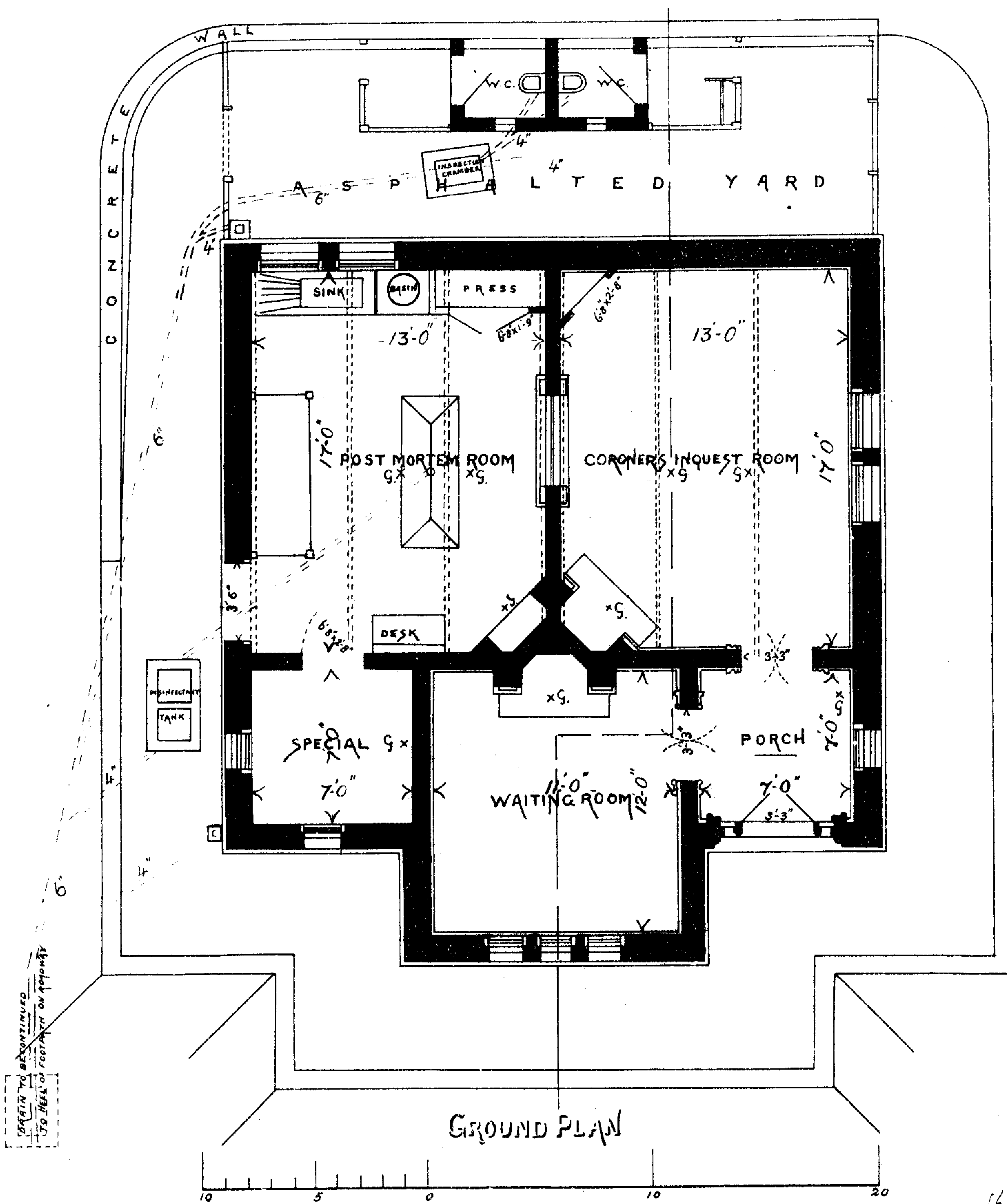

GROUND PLAN

W. E. Gladstone Pope Del 1903

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