1908.

NEW ZEALAND.

PUBLIC HEALTH DEPARTMENT

(ANNUAL REPORT OF THE).

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

Department of Public Health,
Wellington, 30th September, 1908.

My Lord,—

I have the honour to transmit herewith, for Your Excellency's information, the report of the Department of Public Health for the year 1907–8.

I have, &c.,

Geo. Fowlds,
Minister of Public Health.

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

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

Sir,—

The past year has been one of steady progress. The several reports of the District Health Officers and their Inspectors show clear evidence of this.

There has been a great increase in the work of the Bacteriologist and the Analysts, and every year the Department becomes a more manageable and effective machine for the conservation of the public health.

I desire to record my warmest appreciation of the loyal service rendered by all the officers.

Consumption.

There is one feature of the campaign which deserves the earnest attention of all who have the interests of the patients at heart not less than the safeguarding of the general public. For long the warnings issued as to the infectivity of consumption went unheeded; but there came a time when they were hearkened to, and then followed an unreasoning fear and consequent isolation with occasional injustice to the poor sufferer.

I record the following case not because I think it one likely to happen again, nor because any suchlike took place before, but simply in order to call a halt to the unreasoning dread which has filled the minds of some of our people.

A. had been an inmate of "Te Waikato" for a few months, but it was soon seen that he could not get better. When he learned this he asked to be allowed to go home. He had plenty of money; his fare to Wellington was assured, and he landed in Onehunga timed to catch the southern boat. Unfortunately the weather was bad, and the boat was put off till the Monday. Vainly he sought a lodging, and, although he had money enough to pay, he could find a bed nowhere save in an outhouse. From pillar to post did he wander next day, till finally he found shelter in a hotel, where he died.

Collectively we have great sympathy for the poor soul stricken with this disease; individually we occasion him much unnecessary hardship. Day after day I have men and women who have passed through one or other of our sanatoria, and are now fairly well, eager and anxious to undertake some work, and yet hardly any one will give them a chance. It is a blot upon our alleged altruism that such treatment could be meted out to any one as was offered to poor A.

I wish to proclaim it as forcibly as I can that the man who has spent a few months in a well-ordered sanatorium is a safer neighbour, even though he be still ill, than the sufferer who has had no institutional instruction, though maybe he seems well. Destruction of the sputum, care of the person, and all that proper living really spells has been so dinned into them at the sanatorium that it is next to impossible for them to behave in such a way as to endanger the health of others.

Speaking of the disabilities under which the poor soul suffering from this disease labours, the Director of the Phipps Institute for the Study, Treatment, and Prevention of Tuberculosis, Philadelphia, says,—

The poor consumptive already is beyond the pale of rights. His rights were wrenched from him when he got the disease. His inalienable right of protection of life was violated when he was driven by conditions over which he had no control into an environment which gave him the disease and fostered its growth. Registration cannot save him; but it can save those who are near and dear to him from a similar fate. The objects which can be obtained by registration are, first, to educate and help the consumptive and his family; second, to protect the people against the danger from contaminated houses into which they may innocently move.

With regard to the source of contagion he states,—

It becomes more and more evident that family relationship is the most important factor in the spread of tuberculosis. Next to this comes association in employment, and third in order comes house infection. These deductions are in harmony with conclusions reached on the same subject along other lines of investigation.

As a corollary, comes a slight change in our views upon the relative part which wet sputum and dried sputum play in the spread of tuberculosis. We gradually are driven to the conviction that contamination of food with the sputum of consumptives while the sputum is still in a moist state must be reckoned with as a factor in the spread of tuberculosis, and that sputum in a dried, powdered form is somewhat less dangerous than we formerly believed it to be. The lesson to be drawn from all this is that sputum must be disposed of immediately when given off, in such a way that nothing can be contaminated.

As showing the good influence of institutions for the treatment of tuberculosis, he states:—

Tuberculosis is a very chronic disease, and the more intimate our acquaintance with it, the longer the time which we assign to it for running its course. We also are beginning to find out that first attacks frequently are recovered from, and that the lung which has stood this first brunt after recovery has more resistance than the opposite lung. In this light it is quite conceivable that the lung in which the disease is most advanced may not be the place of beginning of the disease, nor was it so determined in these statistics.

A most interesting and striking fact which stands out prominently in the topographical study in the death-rate from tuberculosis in Philadelphia is that every ward in which an institution for the treatment of tuberculosis exists has had a reduction in the death-rate from tuberculosis, while some of the adjoining wards have had an increase. This is especially interesting in view of the opposition which exists to the establishment of institutions for the treatment of tuberculosis on the score of danger to the neighbourhood. The location of the Rush Hospital in the Twenty-fourth Ward has been strongly opposed in that ward. One of the arguments most frequently used against its location there is the menace to residents from contagion. The Twenty-fourth Ward has a reduction in the death-rate from tuberculosis, while its neighbour, the Thirty-fourth Ward, with exactly the same kind of population, has had an increase. In fact, the only West Philadelphia wards which have had a reduction in the death-rate from tuberculosis during the two years are the two which have institutions for the treatment of tuberculosis. . . .

Another very interesting fact is that the reduction in the death-rate from tuberculosis during the three years is among the poor in the crowded parts of Philadelphia rather than among the well-to-do in the sparsely built-up parts of the city. The greatest reduction has been in the slum district, the foreign district, the coloured district, and the manufacturing districts. These are just the parts of Philadelphia in which tuberculosis was most rife formerly. The wards in which the wealthy and well-to-do live either have had an increase in tuberculosis or very little decrease. A corollary springs from these facts that the superficial instruction given to the wealthy and well-to-do for the prevention of tuberculosis as advocated by many is insufficient for the prevention of tuberculosis.

His remarks on the nursing question are also of very great value:—

By the founding of the school, the problem of nursing in the Institute has been solved in a way that has proved increasingly satisfactory. At present the work of the training school presents a most interesting phase of the crusade against tuberculosis. The pupils are drawn almost without exception from young women who have been tuberculous cases themselves, who have taken a full course of treatment at the White Haven Sanatorium and have been discharged with the disease arrested. The employment of these young women as pupil-nurses is of benefit from many points of view. They have an absorbing interest in the disease from which they themselves have suffered; they have sympathy with the advanced cases that they are called upon to nurse; they present to their patients an inspiring object-lesson of what may be accomplished in the arrest of the disease; they come to the Institute after having had a valuable preliminary training at White Haven; and, most important of all from the point of view of prevention, they are given an opportunity on their discharge from the sanatorium of immediately entering an occupation in which they have a present livelihood, and the prospect of a respectable earning-capacity after graduation. In this way a partial solution is offered to the problem—perhaps the most perplexing one in the struggle against the disease among the poor—of providing profitable employment for arrested cases.

In all countries very great difficulty has been found in obtaining suitable employment both for male and female ex-patients. The experiment at Karere promises to be very successful, but the suggestion thrown out by the Director of the Phipps Institute is worthy of consideration.

The laws with regard to the registration of nurses would prevent the employment of any but trained women in New Zealand, still there are many spheres of usefulness for the untrained female patient who has had a lengthened sojourn in a sanatorium. Without usurping the title of nurse she is able to do great good. She has learned wherein lies the main source of danger, and, while playing the humble *rôle* of maid in a family where a consumptive lives, she would be able to render great service. As a matter of fact one of our ex-patients is now occupied in this work.

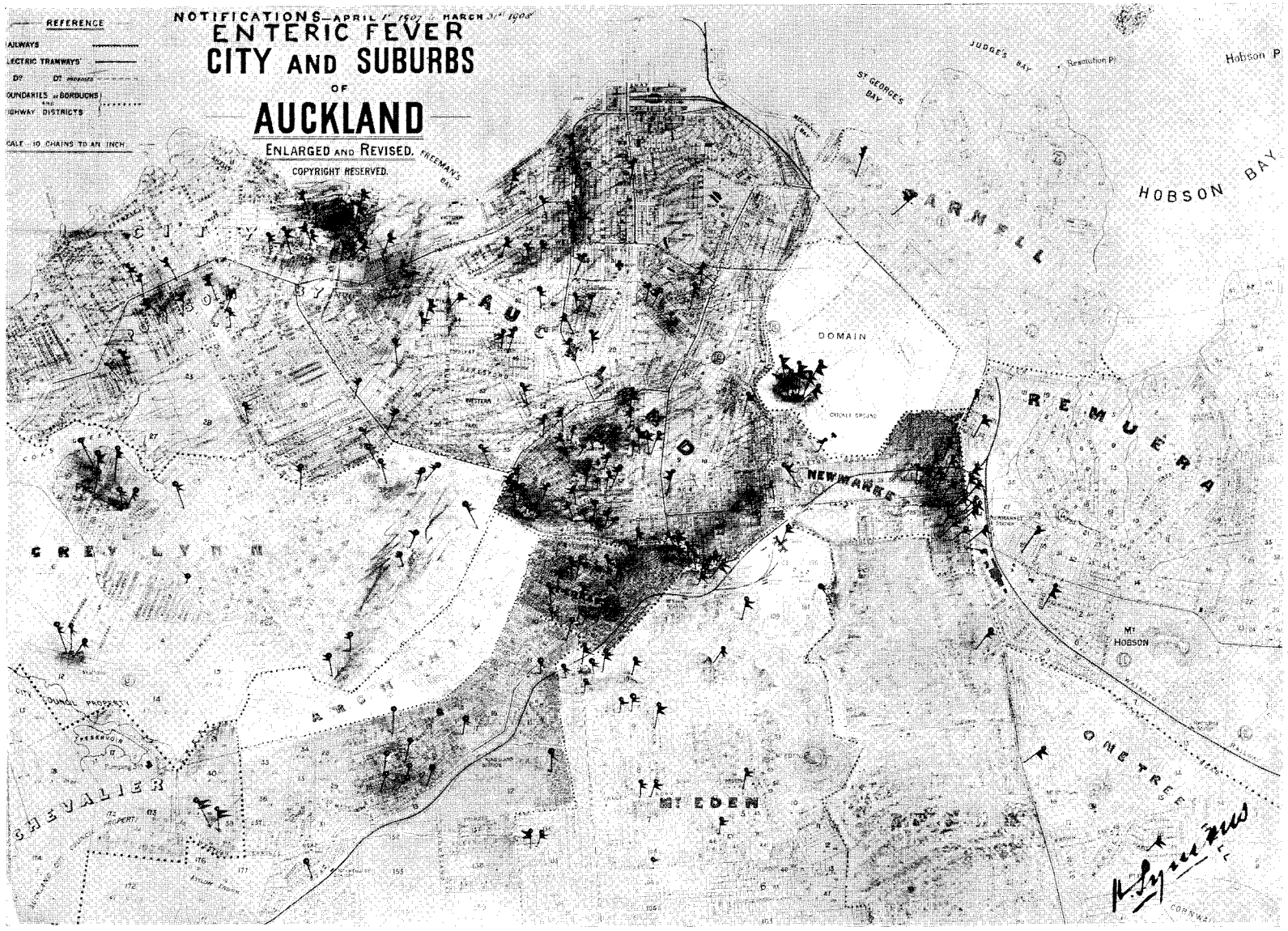
WORK FOR THE "CURED."

It is with the greatest pleasure I have to record that a start has been made in a direction which has often been urged in previous reports.

The various sanatoria and annexes for the treatment of persons suffering from consumption are doing excellent work, but the value of the work done in these institutions has in many cases been stultified in that the "cured" patient has had to face the world of work again unaided. The "cured" consumptive in most instances—that is, the cases which usually pass through the sanatoria—must practice an employment in the open air. The clerk must for ever leave his ledger, the baker his batch, the seamstress her needle, if they are to keep well. Now, what are they to do? The man has no chance in the world of unskilled labour, and for the woman there are few outdoor occupations. Beekeeping, poultry-farming, shepherding, &c., are all suitable, but unless the patient has some capital it is difficult for him to find an opening. As I have pointed out repeatedly, unless we are to lose the money spent in bringing them back to a condition of health, the Municipalities, Hospital Boards, or the Central Government must find them some kind of employment at once suitable to their condition of health, and of a nature which will be profitable not only to the "cured," but to the provider of the work. This, I think, will be accomplished through the camp, the "Karere"—or Forerunner—of which you have been good enough to approve. On the flat near Waipa has been begun an experiment which I am sure will be as successful as it was longed for. Imagine the fate of the man who has spent, say, nine months in a sanatorium and leaves it full of gratitude and a desire for work. Even the most charitable fight shy of having him near to them. He has spent all his savings, if he had any, in the two or three years' battle for health before he entered the sanatorium, and he leaves the institution usually full of hope, but devoid of money. All indoor work is barred to him; he cannot compete with the strong man in navvying, lumping, or agricultural work. He seeks for light out-door work, but rarely finds it. He must perforce live in the cheapest of boardinghouses, often sleeping in the same room with others; his food is poor. Repeated denials soon quench even the "spes phthisica." Friends may be wishful to help, but they have children and they fear him. An appeal to the Charitable Aid Board brings him enough to keep starvation off, but his descent is steady, and the end easily foreseen. Improper food, bad hygienic conditions, and crushed hope make him an easy prey to colds, and a varying time, never very long, sees him an applicant again for a bed in the hospital or sanatorium. I have indulged in no rhetoric. This is a calm, dispassionate, truthful picture, of which unfortunately we Health officials see too many examples.

Labour-camps, as they are often termed, have been started in America, England, and the Continent of Europe, and varying success has attended them. Here in New Zealand, however, we have many factors which are wanting in other countries. The State owns land suitable for tree-planting and it has a department willing to employ men at this work. For men, than tree-planting there could be no more suitable occupation for the "cured" consumptive. The planter is in the open air all day, and he must sleep near his work, which is always outside of the town. He competes with no one, and he is paid only for what he does. He has every inducement to be regular and assiduous, but he can rest when his breath fails him. There is no *arrière pensée* in the minds of any one that he may contaminate the milk, transmit the disease to the fowls, or render the honey unsafe.

"Karere" is situated about a mile from the prison camp at Waipa. The soil is of free, open pumice. There is a good water-supply and through the courtesy of Colonel Hume we have been permitted to connect with the prison-camp telephone. The Under-Secretary for Lands (Mr. Kensington), whose kindly sympathy and help I desire to put on record, has given instructions that all his officers are to help us in every possible way, and has agreed also to pay our people the



CITY AND SUBURBS OF AUCKLAND.

The flags indicate the location of the cases of enteric fever notified during the epidemic of 1907–8, brought up to the 31st May last in order to cover the epidemic period. The shading of the map indicates the intensity of the incidence.

The flags have been fixed as nearly as might be where cases occurred, but in some cases it has not been possible to do so precisely. [*To face p. 5.*

current rate of wage for the work they do. I have had help from many Departments in various matters concerning the public health, but certainly I have never experienced anything like what Mr. Matthews, the Chief Forester, and Mr. Goudie, the Chief Nurseryman, have given us in this adventure. Mr. Matthews has gone out of his way to confer with Dr. Makgill, who has been intrusted to report upon a permanent camp, and his assistant, Mr. Goudie, has done yeoman service with respect to the cleaning-up of the ground, the setting-up of the tents, and everything pertaining to the establishment of "Karere." Mr. Reid, of the prison camp, has also been most helpful.

Twelve ex-patients from Te Waikato have been sent down to "Karere," and Sister Urquhart has been placed in charge. The Department provides tents, bedding, cooking-utensils, and all that belongs to an encampment. The men have to keep the tents in order, arrange for the cooking, do their own washing, and earn as much as they can at the tree-planting.

The name chosen for this new venture is one which, if its meaning be fulfilled, will assuredly bring gladness to many poor souls and at the same time be an advance from an economic point of view. "Karere" is the "goer-before," "the forerunner," "the harbinger"—the bringer of good tidings to the afflicted. I am certain it will succeed.

Dr. Makgill has gone very carefully into the matter of the larger encampment. I asked him to inspect certain places, more especially Taupo. The main disadvantage of a camp at that place would be the expense of transporting goods, &c., from Rotorua. Did the railway tap the land there, no better site could be obtained. Herewith is Dr. Makgill's report.

Department of Public Health (Pathological Laboratory), Wellington, 4th May, 1908.
Memorandum for Dr. Mason, Chief Health Officer, Wellington.

TREE-PLANTING CAMP FOR CONSUMPTIVES.

At your suggestion I have looked into the question of the establishment of a tree-planting colony for ex-patients from the Sanatorium, and have collected a good deal of information bearing on the question. Of course, as the proposal strikes out a new line, there are certain to arise aspects which have not been foreseen; but, so far as I have been able to judge the probable working of the project, there is every reason to believe that it will prove profitable both to the patients and to the Dominion, while the cost to the Department is moderate compared to the advantages which must follow.

I need not go into the question of the necessity for finding suitable employment for these ex-patients, as this problem has been repeatedly gone into in the annual reports of the Department, and any one who has had any connection with sanatorium work recognises that such employment must be regarded as a necessary sequel to sanatorium treatment if satisfactory results are to be obtained. The period immediately following discharge from that institution is the crucial point, determining whether the improvement is to be permanent, or whether the dormant tendency to disease is to be permitted to reawaken, encouraged thereto by a return to unwholesome methods of life.

We all know how difficult it is to find wholesome out-of-door work for ex-patients, and we also know that the average employer of labour, with the usual exaggerated notion of the dangers of infection, fights shy of the man with a consumptive history, and that from a similar cause the public avoid goods produced by these unfortunates. In tree-planting as an occupation these difficulties do not arise. Even the most nervous would scarcely fear to use the timber from a tree planted by a consumptive, while from the medical point of view, no employment could closer approximate the ideal. The work is not heavy; it entails a life absolutely in the open, and, most fortunately, the places in the Dominion most suited for tree-planting are also those with the most perfect climates for the treatment of tuberculosis. It is also a matter for congratulation that the head officers of the Forestry Department are in full sympathy with the scheme, and are quite prepared to co-operate with the Health Department in organizing a tree-planting camp in some suitable spot. I should like to mention here the courteous assistance I have received from Mr. Kensington, Chief Land Commissioner, who is in full sympathy with the project, and has offered us every encouragement. Mr. Matthews, Chief Forester, and Mr. Goudie, Head of the Rotorua Nurseries, also have both gone out of their way to help us in finding suitable sites for a camp, and have, by their advice and explanation of the requirements of the work, gone far towards making the way clear.

In estimating the cost of the scheme it is necessary first to consider the method of management, and how this may affect the question of site.

1. *Management, Staff, &c.*

We must presuppose that the patients are fit for the work, and to this end it will be necessary that none be accepted who have not passed an examination by some one with a clearer idea of the requirements than the ordinary medical man. I would suggest, then, that, except those sent forward by the Medical Superintendent at Cambridge Sanatorium, all applicants from other

sanatoria, or those cases which are in so early a stage that they only require an open-air life, be selected by the Chief Health Officer, or some one specially chosen by him, to report on the case.

These selected cases, then, it is understood, are all capable of doing at least a light day's work, and, as all the operations in connection with tree-planting are light, the majority should be able to make a reasonable living, since Mr. Kensington informs me the Forestry Department would pay according to work done. Wages up to between £2 and £2 10s. a week would then be within reach of the most fit patients, while the weakest should be able to earn £1 to £1 10s.

The supervising and direction of the work will be done by officers of the Forestry Department, and no expense in this direction falls on the Health Department. The tools, cartage of young trees, &c., also will be seen to by the Forestry Department. The sole question for the Health Department is the domestic economy of the camp, and in this connection the patients themselves should be able to do the greater part of the work. If the Department provides a good bush cook, no further domestic staff should be required, for minor duties, such as scullery-work, bedmaking, room-cleaning, and so forth, can be done by the patients, each taking his turn at it in rotation.

General and Medical Supervision.—This is a more difficult question, as it entails considerable expense; yet it is evident that there must be some responsible head to organize things, and see that each inmate does his domestic duties properly, and so forth. Medical supervision is also essential, as we know from experience how even the most hopeful cases are liable to relapses, hæmorrhages, &c. In some cases the amount of work done must be curtailed, while others would require to be encouraged. This could only be done by a trained medical man. In the case of sudden death (which we must be prepared to expect), it would be regarded by the general public with horror if no medical attendant were available. A trained nurse would not count the same in the public eye; and it would be a very trying position for any woman to be alone in such solitary places as those in which the camps must necessarily be.

We must, then, I think, reckon with medical supervision as an essential—either constantly, or, say, twice a week, and in the latter case medical aid must be within reasonable distance in case of sudden illness arising. Dr. Roberts, writing on the subject, recognises the question of public sentiment, but thinks that otherwise a resident medical man would only be an unnecessary expense. This is certainly the case, if we can so arrange it that medical aid is within easy reach. However, we must also consider the question of general management, and it may prove that the salary of a medical man who would supervise the general internal economy, and take an active interest in the tree-planting work—to the extent of himself assisting the patients to earn their bread—would be a wise outlay. In the absence of such a manager one of the patients might be found suitable for the post of supervisor, and might be granted a small salary by the Department for his services. But some such responsible head there must be.

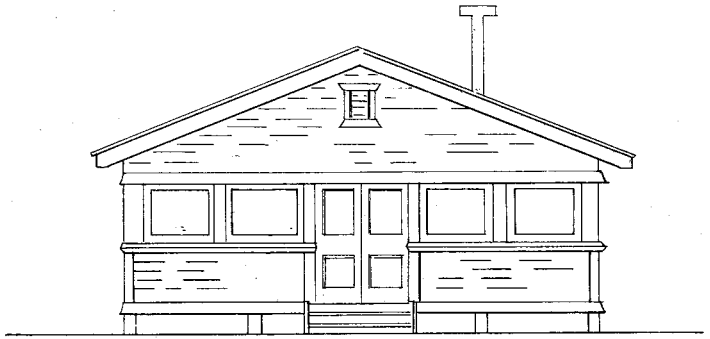
2. *Cost of Buildings, &c.*

This is, of course, dependent on the site to some extent, as the questions of obtaining labour and the cartage of timber, &c., vary at different places. Timber is, however, comparatively cheap in all the districts which we have to consider. At the Rotorua end it can be obtained from the Mamaku mills, brought by rail, and then carted. At the Taupo end it is even cheaper, as there are mills at Oruanui, only seven miles from Taupo, cartage being only 2s. 6d. a hundred. I attach a list of prices at these mills, which shows that timber costs but one-half what it does in Wellington. Labour, however, is high in all these places, and it is not likely that we shall be lucky enough to have a few carpenter patients ready to take up this work.

The shelters must be as simple as possible, and we are only limited in this direction by remembering the sharp frosts up in those regions. Mr. Matthews informed me that he had spent several nights in a tent on the Kaingaroa Plains, and even as early as March found the cold very severe at night. A slight modification of the huts provided for the prisoners would suit our purpose. These are of wood, and are floored and lined, and have a roof of single lengths of curved galvanised iron. Our shelters would require to be more open, and for this purpose a wide eave to the roof is necessary. I have gone into the matter with Mr. Campbell, Government Architect, who very kindly criticized and amended my proposed plans. He recommends iron and felt for roofing in preference to malthoid or ruberoid, which I had intended to use. This material he considers more expensive and less durable. The roof should be match-lined on the lower surface of the rafters, but no ceiling is required. This is done in the prison huts. For the openings in the walls, Mr. Campbell approves of my design of canvas-covered frames, hinged at the top. This would be much cheaper than glazed windows. I think, however, one small glazed window should be provided on one side.

As the patients will be at the camp for possibly a year or more at a time, it is desirable that each should have a shelter to himself. This can be done economically by building them in groups of two, separated by a partition reaching up to the angle of the roof. This gives three open sides for ventilation. The size should be 8 ft. by 10 ft. Such double huts can be built, Mr. Campbell estimates, for, at the very outside, £35 each—that is, £17 10s. a bed—and possibly it could be done for very much less. They would be warm, weathertight, and permanent, and if the necessity for shifting camp arose, they could easily be pulled down and re-erected.

A Central Building would be required to act as dining-room, kitchen, and store. I do not think we can do better than follow on the lines of the building at the "Plunket" colony, Cambridge Sanatorium. The living and dining room for the patients would need to be about 18 ft. by 14 ft. for twelve patients, and on the south side could be attached a kitchen (12 ft. by 12 ft.), a scullery, a linen cupboard, and a store-room. The cost of such a building, very plainly put



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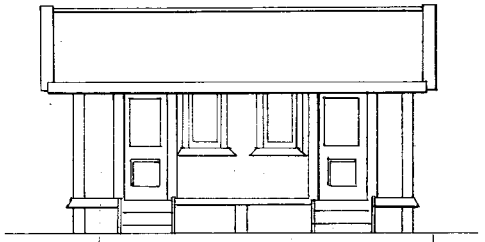

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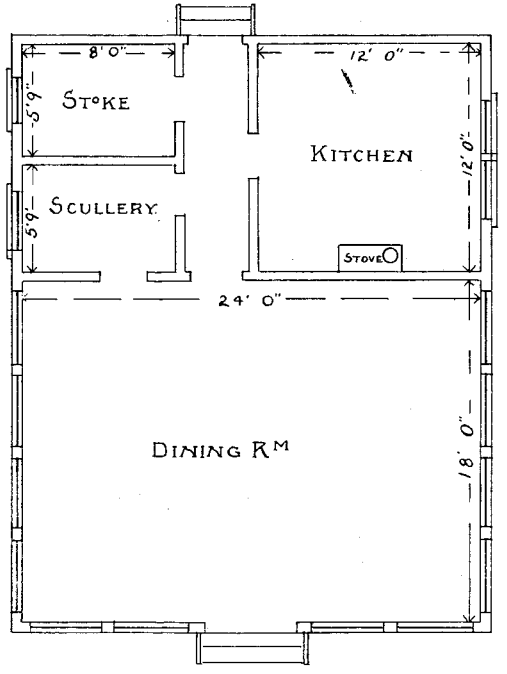
DOUBLE SHELTER



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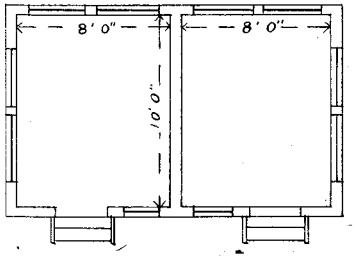

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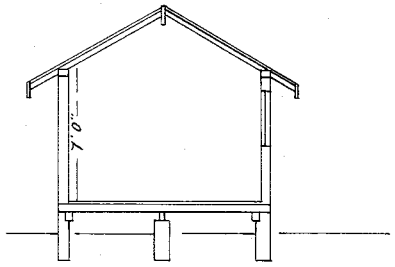

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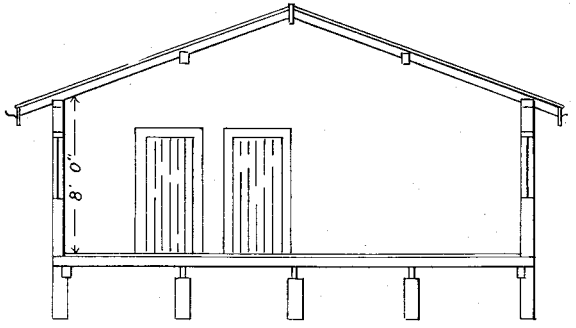

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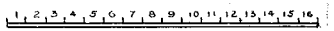


Scale of Feet.

CENTRAL BLOCK

H.—31.

SUGGESTED PLAN OF SHELTER FOR CONSUMPTIVES.

[To face p. 6.

together, would be about £200. This would include an iron kitchen-chimney, with self-contained range. This would be the best, as cartage of lime and bricks would be avoided.

In addition to this, we must provide a cook's room and an office. This could take the form of one of the double shelters, exactly as for the patients. Lavatory accommodation could take the form of two shower-baths, and one plunge bath of galvanised iron. To this should be attached two earth-closets. The cost of the whole building and fittings would be £50.

Water-supply.—This is a somewhat difficult problem, for streams are very scarce on these pumice lands; but Mr. Matthews has always found water available on sinking to a depth of 6 ft. to 10 ft. A test-shaft would have to be sunk before selecting the actual site of the camp. When water was found, a windmill pump and a 600-gallon tank on a trestle would provide the necessary pressure. The cost of this would be about £50, including the sinking of the well. Water for culinary purposes might well be collected from the roof of the main building.

Laundry-work would require to be done by the patients themselves. A very simple shed, a few tubs, and an ordinary boiler would be all that would be required. This would cost about £15.

The total cost of buildings and water-supply, then, would be as follows, calculated for twelve patients:—

	£
Dining and kitchen block	200
6 double shelters at £35 each	210
Cook's room and office	35
Water-supply, &c.	50
Lavatories, &c.	50
Laundry and fittings	15
	560

Furniture.—This need only be of the roughest description. A sufficient dining-table could be built on the spot, also benches for sitting at table, at a cost of a few pounds; lounge-chairs of the canvas deck type should be provided also—say, £6 in all. Table-linen, crockery, cutlery, and so forth—say, £15. Kitchen-table, furnishings, and utensils—say, £10. Of bedroom furniture, we already have a store at Motuihi, and therefore we need not make special allowance for this, beyond an enamelled wash-hand basin fitted to a bracket stand, a cupboard, and a few details of that sort. For this £2 a room would be ample. I do not think it necessary in such a camp to provide linoleum for the floors, but a few rough mats might be obtained. The total cost of furnishing should not exceed £60.

It will be necessary to provide a wagon and two horses, say, at a total cost of £60.

The cost of cartage of timber, &c., to the site has been allowed for in my estimate of the building, but we must add the cost of cartage of furniture, &c. This, at Taupo, would be at the rate of £3 10s. per ton; at the Rotorua end, about £1 10s. per ton. A general allowance of £20 should cover this; bringing the total cost of establishing a camp and furnishing it to £700.

3. *Cost of Maintenance.*

This is a figure very difficult to estimate, but I do not think it possible to expect the camp to be self-supporting, even if the patients did their own cooking, which would not be desirable, since cooking cannot be regarded as an ideal occupation for a person with consumptive tendencies. Further, to make the life attractive to the patients, we must enable them to earn more than their own upkeep—this especially when we consider that some have families dependent on them. Some would certainly be unable to do more than pay for their board, and a communistic state of affairs, where all shared alike the result of the combined effort, would be a direct encouragement to the malingerer and loafer.

The actual cost of food will vary according to the site chosen. We have the evidence of the Prison Department as to this item to guide us. At Waiotapu, in 1907, the cost of maintenance for fifty-six prisoners was at the rate of £19 9s. 8d. a year for each person; at Waipa, it was £17 8s. 1d.; at Dumgree, it was £27 1s. 6d. These items include lighting, fuel, and so forth. We can scarcely hope to attain such economical figures, especially as our scale of rations must be very liberal. I think we can expect it to come to about £40 a head per annum—a trifle lower at Rotorua than at Taupo, owing to the increased cost of cartage to the latter place. The cartage at the Rotorua camp might be considerably reduced by the possession of a cart and team of horses, as provided in my estimate for establishment. At Taupo it would amount to a total of about £50 a year (the cartage of trees need not be considered; that is a matter for the Forestry Department). One advantage, however, at Taupo would be that meat can be obtained locally, a distance of two to three miles away.

Milk.—At either station milk is difficult to obtain, as the land is not adapted to grassing without a considerable outlay in manure, and so forth. The Matron has suggested that goats might be used, but even these would find it hard to obtain a living on the poor scrub found on these pumice lands. In course of time, and at some outlay, grazing for two or three cows might be obtained, but for some two years, probably, the milk must either be carted for long distances at great cost, or the preserved variety used. At Taupo a supply of fresh milk might be obtained at the village, but it would be very limited. At Rotorua arrangements might be made for the daily coach to leave a can of milk at the roadside. From there it might be carried to the camp

by the patients—a distance of one mile or so. In either case it cannot be so large an item in the patient's dietary as one might desire; but, as they are not supposed to be invalids in the strict sense, perhaps this is not a very serious defect. I think a special allowance, however, of £60 a year should be made for milk-supply if fresh milk is to be considered essential. This amount would be about the same for Taupo or Rotorua, the cartage at the latter place being higher, but the price of milk probably lower.

Eggs and Poultry can be raised at the camp—and this is a direction in which considerable economy can be effected. A small allowance, however, should be made for the cost of upkeep of the poultry-farm.

Horse-feed is expensive, especially at Taupo. I can only guess at the amount.

Fuel can be obtained on the ground at Taupo. I am uncertain as to the Rotorua site; possibly a few miles' cartage may be necessary.

Lighting can only be by kerosene-lamps and candles. The cost should be covered by the £40 per head I am allowing for general maintenance.

Drugs should not be a very serious item, beyond malt and oil, antiseptics for sputum mugs, and suchlike. I think £20 a year should cover this.

Salaries.—The Cook would require to be efficient, and probably it would be difficult to get a man to come to such a camp at all. His wages would be not less than £2 10s. a week, especially if he were to bake bread. Bread can be obtained locally at Taupo, or can be left by coach at Rotorua; but it would probably be better, in the event of the camp growing to a large size, to erect an oven, as is done at the prison camp. I have not allowed for this in the cost of establishment, as it is a matter which could best be decided upon later.

Medical Officer.—In the event of a camp being established eight or nine miles from Rotorua, it would be possible to subsidise a medical man in that town to come out once a week to examine the patients, and to come if required for urgent cases. Perhaps a subsidy of £100 a year would cover this, though more probably he would require special fees for coming at other times than the regulation visit. At Taupo there is no medical man resident, and a salary of, say, £500 would be required there to engage him as permanent superintendent. Possibly an arrangement might be made to subsidise a man—say, at £300 a year—to visit the camp two or three days in the week and act as general superintendent, allowing him private practice as well. This, however, would be less easily arranged.

In the event of the camp growing to considerable dimensions, a medical man as manager would be necessary.

Subsidy to Manager.—In the event of no medical resident being appointed, it would be advisable to pay a suitable patient a sum of, say, £25 a year to act as steward, clerk, &c.

4. *Site.*

The question of a suitable site resolves itself practically into two issues—a site at Lake Rotokakahi, about eight miles from Rotorua, along the Waiotapu Road, and another about three miles from Taupo Village.

With Mr. Matthews I visited the Kaingaroa Plains, where the Galatea Road crosses them, six miles or so from Waiotapu. This place is very bleak and wind-swept, and the outlook is depressing—an item, I think, to which some weight must be given in choosing a camp for these semi-invalids. So far as the officers of the Forestry Department are concerned, I believe they are prepared to fall in with our choice, but would prefer that it be as close as practicable to the nurseries at Rotorua, as the cost of supervision and of cartage of trees, and so on, would thereby be minimised. But Mr. Kensington assures me that they would offer no objection if we did decide on the Taupo end, especially as the land there is suitable for afforestation, and this must be done by some one at no distant date. They, therefore, would find work done by our patients at Taupo as acceptable as any other scheme.

So far as Waimarino is concerned, I think we can regard that as out of the question. The climate there is much wetter than in the lake district, and it is very bleak and wind-swept, being the south-western aspect of the great central ranges. Mr. Matthews did not view it favourably from the tree-planting aspect either. On the other hand, the climate of all that area of pumice country from Taupo north-eastwards to Rotorua is comparatively dry and bracing, and, though there is a good deal of frost in winter, snow does not lie on the ground as at Waimarino.

Mr. Bates, of the Meteorological Department, has kindly prepared a report for me on the climates of these different districts. This report shows that Taupo has decidedly the advantage as regards total rainfall, and, what is perhaps more important, the number of days on which rain fell. Taupo is certainly drier; otherwise the difference in climate between the high lands near Lake Rotokakahi and the Taupo neighbourhood is not very great, and both have the same dry subsoil. Probably the presence of so large a body of water at Taupo has an effect on the temperature, keeping it more equable, as in seaside places. Certainly there is no question of the invigorating effects at this place, and for cheerfulness of outlook and general beauty it cannot be surpassed.

I did not visit the actual proposed site at Lake Rotokakahi, but Mr. Matthews assures me the scenery there is pretty, and the slopes of the lake sheltered from the colder winds. The area there available is about 6,000 acres—enough to keep twenty men going for five or six years. At Taupo, the country which Mr. Kensington marked for me on the map as being available, consists of two large blocks of land, one on each side of the Waikato River. The first runs from the Terraces Hotel round the base of the Tauhara Mountain, and is bounded by the Waikato River

on the west and north. It is conveniently suited for tree-planting, but is fit for little else, being very poor. It would form an excellent site for a consumptive camp, and has the advantage of being roaded all through. The area is about 25,000 acres. Work would there be found for a large number of men for many years to come. The other block of land at Taupo lies to the westward of the village, and is about 50,000 acres in extent. It has extremely beautiful views, and would serve our purpose admirably; but is more inaccessible, no formed roads leading to it, though it can easily be reached by means of the lake as it comes down to the shore for a frontage of six miles or more.

The chief consideration is the difference in cost between the Taupo and the Lake Rotokakahi schemes, the balance being considerably in favour of the latter, chiefly owing to the fact that a medical man would have to be obtained for Taupo, whereas at Rotokakahi one of the local practitioners at Rotorua could no doubt be engaged. The extra cost of cartage to Taupo probably would not make a very appreciable difference, while for building purposes timber is cheaper there than at Rotorua. When the system develops—as I believe it will—and a colony of forty or fifty men is established, a wider scope will be required than the available area at Rotorua affords. Taupo would certainly be the place for such a large colony, as there work for hundreds of men for many years could be found. With so large a camp also, the management would be a matter requiring a special appointment, and the cost of a medical manager would be quite justified. But for the present Rotokakahi offers ample scope for work.

The question, then, seems to resolve itself into whether, for a small camp of, say, twelve men, the balance in favour of climate and outlook at Taupo can be regarded as counterbalancing the certainty of an increase in cost of upkeep of £300 or £400 a year. If this increase is to imperil the carrying-out of the scheme, then I certainly do not think I need hesitate to recommend Lake Rotokakahi.

I would especially draw attention to the fact that the absence of such a camp blocks the way for the discharge of patients from the Sanatorium, thereby decreasing the usefulness of that institution. My estimate of the number of patients for the camp is based on data supplied by Miss Rochfort, who considers that about twelve men could go from the Sanatorium in a year. If we accept patients from other parts, and allow those who wish to remain for two or three years, our camp would soon grow into a regular colony, and in course of time we might be able to establish a tree-nursery of our own, and run the place on a paying basis. When trained to the work some of the stronger patients might take contracts for planting for private individuals, and thus increase the sphere of usefulness of the scheme, and make it a very profitable business to themselves.

I cannot but believe that the tree-planting offers great possbiilities in the future for the employment of persons partially crippled by consumption.

R. H. Makgill,
Bacteriologist.

Year by year better and more adequate provision is being made for the poor sufferers from this fell disease consumption. Slowly—so very slowly, it sometimes seems to us who have been urging the necessity of providing shelters wherein the indigent consumptive can be housed—annexes and sanatoria are being erected. As was to be expected, writers have arisen who question the value of sanatoria in the treatment of tuberculosis. Doubtless the enthusiasm of the early advocates led them into some exaggeration, but there is no need for any regret on the part of those ratepayers who have moved in the matter of establishing institutions where persons suffering from consumption can be treated. Considered on its lowest aspect, I am certain that all the moneys expended will bring in a good return in increased safety to the healthy.

The value of a sanatorium or an annexe cannot be assessed by setting out the number of cures. From the nature of the disease it is impossible to hope that a great number of "cures" can be expected. Not until the patient is suffering from the disease in a well-marked form does he take alarm and seek advice. That many suffer from the disease and yet recover completely is admitted by nearly all who have carefully studied this disease.

It cannot be gainsaid that many who live to a good age and die of some other disease show *post-mortem* evidences of having suffered from tuberculosis.

Te Waikato, under the direction of Dr. Roberts and Miss Rochfort, continues its beneficial work. The good influences which emanate from this institution reach far and are of incalculable value; but until each Hospital Board has made adequate provision for its own sick it cannot exercise its full function. It is wasteful in every sense of the word to send a patient from Dunedin to the Waikato only to die. It is unfair to the sufferer. A death in such a community, or the presence of an obviously incurable case goes far to check the progress of the others.

A sanatorium is quite unlike a general hospital, where patients pass in and out every day or week. There, if they are to get well, they must stay for months and so they get to know each other in the most intimate sense of the word. There is the keenest competition at the weekly "weigh-in," and they watch each other's improvement or fall-back with the truest sympathy and interest. I am convinced of nothing more assuredly than this: The incurable should not be treated in the same institution as the curable.

Vital Statistics.

I have again to record my sincere thanks to the Registrar-General (Mr. E. J. von Dadelszen) for his kindness in permitting me to incorporate his figures in the annual report.

It should be borne in mind that his year embraces the period January to December, 1907, while the Health Report covers from the 1st April, 1907, to the 31st March, 1908.

The average number of children to a marriage is still on the decline. Last year the proportion of births to every marriage solemnised in the preceding year was 3·21, while for 1907 it was 3·15. Whatever we may think of this almost universal decline in the birth-rate, I confess I see no way in which the State can interfere to check it. Commissioners have sat in various parts of the world and discussed the subject in all its phases. Voluminous reports have been written, but it has all been as a beating of the wind. To my mind the remedy is not to be found in reports, but in a national awakening and an increase in patriotism. All sorts of cures have been advocated—such as grants of land to parents having over a certain number in the family. I have little faith in such remedies.

But if the loss to the State through the lessened advent be outside practical politics, the conservation of the health and strength of the children born is not so. Much has been done both by the State and private associations, but still the awful waste continues.

Infants.

The various Societies for the Promotion of the Health of Women and Children have done much good work, and in this connection the efforts of Her Excellency Lady Plunket and Dr. Truby King are deserving of record. By your direction a sum has been placed upon our estimates for the purpose of aiding these societies in their work.

Death-rates.

The general death-rate increased last year from 9·31 in 1906 to 10·95. This, as the Registrar-General points out, is the highest rate since 1883. The rate, however, is still much below that of the older countries, as will be seen from the table on page .

Infantile Mortality.

The death-rate among children was very heavy last year. Ninety-seven out of every thousand males born, and eighty of every thousand females, died before attaining the age of one year—that is, one in ten of male children and one in twelve of females.

If we group those deaths due to diarrhœa and enteritis—which is much the same—along with marasmus—which often spells nothing more than bad feeding—we have 861, out of a total of 1,811, due to ignorance, want of care, and impure milk. Replace these with knowledge, love, and a clean milk-supply, and much would have to be subtracted from this awful toll. And yet New Zealand shows less sacrifice than any other country. Take Russia, with an average rate over ten years of 268 deaths under one year to 1,000 births, England and Wales 147, and we find the Dominion right at the bottom with 88·79 per 1,000 births. Though the toll exacted be small in comparison, yet is it too great. The earlier notification of births insisted on by the Act of 1907, which requires a birth in a city or borough to be registered within seventy-two hours, is sure to effect much good.

Influenza.

Influenza claimed 223 victims in 1907, as against 132 in 1906.

Plague.

Detailed accounts of the two cases which occurred in Auckland will be found in the reports of Dr. Purdy and Dr. Makgill. Prompt measures were taken, and the cheering spectacle of Municipality and Central Government working hand-in-hand in the common cause of cleanliness and prevention was splendidly illustrated.

Vaccination.

This has been the subject of several special reports to you during the year. I have nothing further to add to what I said last year.

"Once more I draw attention to the lamentable disregard of the law relating to vaccination. The introduction of the so-called conscientious clause into the English Act in 1897 made it difficult for the believers in the efficiency of vaccination to insist on its being made compulsory under "The Public Health Act, 1900." To grant a certificate of exemption because a parent simply states that he conscientiously believes that to vaccinate his child would be to injure it is practically to leave the matter in the hands of the parent entirely. He may know nothing about the question—that matters not. He is not required to show even an intelligent appreciation of the *pros* and *cons* of the posi-

tion. He has simply to say before a Magistrate, "I believe it will injure my child," and the child goes unprotected. The law has made that parent's path easy enough, one would think; but no, there are many who do not even take the trouble to comply to this extent with the law. What happens? The Registrar proceeds against the parent, and even when the Magistrate has made an order it costs the parent £2—only that and nothing more. Until the child reaches the age of four years no further action can be taken to protect it against small-pox. Last year out of 24,321 children born, 4,486 were vaccinated, 2,964 were exempted, leaving 16,871 unaccounted-for.

"It will be seen that over 81 per cent. of the children born in 1906–7 are unprotected against small-pox—a deplorable state of things. But that is not the worst aspect of the question. Apparently a large section of the community are passively breaking the law passed by the Legislature, while a noisy few are actively opposing it. To prosecute 69 per cent. of the parents is impracticable; not to carry out the law is demoralising to every one. My instructions generally are to prosecute rich and poor, taking a few cases at a time. The time has come when all parents who have not had their children vaccinated, or obtained a certificate of exemption, should be brought before the Magistrate, or—and I say it with the deepest regret—alter the law so that even the semblance of compulsion shall cease. If this were done, our children would not be less protected than they are present, and this absolutely futile system of pretended compulsion would cease.

"The present generation of parents have, most of them, little knowledge of what a fateful disease small-pox is, and that passing discomfort which attends vaccination easily makes the other scale kick the beam, even when they take the trouble to calmly consider the matter. It may be said that some parents are induced to have their children done under the present *régime* who would not if all semblance of compulsion were removed. I do not think the number is large, and in any case the inducements the law, as it now stands, offers to defeat itself are such as to cause even believers in the protective value of vaccination to pause and consider the whole question calmly. To make vaccination entirely optional except in the services, institutions, and prisons may seem a retrograde step, but to keep upon the statute-book a law which is so flouted seems to me dangerous and inimical to the best interests of the community. There is little need, judging from past experiences in New Zealand, to resort to compulsion when small-pox is close at hand, and every endeavour must be made to protect the people at such times. When small-pox was present in Christchurch in 1904, 11,120 people were voluntarily vaccinated in three months. The standard of "interference with the liberty of the subject" is rarely raised at such a time. The unfairness of expecting the officers of the Department to control an outbreak of small-pox when the weapon they most rely on is denied them may be passed over; but the fact remains that many who now assume an academic calmness, or the few who rail against vaccination, will inevitably join hands in condemning the Department should the colony ever be unfortunate enough to suffer as did Tasmania in 1903. That danger seems far off is true, but owing to our constant intercommunication with the Eastern ports it is nevertheless real. Everything, therefore, would have to be in readiness in case of attack, and as every unvaccinated person is a danger not only to himself, but to all who come in contact with him, power should be given when small-pox is present to draw a circle round the point of infection and require all within that zone to submit. If this were done, more effective protection would be brought about than exists at present, while the humiliating spectacle of an unobserved law would be removed."

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

Year.	Total Vaccinations registered of Children under 14 Years of Age.	Vaccinations of Children under 1 Year of Age.	Number of Births registered.	Proportion of Successful Vaccinations of	
				Children under 14 Years of Age to Total Births. Per Cent.	Children under 1 Year of Age to Total Births. Per Cent.
1906	3,602	1,810	24,252	14·85	7·46
1905	3,818	2,079	23,682	16·12	8·78
1904	18,368	2,323	22,766	80·68	10·20
1903	11,683	5,566	21,829	53·52	25·50
1902	8,763	2,611	20,655	42·43	12·64
1901	3,768	1,984	20,491	18·39	9·68
1900	4,525	3,151	19,546	23·15	16·12
1899	5,133	3,379	18,835	27·25	17·94
1898	10,349	5,507	18,955	54·60	29·05
1897	12,440	6,162	18,733	66·41	32·89

The number of successful vaccinations of children registered in 1906 was 3,602, against 3,818 in 1905. The fall prior to 1902 was consequent on the alteration of the law relative to vaccination in England, and subsequently in this colony, while the increase shown for the three years 1902–4 was no doubt due to a slight visitation of small-pox from abroad, which caused one death in 1903.

Seven children out of every hundred born in 1906 are shown to have been successfully vaccinated in that year. This is a falling-back to a position even lower than that which obtained in 1901 as regards vaccination of infants.

Thirteen thousand eight hundred and forty-six exemption certificates were issued from the 13th October, 1900, when the Act came into force, to the end of the year 1906. Of these 2,667 belong to the year 1906, when, as before stated, the successful vaccination of children under one year of age amounted to 1,810, or 7·47 per cent. of births.

Only eight children out of every hundred born in 1907 would appear to have been successfully vaccinated. Soon New Zealand will have the unenviable distinction of being the least protected of all countries.

PHTHISIS.

The death-rates from this disease increased slightly last year—from 6·21 to 6·66 per 10,000. This increase is, I think, of little significance. Provision is gradually being made for sufferers from this disease, and when we can say to every indigent sufferer, "Here is a shelter, come in," as much will have been effected in this direction as can be expected of a State.

ADMISSIONS REFUSED.

During the past year twelve persons were refused admission to the Dominion on account of either mental defects, tuberculosis, or syphilis.

CANCER.

Once again the Registrar-General records an increase in the death-rate from this disease. In 1906, with a mean population of 895,594, there were 623 deaths; in 1907, with a mean population of 919,105, there were 674—an increase of 0·37 per 10,000 persons living.

BIRTHS.

The number of births registered during 1907 was 25,094, or 27·30 in every 1,000 persons living. The number of births is 842 in excess of that for the year 1906, an increase of 3·47 per cent. From 1882 until the year 1899 there was a regular fall in the birth-rate. The number of births registered in a year reached 19,846 in 1884, and, after falling to 17,876 in 1892, has risen to 25,094 in 1907 as stated above.

The number of male children born during 1907 was 12,835, and of female children 12,259.

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

Year.	Number of Births.	Rate per 1,000 of Population.	Year.	Number of Births.	Rate per 1,000 of Population.
1882	19,009	37·32	1895	18,546	26·78
1883	19,202	36·28	1896	18,612	26·33
1884	19,846	35·91	1897	18,737	25·96
1885	19,693	34·35	1898	18,955	25·74
1886	19,299	33·15	1899	18,835	25·12
1887	19,135	32·09	1900	19,546	25·60
1888	18,902	31·22	1901	20,491	26·34
1889	18,457	30·07	1902	20,655	25·89
1890	18,278	29·44	1903	21,829	26·61
1891	18,273	29·01	1904	22,766	26·94
1892	17,876	27·83	1905	23,682	27·22
1893	18,187	27·50	1906	24,252	27·08
1894	18,528	27·28	1907	25,094	27·30

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

Year.	Number of Marriages.	Mean Population (excluding Maoris).	Year.	Number of Marriages.	Mean Population (excluding Maoris).
1882	3,600	509,309	1895	4,110	692,417
1883	3,612	529,292	1896	4,843	706,846
1884	3,800	552,590	1897	4,928	721,609
1885	3,813	573,362	1898	5,091	736,260
1886	3,488	582,117	1899	5,461	749,984
1887	3,563	596,374	1900	5,860	763,594
1888	3,617	605,371	1901	6,095	777,968
1889	3,632	612,716	1902	6,394	797,793
1890	3,797	620,780	1903	6,748	820,217
1891	3,805	629,783	1904	6,983	845,022
1892	4,002	642,245	1905	7,200	870,000
1893	4,115	661,349	1906	7,592	895,594
1894	4,178	679,196	1907	8,192	919,105

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

The figures for the twenty-year period 1888–1907 show a decline in the proportion of births to every marriage in the preceding year from 5·14 to 3·15, as below:—

Year.	Marriages.	Legitimate Births.	Proportion of Births to every Marriage solemnised in the Preceding Year.
1887	3,565	...	...
1888	3,617	18,325	5·14
1889	3,632	17,845	4·93
1890	3,797	17,675	4·87
1891	3,805	17,635	4·64
1892	4,002	17,283	4·54
1893	4,115	17,514	4·37
1894	4,178	17,824	4·33
1895	4,110	17,711	4·24
1896	4,843	17,778	4·32
1897	...	17,911	3·70
1897	4,928	...	...
1898	5,091	18,154	3·68
1899	5,461	18,006	3·54
1900	5,860	18,640	3·41
1901	6,095	19,554	3·34
1902	6,394	19,734	3·23
1903	6,748	20,835	3·26
1904	6,983	21,737	3·22
1905	7,200	22,600	3·24
1906	7,592	23,120	3·21
1907	...	23,937	3·15

If the average result be taken out for the ten years 1888–1897, it will be found to represent 4·51 births to a marriage. Dealing similarly with the figures for 1898–1907 the result is an average of 3·33, so that regarded anually or decenially there is a decided fall to be observed.

In the Australian States a similar decrease is noticeable.

New Zealand had in 1880 the highest birth-rate (40·78); in 1900 the case was reversed; but in 1906 the New Zealand rate was higher than that of Queensland, New South Wales, Victoria, and South Australia.

The movement over ten years is calculated as under:—

Birth-rates per 1,000 of Population.

State or Colony.	1898.	1899.	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.
Queensland	28·28	27·31	30·21	28·28	27·68	24·71	27·12	25·92	26·31	...
New South Wales ...	27·14	27·10	27·43	27·60	27·17	25·28	26·73	26·73	27·04	27·14
Victoria	25·72	26·71	25·82	25·77	25·23	24·46	24·65	24·83	25·14	25·16
South Australia ...	24·98	25·51	25·78	25·39	24·85	23·43	24·70	23·82	23·54	23·97
Western Australia ...	29·35	30·64	31·46	30·32	30·09	30·27	30·34	30·30	30·02	29·24
Tasmania	26·24	25·98	28·25	28·40	28·95	28·61	29·59	29·32	29·52	...
New Zealand	25·74	25·12	25·60	26·34	25·89	26·61	26·94	27·22	27·08	27·30

This table shows that although New Zealand had in 1900 the lowest birth-rate in Australasia, the rate for 1907 was higher than that of New South Wales, Victoria, and South Australia.

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

Taking the number of married women in New Zealand at what may be considered the child-bearing ages (*i.e.*, from 15 to 45 years, inclusive) as shown by each census since 1878, and for the same years the number of legitimate births (excluding plural) registered, the birth-rate per 1,000 married women of the above-stated ages is easily found, and is shown to be steadily declining. In 1878 the rate was 337 per 1,000, in 1896 it had fallen to 252, in 1901 to 244, and in 1906 to 228; or, in other words, in 1878 one married woman of the ages specified in every three gave birth to a child, while in 1906 the rate was less than one in four. The figures for each census year are given below.

Birth-rates (Legitimate) per 1,000 Married Women at Child-bearing Ages for each Census Year, 1878 to 1906.

Year (Census).	Number of Married Women between 15 and 45 Years of Age.	Number of Legitimate Births (Confinements).	Birth-rate per 1,000 Married Women of from 15 to 45 Years of Age.
1878	50,995	17,196	337·2
1881	57,458	18,003	313·3
1886	62,704	18,532	295·5
1891	63,165	17,455	276·3
1896	69,807	17,596	252·1
1901	79,406	19,355	243·8
1906	98,211	22,352	227·6

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

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

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

Married Women under 45 Years of Age, given according to Age-groups, as at the Censuses of 1881, 1891, 1901, and 1906; with the Proportion in each Group for every 100 of the Whole.

Age-groups.	Married Women under 45, excluding Chinese.							
	Numbers at Census.				Proportion per Cent.			
	1881.	1891.	1901.	1906.	1881.	1891.	1901.	1906.
15–20	1,233	750	777	928	2·14	1·19	0·98	0·95
20–25	8,996	8,862	10,053	12,153	15·66	14·03	12·66	12·37
25–30	13,133	14,540	17,923	24,030	22·86	23·02	22·57	24·47
30–35	12,656	14,576	19,617	23,025	22·03	23·08	24·70	23·44
35–40	11,811	12,959	16,854	21,453	20·55	20·51	21·23	21·84
40–45	9,629	11,478	14,182	16,622	16·76	18·17	17·86	16·93
Totals ...	57,458	63,165	79,406	98,211	100·00	100·00	100·00	100·00

A table is given in the Sixty-ninth Annual Report of the Registrar-General of England of such importance that it is reproduced here:—

Legitimate-birth Rates.

Country— (Arranged in order of rates in 1900-2).	Proportion of Legitimate Births per 1,000 Wives aged 15–45 Years.			Increase (+) or Decrease (−) per Cent. in Fertility during 20 years.
	Approximate Periods.			
	1880–2.	1890–2.	1900–2.	
European Countries—				
The Netherlands	347·5	338·8	315·3	— 9·3
Norway	314·5	306·8	302·8	— 3·7
Prussia	312·6	307·6	290·4	— 7·1
Ireland	282·9	287·6	289·4	+ 2·3
German Empire	310·2	300·9	284·2	— 8·4
Austria	281·4	292·4	283·7	+ 0·8
Scotland	311·5	296·4	271·8	— 12·7
Italy	276·2	..	269·4	— 2·5
Sweden	293·0	280·0	269·0	— 8·2
Switzerland	284·1	274·0	265·9	— 6·4
Denmark	287·1	278·1	259·1	— 9·8
Spain	257·7	263·9	258·7	+ 0·4
Belgium	312·7	285·1	250·7	— 19·8
England and Wales	286·0	263·8	235·5	— 17·7
France	196·2	173·5	157·5	— 19·7
Australian Commonwealth—				
Tasmania	..	311·0	256·4	..
Queensland	329·0	320·6	252·8	— 23·2
Western Australia	323·9	338·8	246·4	— 23·9
South Australia	326·5	307·5	235·0	— 28·0
New South Wales	337·8	298·5	234·3	— 30·6
Victoria	299·2	297·8	226·8	— 24·2
New Zealand	322·1	277·5	243·2	— 24·5

Here England and Wales for 1900–2 stands as having had the lowest fertility of all the European countries specified, except France. New Zealand shows a little above England, and, in respect of Australia, somewhat higher than South Australia, New South Wales, and Victoria.

A further table shows the declining birth-rate, and the increase in the marriage-rate, in the United Kingdom.

Birth and Marriage Rates in the United Kingdom, 1886, 1891, 1896, 1901, and 1906.

Year.	Mean Population.	Births.		Marriages.	
		Number.	Rate per 1,000 of Population.	Number.	Rate per 1,000 of Population.
1886 ...	36,313,582	1,145,577	31·5	241,180	6·6
1891 ...	37,802,440	1,148,259	30·4	275,970	7·3
1896 ...	39,599,072	1,152,144	29·0	296,089	7·5
1901 ...	41,550,773	1,162,975	28·0	313,351	7·5
1906 ...	43,661,092	1,170,537	26·8	325,823	7·5

The above figures are taken from the report of the Registrar-General of England (69th number), published in 1908.

The birth-rates for ten years in Great Britain and certain countries of the European Continent are also given from the same source. The rates in England and Wales, and in Scotland, are higher than those in New Zealand, but the rate for Ireland is lower. France has the lowest rate of all quoted:—

Birth-rates in European Countries, 1897 to 1906.

Countries.	Number of Births per 1,000 of Mean Population.									
	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.	1905.	1906.
Hungary	40·3	37·7	39·3	39·3	37·8	38·8	36·7	37·0	35·7	36·0
Austria	37·5	36·3	37·3	37·3	36·6	37·0	35·2	35·5	33·7	...
Italy	34·7	33·5	33·9	33·0	32·6	33·4	31·7	32·8	32·5	31·9
German Empire	36·0	36·1	35·8	35·6	35·7	35·1	33·9	34·1	33·0	...
Netherlands	32·5	31·9	32·0	31·5	32·3	31·8	31·6	31·4	30·8	30·4
Scotland	30·0	30·1	29·8	29·6	29·5	29·2	29·2	28·7	28·1	27·9
Norway	29·9	30·1	30·7	29·9	29·6	29·0	28·8	28·1	27·4	26·5
England and Wales ...	29·6	29·3	29·1	28·7	28·5	28·5	28·4	27·9	27·2	27·1
Belgium	29·0	28·6	28·8	28·9	29·4	28·4	27·5	27·1	26·1	25·7
Sweden	26·7	27·1	26·4	27·0	27·0	26·5	25·7	25·8	25·7	25·7
Switzerland	28·1	28·4	28·9	28·6	29·1	28·7	27·7	27·7	27·4	...
Ireland	23·5	23·2	23·1	22·7	22·7	23·0	23·1	23·6	23·4	23·6
France	22·2	21·8	21·9	21·4	22·0	21·7	21·1	20·9	20·6	20·6

In March, 1901, New Zealand had 86,806 children living under the age of five years, and in April, 1906, the number was 102,745, an increase of 15,939, or 18·35 per cent., although the population at all ages increased in the quinquennium by only 14·99 per cent. Between 1891 and 1896 the increase was only 455, or 0·55 per cent., while between 1886 and 1891 the children living under five years actually decreased in number by 3,624, the increase of population of all ages (8·33 per cent.) being less than between 1891 and 1896 (12·24 per cent.), 1896 and 1901 (9·86 per cent.), or 1901 and 1906 (14·99 per cent.). The number of children under one year to the total population at all ages, according to the results of five censuses, was:—

	Children under One Year.	Total Population (all Ages).
Census 1886	18,355	578,482
„ 1891	16,443	626,658
„ 1896	17,070	703,360
„ 1901	18,381	772,719
„ 1906	22,289	888,578

Thus, in 1886, with a population of 578,482 persons, there were 18,355 children under one year, against 22,289 children of that age in 1906, with a population of 888,578 persons.

The births registered in 1885 were 19,693, against 23,682 in 1905. The birth-rate fell from 34·35 per 1,000 of the population in 1885 to 27·22 in 1905.

Deducting 1,599, the number of deaths of children under one year registered in 1905, from 23,682, the number of births for that year, leaves 22,083, or within 206 of the living children under one year at the time of the last census.

Sexes of Children Born.

The figures show that during each year since 1886 there has been a preponderance of births of male children. It would appear, however, that this excess of male births is not sufficient to compensate for the heavier mortality which occurs among this sex. Of the total population in 1871 there were 70·52 females to every 100 males, but in 1907 the proportion of the females to 100 males had risen to 88·67.

Year.	Number of Births of		Proportion of Births of Males to every 100 Females.
	Males.	Females.	
1887	9,725	9,410	103·3
1888	9,641	9,261	104·1
1889	9,514	8,943	106·4
1890	9,293	8,985	103·4
1891	9,377	8,896	105·4
1892	9,101	8,775	103·7
1893	9,310	8,877	104·9
1894	9,472	9,056	104·6
1895	9,493	9,053	104·9
1896	9,511	9,101	104·5
1897	9,600	9,137	105·1
1898	9,615	9,340	102·9
1899	9,724	9,111	106·7
1900	10,107	9,439	107·1
1901	10,471	10,020	104·5
1902	10,653	10,002	106·5
1903	11,217	10,612	105·7
1904	11,762	11,004	106·9
1905	12,109	11,573	104·6
1906	12,397	11,855	104·6
1907	12,835	12,259	104·7

Twin Births.

There were 244 cases of twin births (488 children) registered in 1907. The number of children born was 25,094; the number of mothers was 24,850: thus, on an average, one mother in every 102 gave birth to twins, against 114 in 1906, 97 in 1905, 93 in 1904, and 97 in 1903.

Illegitimacy.

The births of 1,157 children were illegitimate: thus 46 in every 1,000 children born were born out of wedlock, against 47 in 1906.

The rates of illegitimacy in Australasia are quoted. That for 1907 in New Zealand was less than in any of the Australian States, except South Australia and Western Australia.

Proportion of Illegitimate Births in every 100 Births.

Year.	Queensland.	New South Wales.	Victoria.	South Australia.	Western Australia.	Tasmania.	New Zealand.
1898	6·04	6·93	5·29	3·62	4·99	5·09	4·23
1899	5·97	7·15	5·49	3·95	4·91	6·08	4·40
1900	6·40	7·01	5·91	4·24	4·82	5·43	4·63
1901	5·93	7·16	5·58	3·98	3·88	5·94	4·57
1902	6·04	6·60	5·51	4·36	3·96	5·36	4·46
1903	6·76	6·71	5·73	4·18	4·69	5·61	4·55
1904	6·89	7·12	5·74	4·01	4·36	5·82	4·52
1905	7·00	7·37	5·61	4·37	4·19	5·52	4·57
1906	7·68	7·04	5·58	4·00	4·78	5·78	4·67
1907	...	7·04	5·62	4·10	3·89	...	4·61

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

The proportion of illegitimate births per 1,000 unmarried women—*i.e.*, spinsters and widows—at the reproductive ages, covering a period of twenty years, is shown:—

Year.	Unmarried Women aged 15–45 Years.	Illegitimate Births.	Illegitimate-birth Rate per 1,000 Unmarried Women.
1886	56,277	602	10·70
1891	68,990	638	9·25
1896	89,722	834	9·30
1901	105,420	937	8·89
1906	116,506	1,132	9·72

The rate in New South Wales for 1905 was 16·24 per 1,000 unmarried women, in Victoria the rate was 10·31 for 1901, while in England and Wales the rate was as low as 8·1 for the year 1906.

For England and Wales the proportion of illegitimate births to the total births in 1906 was 4 per cent., having gradually diminished from 7 per cent. in 1845.

The average proportion of illegitimate births in Scotland in five years was 6·3 per cent., but in Ireland the extremely low average of 2·6 per cent. obtained.

The figures in the next table, which give the percentages of illegitimate births to the total births in a number of foreign countries, cover in most cases a period of five years.

Country.	Illegitimate Births per Cent.	Country.	Illegitimate Births per Cent.
Germany	9·08	France	8·82
Prussia	7·68	Belgium	7·67
Bavaria	13·43	Netherlands	2·60
Saxony	12·89	Sweden	11·13
Austria	14·20	Norway	7·43
Hungary	9·13	Italy	6·45

The Legitimation Act.

An important Act was passed in 1894, entitled the Legitimation Act, which makes provision for the legitimation of children born before marriage on the subsequent marriage of their parents. Under this Act any child born out of wedlock, whose parents afterwards marry, is deemed to be legitimised by such marriage on the birth being registered in the manner prescribed by the Act. For legitimation purposes Registrars must register a birth when called upon to do so by any person claiming to be the father of an illegitimate child; but such person is required to make a solemn declaration that he is the father, and that at the time of the birth there existed no legal impediment to his marriage with the mother of the child. He has also to produce the evidence of his marriage. It will thus be seen that in cases dealt with under the Act registration becomes the test of legitimacy. In the December quarter of 1894, 11 children were legitimised; in the year 1895 the number was 68; in 1896, 56; in 1897, 48; in 1898, 59; in 1899, 41; in 1900, 62; in 1901, 47; in 1902, 96; in 1903, 65; in 1904, 87; in 1905, 84; in 1906, 125; and in 1907, 114, making altogether 963 legitimations since the passing of the law.

Maternity Homes and the Registration of Nurses and Midwives.

There are four maternity homes now open for the use of the public, one at each of the principal centres. The St. Helens Hospital at Wellington was opened in June, 1905; that at Dunedin in October, 1905; that at Auckland, in June, 1906; and that at Christchurch in April, 1907. Up to the end of March, 1907, a total of 564 births had taken place in the three hospitals, and 154 confinements had been attended by the institution nurses outside the hospitals. These institutions are a development of the policy begun by legislation in 1901, when the Nurses Registration Act was passed, followed in 1904 by the Midwives Act, the latter providing that after a certain date only those midwives who were duly registered would be qualified to practise on their own account. Thirty-three nurses' certificates have been issued to those who were trained in the hospitals and were qualified to practice, while 996 midwives have been registered, 149 of these holding special certificates.

The maternity hospitals are not intended in any sense to be charitable institutions, and it is expected that they will be self-supporting.

Births and Birth-rates in the Four Chief Cities.

The total number of births registered as occurring in the four chief centres and suburbs in 1907 was 7,018, as against 6,512 for the previous year. The birth-rates for 1907 were:—

	Birth-rates per 1,000 of Mean Population.	
Auckland City	29·63	
" and six suburban boroughs	...	27·46
Wellington City	27·53	
" and three suburban boroughs	...	27·34
Christchurch City	30·47	
" and one suburban borough	...	30·48
Dunedin City	25·69	
" and six suburban boroughs	...	25·36

By the inclusion of the suburbs the rate is raised at Christchurch, but lowered at Auckland, Wellington, and Dunedin. It will be observed that Christchurch has the highest rate, Auckland next highest, Wellington and Dunedin following with intervals. The birth-rate for the Dominion last year was 27·30 per thousand. Auckland, Wellington, and Christchurch are thus over the average, and Dunedin below it.

The birth-rates for three of the central boroughs last year show a fall when compared with 1906. In Auckland the rate fell from 29·96 to 29·63, in Wellington from 27·85 to 27·53, in Dunedin from 28·96 to 25·69, but rose in Christchurch from 28·19 to 30·47. The rates for five years, 1903 to 1907, are:—

	Births per 1,000 of Population.				
	1903.	1904.	1905.	1906.	1907.
Auckland (without suburbs) ...	31·67	31·08	30·06	29·96	29·63
Wellington " ...	29·22	26·77	29·72	27·85	27·53
Christchurch " ...	26·59	27·53	29·70	28·19	30·47
Dunedin " ...	19·54	22·40	23·90	28·96	25·69

NATURALISATION.

Aliens residing in New Zealand may, on taking the oath of allegiance to His Majesty, obtain letters of naturalisation entitling them to enjoy all the rights and privileges that a natural-born subject of the United Kingdom can enjoy or transmit within this Dominion. Two hundred and eighty-two (275 men and 7 women) were naturalised in 1907.

The number belonging to each nationality was as under:—

Number of Aliens naturalised in 1907.

Natives of—	M.	F.	Natives of—	M.	F.
German Empire	27	2	Spain	1	0
Norway	21	1	Portugal and possessions	1	0
Sweden	18	0	Austria-Hungary	100	0
Denmark	27	2	Greece	4	0
Russia and Finland	23	0	China	12	0
France and possessions	4	0	Japan	2	0
Belgium	2	0	United States of America	5	0
Netherlands	1	0	Syria	10	0
Switzerland	8	1	Chili	1	0
Italy	8	1			

The number of natives of each country naturalised during the last twenty-five years is next shown.

Natives of—		Natives of—	
Germany	1,742	Portugal	67
Sweden and Norway	1,375	Austria-Hungary	778
Denmark	954	Greece	62
Russia in Europe	310	China	416
France	149	United States of America	108
Belgium	36	Other countries	183
Netherlands	70		
Switzerland	202	Total	6,708
Italy and Sicily	256		

By section 2 of "The Aliens Act Amendment Act, 1882," repealed and re-enacted by section 2 of "The Aliens Act Amendment Act, 1892," it is provided that when the father, or mother being a widow, has obtained naturalisation in the Dominion every child who during infancy has become resident with them in New Zealand shall be deemed to be naturalised, and shall have the rights and privileges of a natural-born subject.

MARRIAGES.

The marriages for 1907 show an increase on the number for the previous year. The number was 8,192, or 600 more than in 1906. The marriage-rate rose from 8·48 per 1,000 persons living in 1906 to 8·91 in 1907, the rate for the latter year being the highest obtained since 1875, when it stood at 8·94 per 1,000 persons. The improvement shown during recent years sets New Zealand in a good position relatively to the Australian States.

The rates for a series of seventeen consecutive years were:—

Marriages per 1,000 of the Population.

Year.	Queensland.	New South Wales.	Victoria.	South Australia (Proper).	Western Australia.	Tasmania.	New Zealand.
1891	7·18	7·39	7·69	7·31	8·00	6·63	6·04
1892	6·67	6·77	6·64	6·51	7·29	6·51	6·23
1893	5·91	6·40	5·99	6·26	6·34	5·51	6·22
1894	5·70	6·20	5·98	6·09	6·24	5·43	6·15
1895	6·23	6·35	6·00	5·88	6·83	5·32	5·94
1896	6·05	6·59	6·48	6·20	8·45	5·88	6·85
1897	6·05	6·72	6·36	5·46	10·73	6·23	6·83
1898	6·03	6·66	6·53	6·18	9·89	6·29	6·91
1899	6·78	6·89	7·01	6·24	9·89	6·37	7·28
1900	6·88	7·38	6·96	6·50	10·27	7·71	7·67
1901	6·61	7·68	6·99	6·44	9·65	7·68	7·83
1902	6·31	7·53	7·02	6·61	9·77	7·47	8·01
1903	5·72	6·86	6·29	6·25	9·33	7·57	8·23
1904	5·93	7·21	6·80	6·91	8·83	7·55	8·26
1905	6·04	7·42	7·24	7·00	8·48	7·61	8·28
1906	6·73	7·63	7·28	7·12	8·70	7·74	8·48
1907	..	7·84	7·68	7·99	8·02	..	8·91

The improved rate for New Zealand is higher than the rate for the European countries given in the table following.

Marriages in every 1,000 of the Population.

Hungary	1906 ..	8·7	Netherlands	1906 ..	7·5
German Empire ..	1905 ..	8·1	Denmark	1906 ..	7·5
Belgium	1906 ..	8·1	Spain	1906 ..	7·3
Austria	1905 ..	7 8	Scotland	1906 ..	7·0
England and Wales ..	1906 ..	7·8	Sweden	1906 ..	6·1
France	1906 ..	7·8	Norway	1906 ..	5·9
Italy	1906 ..	7·8	Ireland	1906 ..	5·2
Switzerland	1905 ..	7·6			

The marriage-rate, measured by the total population, does not show the true position when, as in the case of New Zealand, the age constitution of the people fluctuates considerably. A more satisfactory standard is found in the number of persons of marriageable age, defined as meaning the unmarried and widowed of males aged 20 years and upwards and of females aged 15 years and upwards. The rates are given for four census years:—

Year of Census.	Proportion of Unmarried per 1,000 of Total		Proportion of Marriages per 1,000 of the			
	Males.	Females.	Marriageable Men.	Marriageable Women.	Marriageable Persons.	Total Population.
1891	246·2	267·8	46·22	48·10	47·14	6·04
1896	264·2	308·3	49·11	47·09	48·08	6·85
1901	278·3	330·6	53·56	49·96	51·69	7·83
1906	295·8	326·9	54·09	55·15	54·62	8·48

Of the marriages solemnised in 1907, 7,499 were between bachelors and spinsters, 231 between bachelors and widows, 335 between widowers and spinsters, and 127 between widowers and widows.

Divorced men and women have been classed as bachelors or spinsters: 53 divorced men and 75 divorced women were married during the year.

Included amongst spinsters are three married women, and amongst the bachelors two married men, who elected to go through the form of marriage with other persons under the protection of the provisions of section 204, subsection (5), of "The Criminal Code Act, 1893," which runs, "No one commits bigamy by going through a form of marriage if he or she has been continually absent from his or her wife or husband for seven years then last past, and is not proved to have known that his wife or her husband was alive at any time during those seven years."

The total number of marriages solemnised (8,192) does not include marriages where both parties are of the aboriginal native race, such persons being exempted from the necessity of

complying with the provisions of the Marriage Act, although at liberty to take advantage thereof. Twenty-one marriages in which both parties were Maoris were contracted in 1907 in terms of the Act: 13 by Registrars, 3 by clergymen of the Church of England, 1 by a Methodist minister, 1 by a minister of the Congregational Church, and 3 by ministers of the Church of the Latter-day Saints.

BACHELORS AND SPINSTERS IN NEW ZEALAND.

The results of three censuses in respect of the number of bachelors of 20 years and upwards, and spinsters of 15 years and upwards, show some interesting features. In 1891 there was an excess of bachelors over spinsters amounting to 3,497 men. But in 1896 not only had the preponderance of the male element been lost, but an excess of spinsters over bachelors was reported amounting to 1,786 women, while in 1901 this excess had risen to 3,572 women. The census of 1906 disclosed the fact that there was a considerable excess of bachelors, amounting to 9,633. This result, no doubt, is largely due to the arrivals from abroad of numbers of young men who have settled in New Zealand.

It is noticeable how differently the numbers for the provincial districts have been affected by the process in operation. An excess of bachelors was preserved in Auckland, Taranaki, Hawke's Bay, Wellington, Marlborough, Nelson, and Westland from 1891 to 1906. In Canterbury, however, an excess of spinsters was found in 1891 of 2,516, which increased to 3,997 in 1896 and to 4,918 in 1901, but decreased to 2,117 in 1906; while in Otago an excess of 773 spinsters in 1891 increased to 2,066 in 1896, diminished in 1901, when there were 1,899 more spinsters than bachelors, and again in 1906, when the number of spinsters was 954 greater than the number of bachelors. These two important districts of the South Island have lost large numbers of bachelors by departures to the North Island. The following table exhibits the particulars for each provincial district:—

Provincial Districts.	Census, 1891.		Census, 1896.		Census, 1901.		Census, 1906.	
	Excess of Bachelors over Spinsters.	Excess of Spinsters over Bachelors.	Excess of Bachelors over Spinsters.	Excess of Spinsters over Bachelors.	Excess of Bachelors over Spinsters.	Excess of Spinsters over Bachelors.	Excess of Bachelors over Spinsters.	Excess of Spinsters over Bachelors.
Total excess	3,497	..	..	1,786	..	3,572	9,633	..
Auckland	156	..	703	..	521	..	3,383	..
Taranaki	121	..	524	..	805	..	754	..
Hawke's Bay	1,337	..	1,142	..	425	..	1,151	..
Wellington	2,129	..	637	..	732	..	4,389	..
Marlborough	644	..	183	..	158	..	532	..
Nelson	1,486	..	580	..	637	..	1,550	..
Westland	900	..	501	..	666	..	935	..
Canterbury	..	2,516	..	3,997	..	4,918	..	2,117
Otago	..	773	..	2,066	..	1,899	..	954
Chatham Islands ..	15	..	7	..	1	..	10	..
Kermadec Islands ..	..	2	..	..	..	..	..	..

MARRIAGES BY MINISTERS OF VARIOUS DENOMINATIONS.

Of the marriages in the year 1907, 24·38 per cent. were solemnised by ministers of the Church of England, 26·23 per cent. by ministers of the Presbyterian Churches, 14·95 per cent. by ministers of the Methodist Churches, 11·22 per cent. by ministers of the Roman Catholic Church, 7·99 per cent. by ministers of other denominations, and 15·23 per cent. by Registrars.

The following shows the proportions of marriages by ministers of the principal denominations in the past eight years, and the percentages of these denominations to the total population in 1907:—

Denomination.	Percentage of Marriages.								Percentage of Denomination to Total Population in 1906.
	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.	
Church of England ..	22·68	24·91	24·58	25·52	24·12	24·24	24·93	24·38	41·51
Presbyterians	26·38	24·48	25·95	25·31	25·46	26·43	25·75	26·23	22·96
Methodists	13·23	13·19	12·95	13·32	16·30	16·76	14·94	14·95	10·06
Roman Catholics ..	10·82	10·53	9·94	10·08	11·14	10·22	11·13	11·22	14·31
Other denominations ..	10·20	10·20	10·07	9·87	6·54	6·75	6·34	7·99	11·16
By Registrars ..	16·69	16·69	16·51	15·90	16·44	15·60	16·91	15·23	..
	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·0

Marriage by Registrar is found to be less frequent than it was eight years ago, the percentage falling from 16·69 in 1900 to 15·23 in 1907.

MARRIAGE REGISTER SIGNED BY MARK.

Of the men married in 1907, 12, or 1·46 in every 1,000, and of the women 25, or 3·05 per 1,000, signed the register by marks.

The illiteracy of the people, as measured by the proportion of married persons who affix marks instead of signatures to the marriage register, has greatly decreased of late, having fallen since 1881 from 32·04 per 1,000 among men to 1·46 per 1,000, and from 57·98 per 1,000 to 3·05 per 1,000 among women. This is shown in a very striking manner by the following table:—

Persons in every 1,000 married who signed by Mark.

Denomination.	1881.		1891.		1901.		1907.	
	M.	F.	M.	F.	M.	F.	M.	F.
Church of England	16·59	27·15	8·29	10·66	1·32	3·29	1·50	..
Presbyterians	10·25	29·61	5·79	8·69	2·68	4·69	0·93	1·86
Methodists	32·41	41·79	8·93	10·71	3·73	3·73	..	2·45
Roman Catholics	117·78	133·33	31·33	18·28	6·23	7·79	1·09	1·09
Other denominations	10·36	20·72	9·26	..	1·61	3·22	..	1·53
By Registrars	39·22	93·51	27·42	43·08	13·77	15·73	4·81	12·82
Total marriages ..	32·04	57·98	13·93	16·82	4·59	6·23	1·46	3·03

The proportion of illiterates in 1901 and 1907 was greatest among those married before Registrars. Previously the proportion was largest among Roman Catholics; but since 1881 it has, as shown by the table, most remarkably decreased.

AGES OF PERSONS MARRIED.

Of the persons married in 1907, 131 bridegrooms and 1,296 brides were under 21 years of age—one of the bridegrooms was between 16 and 17, and ten between 18 and 19. Of the brides, ten were between 15 and 16, and thirty-four between 16 and 17 years of age. The proportion of men married is greatest at the ages of 25 to 30, and of women at from 21 to 25 years.

The following are the proportions of men and women married at each age-period to every 100 marriages in the years 1891, 1901, and 1907:—

Age.	1891.		1901.		1907.	
	M.	F.	M.	F.	M.	F.
Under 21 years	1·55	20·79	1·93	17·16	1·60	15·82
21 and under 25	26·99	43·99	24·94	39·97	23·63	36·77
25 ,, 30	36·19	22·97	37·08	26·89	39·39	29·53
30 ,, 40	25·94	8·72	27·12	12·73	27·16	14·11
40 ,, 50	6·44	2·71	6·04	2·44	5·07	2·66
50 ,, 60	2·26	0·66	1·77	0·57	1·99	0·81
60 ,, 70	0·55	0·16	0·92	0·24	0·88	0·28
70 and upwards	0·08	..	0·20	..	0·28	0·02

Registrars of Marriages are prohibited by law from issuing certificates for the marriage of minors without the consent of their parents or lawful guardians, if there be any in New Zealand. If a declaration be made in any case that there is no such parent or lawful guardian resident in the Dominion, then a certificate may be issued after the expiration of fourteen days following the date on which the notice of intended marriage is given.

A marriage may not be solemnised except after the delivery to the minister or Registrar who officiates of a certificate issued by a Registrar authorising such marriage, and if any persons knowingly and wilfully intermarry without such certificate the marriage is null and void; and no clergyman or minister of any denomination is empowered to solemnise marriages until his name has been placed on the Registrar-General's list of officiating ministers for the year.

Marriage with a deceased wife's sister in New Zealand was legalised in the year 1880, and an Act was passed in the year 1900 which legalised marriage with the brother of a deceased husband. This Act is retrospective, including in its provisions marriages between such parties which had previously been solemnised as well as those contracted after the statute was passed, and declaring all these to be valid, and the issue born prior or subsequent to the passing of the Act to be deemed born in lawful wedlock.

The measure was reserved for the signification of her late Majesty's pleasure. The Royal assent has since been given, and the Act came into force in New Zealand by Proclamation dated the 22nd May, 1901.

The ages at which persons may contract binding marriages are the same as in England—12 years for females and 14 for males. Marriage may be contracted at earlier ages than those stated, but would be voidable at the discretion of either of the parties upon reaching the age of 12 or 14, as the case may be, and without the necessity of proceedings in Court.

Although in New Zealand the age at which girls may legally marry is as above, nevertheless, by the criminal law, to unlawfully carnally know a girl under the age of 16 years is now a punishable offence. The age of consent was raised from 15 to 16 by statute passed in 1896.

Mean Ages at Marriage.

Year.	Mean Age of Bridegrooms.	Mean Age of Brides.	Year.	Mean Age of Bridegrooms.	Mean Age of Brides.
1895	29·90	25·05	1902	29·89	25·63
1896	29·74	25·28	1903	29·89	25·84
1897	29·62	25·21	1904	29·60	25·44
1898	29·95	25·30	1905	29·65	25·75
1899	29·86	25·48	1906	29·76	25·97
1900	29·91	25·29	1907	29·83	26·07
1901	29·72	25·54			

The average age of bridegrooms has remained fairly constant during the period, but there is a gradual increase in the average age of the brides. In England the mean age of those whose ages were stated was (in the year 1906) 28·56 years for men, and 26·41 years for women. Thus the average age at marriage in New Zealand would appear to be higher for men, but lower for women, than in England.

The proportion of bridegrooms under 21 is much greater in England than in New Zealand, and the proportion of brides under 21 somewhat higher.

In England, in 1906, of every 1,000 bridegrooms whose ages were stated, 43 were under 21 years of age, and of every 1,000 brides 146 were under 21 years of age. In New Zealand, in 1907, the proportions were 16 bridegrooms and 158 brides of similar ages in every 1,000 married :—

Year.	Bridegrooms under 21 in every 100.	Brides under 21 in every 100.	Year.	Bridegrooms under 21 in every 100.	Brides under 21 in every 100.
1890	1·89	22·75	1901	1·93	17·16
1892	1·62	20·14	1904	1·73	17·61
1894	1·44	19·53	1905	1·80	16·90
1896	1·96	19·51	1906	1·65	15.86
1898	1·57	18·13	1907	1·60	15·82
1900	1·67	17·34			

DEATHS.

The deaths in 1907 numbered 10,066, being equivalent to a rate of 10·95 in every 1,000 persons living, as against 9·31 in 1906. This is the highest rate experienced since the year 1883, when the deaths were 11·45 per 1,000 of the population.

Comparative Death-rate for the Period 1897 to 1907.

Country.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.
New Zealand ...	9·14	9·84	10·24	9·43	9·81	10· 0	10·40	9·57	9·27	9·31	10·95
Queensland ...	11·33	12·66	12·07	11·73	11·88	12· 8	12·38	10·11	10·47	9·56	...
New South Wales	10·88	12·48	11·82	11·16	11·68	11·95	11·59	10·62	10·13	9·89	10·56
Victoria ...	12·90	15·94	14·28	12·75	13·22	13·40	12·90	11·92	12·10	12·42	11·66
South Australia*	11·24	13·06	12·14	10·64	11·11	11·79	10·71	10·22	10·14	10·34	9·72
Western Australia	16·97	16·05	13·76	12·92	13·36	13·63	12·60	11·91	10·83	11·87	11·09
Tasmania ...	11·53	13·51	12·25	11·05	10·45	10·84	11·92	11·01	10·23	11·13	...
England and Wales	17·4	17·5	18·2	18·2	16·9	16·2	15·4	16·2	15·2	15·4	...
Scotland ...	18·4	18·0	18·1	18·5	17·9	17·2	16·6	16·9	15·9	16·0	...
Ireland ...	18·5	18·2	17·7	19·6	17·8	17·5	17·5	18·1	17·1	17·0	...
Denmark ...	16·6	15·5	17·3	16·8	15·8	14·6	14·7	14·1	15·0	13·5	...
Norway ...	15·3	15·2	16·7	15·8	14·9	13·8	14·8	14·3	14·8	13·7	...
Sweden ...	15·4	15·1	17·7	16·8	16·1	15·4	15·1	15·3	15·6	14·4	...
Austria ...	25·6	24·9	25·6	25·3	24·0	24·7	23·8	23·7	25·0	...	...
Hungary ...	28·5	28·0	27·2	26·9	25·4	27·0	26·1	24·8	27·8	24·8	...
Switzerland ...	17·7	18·3	17·7	19·3	18·0	17·2	17·6	17·8	17·9	...	...
German Empire ...	21·3	20·5	21·5	22·1	20·7	19·4	20·0	19·6	19·8	...	...
Netherlands ...	16·9	17·0	17·1	17·8	17·2	16·3	15·6	15·9	15·3	14·8	...
France ...	19·4	20·9	21·1	21·9	20·1	19·5	19·2	19·4	19·6	19·9	...
Italy	21·9	22·9	21·9	23·8	22·0	22·2	22·4	21·1	21·9	20·8	...

* Excluding the Northern Territory.

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

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

Index of Mortality in New Zealand for 1907.

Ages.	Estimated Mean Population, 1907.	Number of Deaths, 1907.	Death-rate per 1,000, 1907.	Percentage of Population of Sweden, 1890 (Standard).	Index of Mortality in New Zealand per 1,000.
Under 1 year	23,070	2,228	96·57	2·55	2·46
1 and under 20 years	338,047	1,281	3·78	39·80	1·50
20 and under 40 years ...	347,513	1,528	4·39	26·96	1·18
40 and under 60 years ...	145,586	1,502	10·31	19·23	1·98
60 years and upwards	64,889	3,527	54·35	11·46	6·23
Totals	919,105	10,066	10·95	100·00	13·35

A similar calculation for the States of the Australian Commonwealth has been made for 1905. The results, when compared with the actual rates, exhibit to what degree the age-constitution of the population affects the death-rate. The figures for New Zealand are also given.

	Year 1905.	
	Index.	Actual.
Queensland	14·53	10·47
New South Wales	13·53	10·13
Victoria	14·55	12·10
South Australia	13·52	10·15
Western Australia	14·41	10·83
Tasmania	13·36	10·29
New Zealand	11·85	9·27
" (1906)	11·55	9·31

DEATHS AND DEATH-RATES OF THE FOUR PRINCIPAL CITIES AND THEIR SUBURBS.

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

The total number of deaths registered for the four centres in 1907 was 3,095 — viz., 2,567 in the cities, and 528 in the suburbs.

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

	Death-rates per 1,000 of Mean Population.	
Auckland City	13·38	
" and six suburban boroughs		11·43
Wellington City	11·45	
" and three suburban boroughs		11·28
Christchurch City	14·72	
" and one suburban borough		14·37
Dunedin City	12·98	
" and six suburban boroughs		12·02

If the number of deaths of infants under one year be excluded, the mortality among the rest of the population is found to have been for 1906 and 1907 in the following ratio to the 1,000 living:—

	1906.	1907.
Auckland (including suburbs)	7·63	8·76
Wellington "	7·23	8·06
Christchurch "	9·15	10·52
Dunedin "	9·39	9·60

The degree of infantile mortality is perhaps best shown in the proportion of deaths of children under one year of age to every 100 births. For 1906 and 1907 the proportions at the chief centres are,—

	1906.	1907.
Auckland (including suburbs)	8·58	9·72
Wellington "	7·19	11·78
Christchurch "	7·44	12·62
Dunedin "	7·26	9·54

The higher mortality for 1907 is very considerable.

Again, the percentage of deaths of children under 5 to the total number of deaths is—Auckland 32·83; in Christchurch, 32·71; in Wellington, 35·98; in Dunedin, 24·65.

MORTALITY AT FOUR CENTRES, EXCLUDING SUBURBS.

Excluding suburbs, and dealing with the deaths at all ages in the four cities or central boroughs only, the rates for 1907 are found to be higher than in the previous year. The figures for five years are given :—

	Deaths per 1,000 of Population.				
	1903.	1904.	1905.	1906.	1907.
Auckland (excluding suburbs)	12·97	11·11	12·15	12·51	13·38
Wellington "	11·30	10·75	10·55	9·45	11·45
Christchurch "	11·39	10·50	10·76	11·12	14·72
Dunedin "	14·77	13·59	11·13	12·70	12·98

Omitting the deaths of infants under one year, and calculating the rate on the population of one year of age and upwards, an increase on the previous year is shown at three of the four centres.

	Deaths per 1,000 of Population, excluding Infants (under One Year of Age).				
	1903.	1904.	1905.	1906.	1907.
Auckland (excluding suburbs)	9·45	9·24	9·39	9·84	10·57
Wellington "	8·84	8·42	7·80	7·68	8·43
Christchurch "	8·83	7·87	8·46	9·34	11·10
Dunedin "	13·61	11·90	9·64	10·76	10·74

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

	Deaths of Children under One Year to every 100 Births.					
	1903.	1904.	1905.	1906.	1907.	Mean of Five Years.
Auckland (excluding suburbs)	12·08	6·93	10·13	9·92	10·55	9·92
Wellington "	9·28	9·55	10·02	7·11	11·85	9·56
Christchurch "	10·49	10·36	8·60	7·24	12·99	9·94
Dunedin "	7·27	8·74	7·21	7·76	9·77	8·15

CAUSES OF DEATH AT THE FOUR CENTRES, INCLUDING SUBURBS.

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

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

The mortality from these diseases was much higher at each of the four centres in 1907 than in the previous year. The total deaths in this class were 133 for 1906 and 395 for 1907.

	Deaths from Febrile and Zymotic Diseases.	
	1906.	1907.
Auckland and suburbs	42	103
Wellington "	22	110
Christchurch "	23	110
Dunedin "	46	72
Totals	133	395

Of the above, diarrhœal diseases caused most deaths in 1907 at the four centres taken together, the total number being 111. Whooping-cough came next with 104 deaths, influenza 64, measles 36, diphtheria 23, scarlet fever 11, typhoid fever 9, bubonic plague 1, and other zymotic complaints 36.

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

Zymotic, &c., Diseases.	Auckland.		Wellington.		Christchurch.		Dunedin.	
	1906.	1907.	1906.	1907.	1906.	1907.	1906.	1907.
Diarrhœal diseases ...	16	19	2	23	8	47	3	22
Influenza	11	10	6	17	9	13	7	24
Typhoid fever ...	5	6	4	...	...	2	5	1
Measles	...	17	...	15	...	4	10	...
Scarlet fever ...	2	1	1	9	1	...	...	1
Diphtheria	2	8	5	9	2	5	4	1
Whooping-cough ...	...	36	...	28	...	29	12	11
Bubonic plague ...	...	1	...	...	...	...	...	...
Other zymotic diseases	6	5	4	9	3	10	5	12

Parasitic Diseases (at Four Chief Centres).

Hydatids were fatal at Auckland (1 death), Wellington (2 deaths), Christchurch (1 death), and Dunedin (1 death).

Dietetic Diseases (at Four Chief Centres).

These numbered 15, 3 being due to want of breast-milk, 8 to alcoholism, and 4 to delirium tremens.

Constitutional Diseases (at Four Chief Centres).

The deaths at the four towns numbered 582 in 1907. The first in importance of these diseases, and of all causes of death, is tubercle. The figures for 1906 and 1907 show 232 and 289 deaths for each year respectively.

	Phthisis and other Tubercular Diseases.			
	1906.		1907.	
	Phthisis.	Other Tubercular Diseases.	Phthisis.	Other Tubercular Diseases.
Auckland and suburbs	40	12	46	20
Wellington „	49	11	45	24
Christchurch „	28	14	52	25
Dunedin „	59	19	49	28
	176	56	192	97

The mortality from tubercular diseases for 1907 is 9·3 per cent. of the total deaths at the four boroughs and their suburbs from all causes.

Deaths from cancer rose at the chief towns from 217 in 1906 to 235 in 1907. The latter number is 7·59 per cent. of deaths for the year from all causes.

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

	1903.	1904.	1905.	1906.	1907.
Auckland and suburbs	37	45	35	49	50
Wellington „	47	44	47	53	50
Christchurch „	33	38	49	60	76
Dunedin „	62	57	60	55	59
Totals	179	184	191	217	235

Diabetes shows 27 deaths in 1907, against 36 in 1906.

Developmental Diseases (at Four Chief Centres).

There were 330 deaths in this class, of which 127 were from premature birth, 183 from old age, and 20 from other causes.

Local Diseases (at Four Chief Centres.)

Deaths in this class were 245 more than in 1906, the figures being 1,542, against 1,297. Diseases of the circulatory system were the most fatal of this class, amounting to 384, being heart-disease, &c. Diseases of the nervous system show 300 deaths—117 from apoplexy. Diseases of the respiratory system show 369 deaths for 1907, against 297 in the former year. Bronchitis, pneumonia, congestion of the lungs, pleurisy, and allied diseases form this group, and the increased number for 1907 is very considerable.

Under the head of "Diseases of the Digestive System" there were 330 deaths at the four centres, including 166 from enteritis; peritonitis, 10; gastritis, 16; cirrhosis of liver, 14; jaundice and liver-disease, 20; and dentition, 5. From appendicitis 28 deaths are particularly noted.

Diseases of urinary system caused 111 deaths—51 from Bright's disease. The remaining deaths were: 1 disease of organs of special sense, 11 of the lymphatic, 26 of the reproductive systems, 5 of the organs of locomotion, and 5 of the integumentary system.

Violent Deaths (at Four Chief Centres).

There were 127 violent deaths, 95 of which were classed as accidental. Eight of these latter were caused by fractures, and 17 by falls. In 4 cases deaths resulted from the deceased being run over by a train, 3 by being struck by tram-car, 3 crushed by dray, truck, &c., 2 while getting off tram-car in motion, 3 by an accident at the Auckland Dock. Nine deaths were from burns or scalds, 16 by drowning, 12 by suffocation, 1 by poisoning; besides 4 from accident at birth, and 13 others.

Four deaths were classified as homicide. Of 28 suicides, 8 were by shooting, 2 by cutting throat, 8 by poison, 4 by hanging, 4 by drowning, and 2 others.

VITAL STATISTICS OF THE AUSTRALASIAN CAPITALS, 1907.

The vital statistics of the the two chief cities, *with their suburbs*, of Australasia show that the death-rate in Wellington (N.Z.) for 1907 was lower than that of either of these principal towns for the same year.

Capital Cities (including Suburbs).	Estimated Mean Population.	Births.		Deaths.		Excess of Births over Deaths.
		Total Number.	Rate per 1,000 of Population.	Total Number.	Rate per 1,000 of Population.	
Melbourne ..	532,200	12,860	24·16	6,823	12·82	6,037
Sydney	544,700	14,334	26·32	6,238	11·45	8,096
Wellington ...	69,241	1,893	27·34	781	11·28	1,112

AVERAGE AGE AT DEATH, AND EXPECTATION OF LIFE.

The average age at death of persons of either sex, in each of the ten years 1898–1907, was as follows:—

	Males.	Females.		Males.	Females.
1898	39·29 years	35·69 years.	1903	39·56 years	35·43 years.
1899	37·73 "	33·54 "	1904	41·47 "	38·44 "
1900	40·31 "	36·14 "	1905	43·03 "	39·13 "
1901	41·64 "	37·68 "	1906	44·39 "	39·35 "
1902	41·07 "	34·88 "	1907	40·43 "	36·66 "

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

The table shows, on comparison with New South Wales figures (Coghlan's), that at birth the expectation of life to the male infant in New Zealand is considerably greater than in that State, the figures being 54·44 years (N.Z.), against 49·60 (N.S.W.), and for females 57·26 and 52·90.

At 21 years of age the expectation in New Zealand for males is 43·77 years, as against 41·35 (N.S.W.), and for females 45·59, against 43·62.

At age 45 the comparison is, for males, 25·23 years (N.Z.), 23·27 (N.S.W.); females, 27·46 years (N.Z.), against 25·34 (N.S.W.).

At the age of 70, the limit of a normal life, the figures for New Zealand are—males 9·48 years, females 10·23, against 8·64 for both sexes in New South Wales.

Throughout the comparison is in favour of this country.

Expectation of Life in New Zealand.

Age.	Average Duration of Life: Years.		Age.	Average Duration of Life: Years.		Age.	Average Duration of Life: Years.	
	Male.	Female.		Male.	Female.		Male.	Female.
0	54·444	57·260	35	32·829	34·954	70	9·481	10·227
1	59·102	61·214	36	32·054	34·215	71	8·988	9·673
2	59·169	61·220	37	31·282	33·475	72	8·504	9·130
3	58·626	60·647	38	30·511	32·734	73	8·035	8·604
4	57·924	59·934	39	29·744	31·990	74	7·586	8·095
5	57·167	59·148	40	28·979	31·243	75	7·160	7·614
6	56·396	58·343	41	28·220	30·493	76	6·758	7·164
7	55·606	57·520	42	27·465	29·739	77	6·379	6·742
8	54·791	56·680	43	26·715	28·981	78	6·022	6·349
9	53·956	55·825	44	25·971	28·221	79	5·683	5·982
10	53·094	54·953	45	25·231	27·458	80	5·362	5·636
11	52·212	54·069	46	24·499	26·694	81	5·055	5·312
12	51·315	53·180	47	23·773	25·927	82	4·765	5·005
13	50·425	52·294	48	23·055	25·163	83	4·489	4·714
14	49·539	51·415	49	22·344	24·399	84	4·229	4·439
15	48·663	50·545	50	21·636	23·640	85	3·982	4·180
16	47·803	49·690	51	20·932	22·885	86	3·747	3·935
17	46·960	48·847	52	20·231	22·135	87	3·525	3·705
18	46·139	48·016	53	19·530	21·392	88	3·313	3·487
19	45·336	47·198	54	18·836	20·655	89	3·110	3·283
20	44·551	46·393	55	18·150	19·926	90	2·914	3·089
21	43·775	45·593	56	17·478	19·202	91	2·723	2·905
22	43·005	44·803	57	16·822	18·485	92	2·525	2·731
23	42·235	44·021	58	16·183	17·776	93	2·323	2·564
24	41·463	43·244	59	15·560	17·077	94	2·101	2·400
25	40·684	42·474	60	14·949	16·386	95	1·843	2·238
26	39·899	41·708	61	14·348	15·705	96	1·553	2·082
27	39·108	40·946	62	13·754	15·037	97	1·247	1·931
28	38·319	40·187	63	13·170	14·386	98	0·960	1·774
29	37·526	39·431	64	12·600	13·752	99	0·677	1·600
30	36·736	38·678	65	12·046	13·135	100	0·500	1·424
31	35·949	37·928	66	11·512	12·534	101	...	1·195
32	35·165	37·181	67	10·994	11·954	102	...	0·889
33	34·384	36·438	68	10·486	11·365	103	...	0·500
34	33·605	35·695	69	9·981	10·792			

ORPHANHOOD OF CHILDREN.

New Zealand statistics give detailed information on this subject, which appears to be unique. In a paper read by Mr. H. W. Manly, actuary of the Equitable Life Assurance Society, on the 27th April, 1903, before the Institute of Actuaries at London, under the heading "Children's Benefits," he stated that in order to ascertain the ages and the number of children left by a married man at his death he had to go to the same source as Mr. King did when he constructed his table of "Family Annuities"—viz., the Statistics of New Zealand. And, further, after announcing his intention of making very considerable use of the information, he gave the tables, grouping five ages together. ("Journal of the Institute of Actuaries," October, 1903.)

Although the subject is not one of general interest, as the Year-book is more often referred to than a statistical volume, it may be excusable to draw attention here to the tables published for the year 1907 and the experience of the quinquennial period, as shown in the "Statistics of New Zealand."

The first table shows, for the year 1907, the total number of men who died at each year of age from twenty upwards; the number of men stated in the registers as having died (*a*) childless, (*b*) leaving children; and the number and ages of the children living at the time of the father's death. The next is a similar table, but giving five years' results for all ages of the fathers. A condensation of this table is shown here.

New Zealand, 1903 to 1907.

Ages of Married Men at Death.	Number of Married Men who died		Number and Ages of Living Issue.						
	Childless.	Leaving Children.	Under 5.	5 to 10.	10 to 15.	15 to 21.	21 and over.	Not specified.	Totals.
20 to 30 ...	91	155	250	24	...	...	...	13	287
30 „ 40 ...	173	655	886	565	213	32	...	67	1,763
40 „ 50 ...	162	918	714	919	968	770	293	226	3,890
50 „ 60 ...	196	1,415	332	650	1,157	1,591	3,244	346	7,320
60 „ 65 ...	126	1,057	71	180	419	854	4,323	242	6,089
65 and upwards	711	4,806	82	207	591	1,280	22,870	1,181	26,211

A table has also been prepared for the statistical volume showing, for the year 1907, the number and ages of the youngest orphan children left by married men who died. The results of five years' experience in this matter are expressed below in tabular form.

Number and Ages of Youngest Living Children left by Married Men who died, 1903–7.

Ages of Married Men at Death.	Number of Married Men who died leaving Children.	Number and Ages of Youngest Living Children.					
		Under 5.	5 to 10.	10 to 15.	15 to 20.	21 and over.	Not specified.
20 to 30	155	148	2	..	..	..	5
30 „ 40	655	503	101	22	2	..	27
40 „ 50	918	416	236	132	60	23	51
50 „ 60	1,415	226	280	329	284	226	70
60 „ 65	1,057	49	89	168	276	434	41
65 and upwards ..	4,806	56	99	281	498	3,648	224

INFANTILE MORTALITY.

Subjoined is a classified statement of the deaths of infants under one year during 1907, with the ratio of the deaths in each class to the 1,000 births during the year:—

Year.	Sex.	Under 1 Month.	1 and under 3 Months.	3 and under 6 Months.	6 and under 12 Months.	Total under 12 months.
	Number of Deaths.					
1907 ...	Male	430	269	257	286	1,242
	Female	333	177	243	233	986
	Deaths to the 1,000 Births.					
1907 ...	Male	33·50	20·96	20·02	22·28	96·76
	Female	27·16	14·44	19·82	19·01	80·43

Ninety-seven out of every thousand of male children born, and eighty of every thousand females, are found to have died before attaining the age of one year. The mortality was thus one in ten of male children and one in twelve of females in New Zealand, where conditions are far more favourable to infant life than in Australia, at least so far as relates to the cities. But the year 1907 was exceptionally fatal amongst children, as is exhibited in the further tables on this subject.

It will also be seen from the figures that the chances of living during the first year of age are greater for female than for male infants. Thus, during the year 1907 there were—

100	deaths of males to	81	deaths of females	under 1 month of age;
100	"	69	"	from 1 to 3 months of age;
100	"	99	"	from 3 to 6 months of age;
100	"	85	"	from 6 to 12 months of age;
100	"	83	"	under 12 months of age.

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

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

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

Year.	Deaths of Infants under 1 Year of Age. (Totals for each Year, and Means of 10 Years.)					Total Births registered in each Year, and Mean of 10 Years.	Proportion of Deaths of Infants under 1 Year to every 1,000 Births.
	Under 1 Month.	1 Month and under 3 Months.	3 Months and under 6 Months.	6 Months and under 12 Months.	Total under 12 Months.		
1898	573	289	306	342	1,510	18,955	79·7
1899	619	389	378	420	1,806	18,835	95·9
1900	607	288	293	281	1,469	19,546	75·2
1901	610	272	392	289	1,463	20,491	71·4
1902	665	344	313	390	1,712	20,655	82·9
1903	692	346	367	365	1,770	21,829	81·1
1904	669	260	356	331	1,616	22,766	71·0
1905	714	285	290	310	1,599	23,682	67·5
1906	717	247	244	298	1,506	24,252	62·1
1907	763	446	500	519	2,228	25,094	88·79
Means of ten years ...	663	317	334	354	1,668	21,611	77·18

NOTE.—The total number of deaths of infants for the period included in the table is 16,679.

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

Year.	Deaths of Children under 1 to 5 Years of Age. (Totals for each Year, and Means of 10 Years.)						Total Deaths at all Ages for each Year, and Mean of 10 Years.	Deaths under 5 Years Per Cent. of Mortality at all Ages.
	Under 1 Year.	1 Year and under 2 Years.	2 Years and under 3 Years.	3 Years and under 4 Years.	4 Years and under 5 Years.	Total Deaths under 5 Years.		
1898	1,510	200	91	72	47	1,920	7,244	26·50
1899	1,806	291	111	74	56	2,338	7,680	30·44
1900	1,469	205	93	64	58	1,889	7,200	26·24
1901	1,463	208	85	68	52	1,876	7,634	24·57
1902	1,712	307	118	92	61	2,290	8,375	27·34
1903	1,770	275	126	111	64	2,346	8,528	27·51
1904	1,616	169	83	63	43	1,974	8,087	24·41
1905	1,599	176	97	61	46	1,979	8,061	24·55
1906	1,506	177	87	58	37	1,865	8,339	22·36
1907	2,228	350	165	94	49	2,886	10,066	28·67
Means of ten years	1,668	236	105	76	51	2,136	8,121	26·30

NOTE.—The total number of deaths included in this table of children under 5 years is 21,363.

Although 16,679 infants (under one year) were lost to the Dominion by death during the decade, and, including these, 21,363 children under five, the third table shows much more satisfactory results for New Zealand than for New South Wales or Victoria in the matter of the preservation of infant life. Dealing with averages of five years, in New Zealand only 73 infants under one year are found to die out of every 1,000 born, against 91 in New South Wales and 94 in Victoria.

Year.	Proportion of Deaths of Infants under 1 Year of Age to every 1,000 Births.		
	New Zealand.	New South Wales.	Victoria.
1902	82·9	109·7	108·6
1903	81·1	110·4	106·4
1904	71·0	82·4	77·6
1905	67·5	80·6	83·3
1906	62·1	74·5	92·9
Means of five years	72·9	91·5	93·8

European countries show still higher average mortality of infants than the principal Australian States: England and Wales, 132 (under one year) to every 1,000 births; France, 136; Italy, 166; Hungary, 205. Sweden (99) and Norway (81) have exceptionally low rates.

The principal causes of mortality in children under one year for New Zealand are given, with the numbers of deaths for five years from such causes. Premature birth stands first in order of importance, marasmus or debility coming next. Here it is seen how much mortality is attributed to these causes according to the medical certificates. As to the conditions which operate, the Registrar-General cannot deal with the question.*

Deaths under One Year.—Principal Causes.

Principal Causes of Deaths of Infants.	1903.	1904.	1905.	1906.	1907.
Miasmatic diseases	191	36	20	43	238
Diarrhœal diseases	122	152	92	65	235
Premature birth	301	291	360	337	359
Convulsions	103	95	96	90	84
Bronchitis, pneumonia, pleurisy	241	149	208	170	269
Enteritis	167	231	193	167	322
Marasmus, &c.	270	273	258	267	304

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

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

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

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

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

A table is added to show the infant mortality in Wellington, Sydney, and Melbourne.

Year.	Wellington and Suburbs.			Sydney and Suburbs.			Melbourne and Suburbs.		
	Total Births.	Deaths of Infants under 1 Year.	Proportion of Deaths of Infants under 1 Year to 1,000 Births.	Total Births.	Deaths of Infants under 1 Year.	Proportion of Deaths of Infants under 1 Year to 1,000 Births.	Total Births.	Deaths of Infants under 1 Year.	Proportion of Deaths of Infants under 1 Year to 1,000 Births.
1902	1,321	172	130·2	13,002	1,457	112·1	12,498	1,590	127·2
1903	1,520	141	92·8	12,749	1,483	116·3	12,012	1,493	124·3
1904	1,479	141	95·3	13,215	1,300	98·4	11,886	1,102	92·7
1905	1,715	165	96·2	13,769	1,230	89·3	11,944	1,133	94·8
1906	1,753	126	71·88	13,984	1,176	84·10	12,373	1,404	113·47
Means of five years	1,558	149	95·64	13,344	1,329	99·60	12,143	1,344	110·68

The infantile mortality for a number of countries is given by the Registrar-General of England.

Deaths of Children under One Year to 1,000 Births.

Country.	Average Annual Rate in 10 Years. 1896–1905.	Country.	Average Annual Rate in 10 Years. 1896–1905.
Chili	326	Bulgaria	144
Russia	268	Western Australia	143
Austria	223	Switzerland	139
Roumania	218	Finland	135
Hungary	215	Denmark	126
Prussia	196	Scotland	125
Spain	178	New South Wales	105
Jamaica	174	Victoria	103
Ceylon	170	Ireland	102
Italy	168	South Australia	100
Servia	154	Queensland	99
Belgium	153	Sweden	97
Japan	153	Tasmania	94
France	149	Norway	88
England and Wales	147	New Zealand	77
Netherlands	144		

Here, of European countries, Austria, which has a birth-rate of 35 to 38 per 1,000 of population, shows an infantile mortality of 223 per 1,000 births; while New Zealand, with a birth-rate of 27 per 1,000 of population, loses only 77 infants per 1,000 births. So that, whatever may be the faults of ignorance or wilfulness in this country, from a statistical point of view it would appear that far better conditions obtain than elsewhere.

INFANT-LIFE PROTECTION.

"The Infant Life Protection Act, 1907," repeals the statute of 1896. The Act renders it unlawful for any person to take charge of an infant under the age of six years, for the purpose of nursing or maintaining it apart from its parents or guardians, for a longer period than seven consecutive days, unless such person is licensed as a foster-parent.

Provision is made for the granting and revocation of licenses, and for the method of payment of maintenance-money. No payment is to be made to or received by a foster-parent except in pursuance of an agreement approved by the Secretary to the Education Department, and if default be made in payment under the agreement the amount due, or part thereof, may be paid by the Secretary, and shall be recoverable as a debt due to the Crown. When and so long as any money so recoverable remains unpaid, the Secretary shall have and may exercise the powers of a guardian until the child attains the age of fifteen years. Provision is also made for the inspection of foster-homes, and in case of the removal or death of foster-children.

The Act applies to any infant adopted under "The Adoption of Children Act, 1895," in the same manner and to the same extent as if no such adoption had taken place. The Department of Education is the authority by whom the Act is to be administered.

In his sixty-seventh annual report the Registrar-General of England remarked "that a well-devised system of early notification of births, legalised and worked in conjunction with the present registration system on the one hand, and with sanitary administration on the other, might, along with other motive forces, serve as a most effective and lasting barrier with which to stem the tide of infant mortality." The Notification of Births Act was passed accordingly in England, and the New Zealand Legislature in 1907 introduced provisions for early notification when passing the Infant Life Protection Act of that year, allowing seventy-two hours after birth if in a city or borough, or twenty-one days in any other case.

CAUSES OF DEATH (THE WHOLE DOMINION).

The deaths registered during 1907, arranged in the several classes according to their assigned causes, give the rates shown here.

Causes of Death.	Number of Deaths.			Proportion to Total Deaths.			Proportion per 10,000 living, 1907.	Proportion per 10,000 living, 1906.
	Males.	Females.	Total.	Males.	Females.	Total.		
Class I.—Specific febrile or zymotic diseases,—				Per Cent.	Per Cent.	Per Cent.		
Order 1. Miasmatic diseases ...	384	384	768	6·67	8·91	7·63	8·35	3·05
„ 2. Diarrhœal diseases ...	184	130	314	3·20	3·01	3·12	3·42	1·08
„ 3. Malarial diseases ...	1	...	1	0·02	...	0·01	0·01	0·01
„ 4. Zoogenous diseases ...	...	...	...	...	...	...	...	...
„ 5. Venereal diseases ...	7	7	14	0·12	0·16	0·14	0·15	0·19
„ 6. Septic diseases	29	59	88	0·50	1·37	0·87	0·96	0·65
Total Class I	605	580	1,185	10·51	13·45	11·77	12·89	4·98
Class II.—Parasitic diseases ...	6	10	16	0·10	0·23	0·16	0·17	0·17
Class III.—Dietetic diseases ...	35	17	52	0·61	0·39	0·52	0·57	0·72
Class IV.—Constitutional diseases ...	912	818	1,730	15·85	18·98	17·19	18·82	17·17
Class V.—Developmental diseases ...	604	488	1,092	10·50	11·32	10·85	11·88	10·90
Class VI.—Local diseases,—								
Order 1. Diseases of nervous system	501	409	910	8·70	9·49	9·04	9·90	9·64
„ 2. Diseases of organs of special senses	4	3	7	0·07	0·07	0·07	0·08	0·07
„ 3. Diseases of circulatory system	758	475	1,233	13·17	11·02	12·52	13·41	12·62
„ 4. Diseases of respiratory system	653	493	1,146	11·35	11·44	11·39	12·47	10·90
„ 5. Diseases of digestive system	529	474	1,003	9·19	10·99	9·96	10·91	8·73
„ 6. Diseases of lymphatic system	16	23	39	0·28	0·53	0·39	0·42	0·35
„ 7. Diseases of urinary system	286	128	414	4·97	2·97	4·11	4·50	4·27
„ 8. Diseases of reproductive system,—								
(*a.*) Of organs of generation	2	27	29	0·03	0·63	0·29	0·32	0·36
(*b.*) Of parturition ...	...	87	87	...	2·02	0·86	0·95	0·84
„ 9. Diseases of locomotive system	9	11	20	0·16	0·25	0·20	0·22	0·32
„ 10. Diseases of integumentary system	13	12	25	0·23	0·28	0·25	0·27	0·14
Total Class VI	2,771	2,142	4,913	48·15	49·69	48·81	53·45	48·24
Class VII.—Violence,—								
Order 1. Accident or negligence ...	506	99	605	8·79	2·30	6·01	6·58	6·30
„ 2. Homicide	4	2	6	0·07	0·05	0·06	0·07	0·12
„ 3. Suicide...	92	10	102	1·60	0·23	1·01	1·11	0·93
„ 4. Execution	...	...	...	...	...	...	...	...
Total Class VII	602	111	713	10·46	2·58	7·08	7·76	7·35
Class VIII.—Ill-defined and not-specified causes	220	145	365	3·82	3·36	3·62	3·97	3·58
Grand totals	5,755	4,311	10,066	100·00	100·00	100·00	109·51	93·11

The next table shows, for either sex, the number of deaths from each cause registered during the year 1907 :—

Causes of Death.

Class.	Causes of Death. Orders and Diseases.	Males.	Females.	Total.
I.—Specific Febrile or Zymotic Diseases.	Order 1.—*Miasmatic.*			
	Small-pox	...	...	...
	Chicken-pox ...	...	...	...
	Measles	55	46	101
	Epidemic rose-rash, rubeola	...	...	...
	Scarlet fever, scarlatina	8	17	25
	Typhus	...	...	...
	Bubonic plague ...	...	2	2
	Dengue	...	...	...
	Relapsing fever ...	...	...	...
	Influenza	111	112	223
	Whooping-cough ...	142	165	307
	Mumps	...	1	1
	Diphtheria	35	20	55
	Cerebro-spinal fever ...	...	...	...
	Simple and ill-defined fever	...	...	...
	Enteric fever, typhoid	32	21	53
	Other miasmatic diseases	1	...	1
	Total Order 1 ..	384	384	768
	Order 2.—*Diarrhœal.*			
	Simple cholera ...	25	15	40
	Diarrhœa	145	109	254
	Dysentery	14	6	20
	Total Order 2 ...	184	130	314
	Order 3.—*Malarial.*			
	Remittent fever ...	...	...	...
	Ague	...	...	...
	Beriberi	1	...	1
	Total Order 3 ...	1	...	1
	Order 4.—*Zoogenous.*			
	Hydrophobia ...	...	...	...
	Glanders	...	...	...
	Splenic fever ...	...	...	...
	Cow-pox and other effects of vaccination	...	...	...
	Total Order 4 ...	...	...	...
	Order 5.—*Venereal.*			
	Syphilis	6	7	13
	Gonorrhœa, stricture of urethra, ulcer of groin	1	...	1
	Total Order 5 ...	7	7	14
	Order 6.—*Septic.*			
	Phagedæna... ...	...	...	...
	Erysipelas	6	10	16
	Pyæmia, septicæmia...	23	20	43
	Puerperal fever, pyæmia, septicæmia	...	29	29
	Total Order 6 ...	29	59	88
	Total Class I ...	605	580	1,185

Class.	Causes of Death. Orders and Diseases.	Males.	Females.	Total.
II.—Parasitic Diseases.	Thrush	1	...	1
	Other diseases from vegetable parasites	...	...	...
	Hydatid disease ...	5	10	15
	Worms	...	...	...
	Other diseases from animal parasites	...	...	...
	Total Class II ...	6	10	16
III.—Dietetic Diseases.	Starvation, exposure...	4	...	4
	Want of breast-milk ...	3	2	5
	Scurvy	...	...	...
	Intemperance—			
	Chronic alcoholism...	17	8	25
	Delirium tremens...	10	1	11
	Other dietetic diseases	1	6	7
	Total Class III	35	17	52
IV.—Constitutional Diseases.	Rheumatic fever ...	16	9	25
	Rheumatism ...	7	5	12
	Gout	1	2	3
	Rickets	3	...	3
	Cancer	361	313	674
	Tabes mesenterica, tubercular peritonitis	18	17	35
	Tubercular meningitis, acute hydrocephalus	64	51	115
	Phthisis	337	275	612
	Other forms of tuberculosis, scrofula	45	49	94
	Purpura, hæmorrhagic diathesis	10	3	13
	Anæmia, chlorosis, leucocythæmia	18	32	50
	Diabetes mellitus ...	29	58	87
	Other constitutional diseases	3	4	7
	Total Class IV	912	818	1,730
V.—Developmental Diseases.	Premature birth ...	194	165	359
	Atelectasis	11	11	22
	Cyanosis	3	3	6
	Spina bifida ...	4	5	9
	Imperforate anus ...	2	1	3
	Cleft palate, hare-lip...	3	1	4
	Other congenital defects	10	8	18
	Old age	377	294	671
	Total Class V ...	604	488	1,092
VI.—Local Diseases.	Order 1.—*Diseases of Nervous System.*			
	Inflammation of the brain or its membranes	71	59	130
	Cerebro-spinal meningitis	...	...	...
	Apoplexy	182	148	330
	Softening of brain ...	7	13	20
	Hemiplegia, brain paralysis	24	22	46

Causes of Death—continued.

Class.	Causes of Death. Orders and Diseases.	Males.	Females.	Total.
VI.—Local Diseases—*continued.*	Order 1.—*Diseases of Nervous System*—continued.			
	Paralysis (undescribed)	29	32	61
	Paralysis agitans ...	5	2	7
	Insanity, general paralysis of insane	36	9	45
	Chorea	...	1	1
	Epilepsy	20	24	44
	Convulsions ...	51	59	110
	Laryngismus stridulus	3	...	3
	Idiopathic tetanus ...	...	2	2
	Paraplegia, diseases of spinal cord	21	11	32
	Locomotor ataxia ...	13	1	14
	Other diseases of nervous system	39	26	65
	Total Order 1 ...	501	409	910
	Order 2.—*Diseases of Organs of Special Sense.*			
	Otitis, otorrhœa ...	4	3	7
	Epistaxis, and diseases of nose	...	...	...
	Ophthalmia, and diseases of eye	...	...	...
	Total Order 2 ...	4	3	7
	Order 3.—*Diseases of Circulatory System.*			
	Endocarditis, valvular disease	498	307	805
	Pericarditis... ...	6	2	8
	Hypertrophy of heart	...	...	...
	Fatty degeneration of heart	42	27	69
	Angina pectoris ...	23	9	32
	Syncope ...	117	75	192
	Aneurism	28	8	36
	Senile gangrene ...	7	7	14
	Embolism, thrombosis	20	31	51
	Phlebitis	...	4	4
	Varicose veins, piles ...	...	...	...
	Other diseases of circulatory system	17	5	22
	Total Order 3 ...	758	475	1,233
	Order 4.—*Diseases of Respiratory System.*			
	Laryngitis	18	14	32
	Croup	12	8	20
	Other diseases of larynx and trachea	2	...	2
	Asthma, emphysema	17	7	24
	Bronchitis	209	177	386
	Pneumonia... ...	323	249	572
	Pleurisy	33	15	48
	Other diseases of respiratory system	39	23	62
	Total Order 4 ...	653	493	1,146

Class.	Causes of Death. Orders and Diseases.	Males.	Females.	Total.
VI.—Local Diseases—*continued.*	Order 5.—*Diseases of Digestive System.*			
	Stomatitis, cancrum oris	1	1	2
	Dentition	7	9	16
	Sore throat, quinsy ...	4	1	5
	Dyspepsia ...	7	6	13
	Hæmatemesis ...	4	4	8
	Melæna	5	4	9
	Diseases of stomach, gastritis	44	55	99
	Enteritis	214	205	419
	Ulceration, perforation of intestine	5	7	12
	Ileus, obstruction of intestine	40	23	63
	Stricture or strangulation of intestine	2	1	3
	Intussusception of intestines	12	6	18
	Hernia	18	9	27
	Fistula	1	2	3
	Peritonitis	29	41	70
	Ascites	...	4	4
	Gall-stones	10	15	25
	Cirrhosis of liver ...	35	7	42
	Other diseases of liver, hepatitis, jaundice	31	31	62
	Appendicitis ...	56	30	86
	Other diseases of digestive system	4	13	17
	Total Order 5 ...	529	474	1,003
	Order 6.—*Diseases of Lymphatic System and Ductless Glands.*			
	Diseases of lymphatic system	7	...	7
	Diseases of spleen ...	...	...	...
	Bronchocele ...	7	20	27
	Addison's disease ...	2	3	5
	Total Order 6 ...	16	23	39
	Order 7.—*Diseases of Urinary System.*			
	Acute nephritis ...	35	22	57
	Bright's disease ...	129	82	211
	Uræmia	19	9	28
	Suppression of urine ...	9	3	12
	Calculus	3	1	4
	Hæmaturia... ...	...	1	1
	Diseases of bladder and prostate	76	3	79
	Other diseases of urinary system (kidney-diseases undescribed)	15	7	22
	Total Order 7 ...	286	128	414
	Order 8.—*Diseases of Reproductive System.*			
	(*a.*) Diseases of organs of generation,—			
	Ovarian disease ...	...	7	7

Causes of Death—continued.

Class.	Causes of Death. Orders and Diseases.	Males.	Females.	Total.
VI.—Local Diseases—*continued.*	Order 8.—*Diseases of Reproductive System*—continued			
	(*a.*) Diseases of organs of generation—*ctd.*			
	Diseases of uterus and vagina	...	17	17
	Disorders of menstruation	...	...	...
	Pelvic abscess ...	2	3	5
	Perineal abscess ...	...	...	...
	Diseases of testes, penis, scrotum, &c. ...	...	...	...
	(*b.*) Diseases of parturition,—			
	Abortion, miscarriage	...	13	13
	Puerperal mania ...	...	1	1
	Puerperal metritis ...	...	1	1
	Puerperal convulsions	...	13	13
	Placenta prævia (flooding)	...	15	15
	Phlegmasia dolens ...	...	...	...
	Other accidents of child-birth	...	44	44
	Total Order 8 ...	2	114	116
	Order 9.—*Diseases of Organs of Locomotion.*			
	Caries, necrosis ...	5	7	12
	Arthritis, ostitis ...	2	1	3
	Other diseases of organs of locomotion	2	3	5
	Total Order 9 ...	9	11	20
	Order 10.—*Diseases of Integumentary System.*			
	Carbuncle	1	2	3
	Phlegmon, cellulitis ...	7	7	14
	Lupus	...	...	...
	Ulcer, bed-sore ...	...	...	...
	Eczema	2	2	4
	Pemphigus	2	...	2
	Other diseases of integumentary system	1	1	2
	Total Order 10 ...	13	12	25
	Total Class VI ...	2,771	2,142	4,913
VII.—Violence.	Order 1.—*Accident or Negligence.*			
	Fractures, contusions	210	25	235
	Gunshot wounds ...	24	1	25
	Cut, stab	12	...	12
	Burn, scald ...	28	19	47
	Sunstroke	1	...	1
	Poison	8	4	12
	Drowning	161	25	186
	Suffocation	33	20	53
	Otherwise	29	5	34
	Total Order 1 ...	506	99	605
	Order 2.—*Homicide.*			
	Murder, manslaughter	4	2	6
	Wounds in battle ...	...	...	...
	Total Order 2 ...	4	2	6
	Order 3.—*Suicide.*			
	Gunshot wounds ...	39	1	40
	Cut, stab	12	1	13
	Poison	8	2	10
	Drowning	8	1	9
	Hanging	19	3	22
	Otherwise	6	2	8
	Total Order 3 ...	92	10	102
	Order 4.—*Execution.*			
	Hanging	...	...	...
	Total Class VII ...	602	111	713
VIII.—Ill-defined and Not-specified Causes.	Dropsy	...	...	...
	Marasmus, &c. ...	202	143	345
	Mortification, gangrene	1	...	1
	Tumour	3	...	3
	Abscess	2	...	2
	Hæmorrhage ...	1	1	2
	Sudden (cause unascertained)	11	1	12
	Other ill-defined and not-specified causes	...	...	...
	Total Class VIII ...	220	145	365
	General totals ...	5,755	4,311	10066

MORTALITY FROM FEBRILE AND ZYMOTIC DISEASES.

The deaths in 1907 from specific febrile or zymotic diseases amounted to 1,185, a proportion of 12·89 in every 10,000 persons living, and an increase of 739 on the number of deaths in 1906, when the proportion was 4·98.

The diseases in this class that have caused the greatest mortality during the past ten years are stated in the table that follows. Of these, diarrhœal complaints were by far the most fatal, causing 2,102 deaths in the decennial period. Influenza comes next, with 1,465 deaths; whooping-cough third, with 886 deaths; typhoid fever fourth, with 709 deaths; measles fifth, with 616

deaths; diphtheria next, with 439 deaths; scarlet fever, with 265 deaths; and puerperal fever, with 220 deaths:—

Diseases.	1898.	1899.	1900.	1901.	1902.	1903.	1904.	1905.	1906.	1907.
Measles	56	137	9	6	134	143	10	8	12	101
Scarlet fever and scarlatina	2	...	10	17	39	131	13	10	18	25
Diphtheria	45	58	63	44	54	23	27	35	35	55
Whooping-cough ...	6	123	90	9	83	204	35	3	26	307
Influenza	219	135	181	219	117	56	113	70	132	223
Diarrhœal diseases ...	275	298	199	139	275	184	193	128	97	314
Enteric or typhoid fever...	120	93	68	95	53	61	73	45	48	53
Puerperal fever ...	19	15	24	20	25	28	21	21	18	29

The mortality from measles for 1898 was not very great, but rose to 137 deaths in 1899, falling again to 9 deaths in 1900 and 6 deaths in 1901, again rising to 134 in 1902, and further to 143 deaths in 1903. During 1904, 1905, and 1906 this disease was not epidemic in the Dominion, and caused only ten, eight, and twelve deaths respectively, but in 1907 there was an outbreak which caused 101 deaths. From scarlet fever and scarlatina there were only 25 deaths last year, as compared with 131 in 1903. The mortality from diphtheria, which was 45 deaths in 1898, rose to 55 deaths in 1907, the figures for the intervening years not presenting any striking features.

Whooping-cough in 1898 caused only 6 deaths. In 1899 the mortality sprang up to a total of 123 deaths, against 90 in 1900, 9 in 1901, and 83 in 1902. In 1903 the mortality was heavy, the number of deaths being 204, but in 1904 only 35 deaths are recorded from this complaint, while in 1905 and 1906 the number was further reduced. Last year this complaint was epidemic, and 307 deaths were recorded.

The deaths from influenza numbered 223 in 1907, as against 132 in the previous year. The figures for the eight previous years ranged from 56 to 219, the last being for the years 1898 and 1901.

From diarrhœal complaints the deaths in 1907 were 314, the highest number observed in the decennial period, as against 97 in 1906; while in 1896 the mortality reached the height of 334 deaths, and in 1889 was even higher (355), with a much smaller population than in 1907.

Enteric or typhoid fever was slightly more fatal in 1907 than in 1906, the figures being 53 deaths, against 48. The highest mortality during the decennium was in 1898, when the deaths numbered 120.

PARASITIC DISEASES.

There were 16 deaths from parasitic diseases, the proportion per 10,000 living being 0·17. Deaths from hydatids numbered 15 in 1907.

DIETETIC DISEASES.

Under the class "Dietetic diseases" are included 36 deaths from intemperance. But these cannot be said to represent the full extent of the mortality really caused by the abuse of alcoholic liquors. Many deaths of intemperate persons are attributed to disease of the liver, kidneys, &c., in the medical certificats.

CONSTITUTIONAL DISEASES: PHTHISIS, CANCER, ETC.

The deaths from constitutional diseases in 1907 numbered 1,730, or 18·82 per 10,000 of population, and 17 out of every 100 deaths from all causes. This class of disease is more fatal than any other except that defined as "Local diseases," on account of the great numbers of deaths from cancer and phthisis, with other tubercular complaints, which are classed as "Constitutional."

The number of deaths from phthisis was 612, and was in the proportion of 6·66 in every 10,000 persons living, against 6·21 in the previous year.

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

Year.	Deaths from Phthisis.	Rate per 10,000.	Year.	Deaths from Phthisis.	Rate per 10,000.
1898	597	8·11	1903	570	6·95
1899	593	7·91	1904	598	7·08
1900	577	7·56	1905	496	5·70
1901	596	7·66	1906	556	6·21
1902	617	7·73	1907	612	6·66

Of the persons dying from phthisis in New Zealand during 1907, more than one-half were born in the Dominion. The numbers are: total of deaths from phthisis, 612; 372 of them having been New-Zealand-born. The proportion is 61 per cent.

At the census of 1906 the New-Zealand-born were shown to be 68 per cent. of the population, which would give the approximate average number of the same in 1907 as 627,400. The death-rate from phthisis amongst these persons was, judging from the numbers in the table annexed, 5·93 per 10,000 living.

The death-rate from phthisis in England and Wales is stated by the Registrar-General to be at the rate of 11·50 per 10,000 living for the year 1906.

Deaths from Phthisis, 1907.

Table showing the Number of Persons who died from Phthisis during the Year 1907, classified to Age, Sex, and Length of Residence in New Zealand.

Length of Residence in New Zealand.	Age at Death.										
	Under 5 Years.	5 to 10.	10 to 15.	15 to 25.	25 to 35.	35 to 45.	45 to 55.	55 to 65.	65 to 75.	75 and upwards.	Total.
Males.											
Under 1 month	...	...	...	1	2	1	...	...	...	...	4
1 to 6 months	...	...	...	1	1	2	...	...	...	...	4
6 to 12 months	...	...	...	1	2	1	...	...	...	...	4
1 to 2 years	...	...	...	...	...	2	1	...	...	...	3
2 to 3 years	...	...	...	...	1	...	...	...	...	...	1
3 to 4 years	...	..	...	...	3	...	...	1	...	...	4
4 to 5 years	...	...	...	...	4	1	...	...	...	...	5
5 to 10 years	...	...	...	3	6	1	2	1	...	...	13
10 to 15 years	...	...	...	...	3	3	...	...	...	...	6
15 to 20 years	...	...	...	1	1	2	1	...	...	...	5
20 to 25 years	...	...	...	...	3	2	6	2	...	...	13
25 years and upwards ...	...	...	...	...	9	12	20	21	16	3	81
Not known	...	...	...	3	5	6	5	1	3	...	23
Born in New Zealand ...	2	2	1	54	74	26	10	...	2	...	171
Totals	2	2	1	64	114	59	45	26	21	3	337
Females.											
Under 1 month	...	...	...	...	...	...	...	...	...	...	...
1 to 6 months	...	...	...	...	...	1	...	...	..	...	1
6 to 12 months	...	...	...	...	1	...	...	...	...	...	1
1 to 2 years	...	...	...	...	...	...	...	...	...	...	...
2 to 3 years	...	...	...	...	1	...	1	...	...	...	2
3 to 4 years	...	...	...	...	2	2	...	...	...	...	4
4 to 5 years	...	...	...	...	...	...	...	...	...	...	...
5 to 10 years	...	...	...	3	1	...	...	...	...	...	4
10 to 15 years	...	...	...	1	2	...	3	...	...	...	6
15 to 20 years	...	...	...	2	...	1	1	1	...	...	5
20 to 25 years	...	...	...	1	1	6	2	...	...	...	10
25 years and upwards ...	...	...	...	...	3	9	11	9	1	1	34
Not known	...	...	...	1	2	2	2	...	...	...	7
Born in New Zealand ...	2	1	9	81	81	18	7	2	...	...	201
Totals	2	1	9	89	94	39	27	12	1	1	275
Totals of both sexes ...	4	3	10	153	208	98	72	38	22	4	612

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

From other forms of tuberculosis the deaths in 1907 were 244, or 2·65 per 10,000 of population. Thus a large addition has to be made to the deaths from phthisis to appreciate the full mischief done by tubercular disease.

Deaths from all Tubercular Diseases.

The mortality from all forms of tubercular disease, taken together, has been at the average rate of 9·5 persons per 10,000 living for the last ten years. This rate is far lower than that which obtained in England during the year 1905, when the proportion was 16·44 per 10,000 living.

A table is supplied showing the results for each of ten years in New Zealand. Besides the death-rate from tubercular diseases, it also shows the percentage of deaths by tubercle to those from all causes, which was from 8·50 to 10·62 per cent. for the decennial period 1898–1907.

Decennial Table, 1898–1907, showing the Death-rate from Tubercle per 10,000 Living and Percentage of Total Deaths.

Year.	Mean Population.	Number of Deaths from Tubercular Diseases.	Rate per 10,000.	Percentage of Total Deaths from all Causes.
1898	736,260	769	10·44	10·62
1899	749,984	795	10·60	10·35
1900	763,594	752	9·85	10·44
1901	777,968	775	9·96	10·15
1902	797,793	802	10·05	9·58
1903	820,217	769	9·38	9·02
1904	845,022	799	9·46	9·88
1905	870,000	678	7·79	8·41
1906	895,594	720	8·04	8·63
1907	919,105	856	9·31	8·50

Decennial Table, 1898–1907.—Deaths from various Tubercular Diseases registered in New Zealand, specifying the Number under and over Five Years of Age.

Persons.

Year.	Tabes Mesenterica, Tubercular Peritonitis.		Tubercular Meningitis, Acute Hydrocephalus.		Phthisis.		Other Forms of Tuberculosis, Scrofula.		Total Deaths from Tuberculosis.		Total of all Ages.
	Under 5 Years.	Over 5 Years.	Under 5 Years.	Over 5 Years.	Under 5 Years.	Over 5 Years.	Under 5 Years.	Over 5 Years.	Under 5 Years.	Over 5 Years.	
1898	37	12	37	38	10	587	11	37	95	674	769
1899	43	19	32	40	10	583	12	56	97	698	795
1900	20	20	24	55	13	564	9	47	66	686	752
1901	30	22	30	31	10	586	14	52	84	691	775
1902	26	19	36	30	5	612	8	66	75	727	802
1903	22	28	39	35	9	561	11	64	81	688	769
1904	17	18	44	44	5	593	12	66	78	721	799
1905	15	19	37	38	4	492	8	65	64	614	678
1906	8	12	35	31	8	548	10	68	61	659	720
1907	16	19	68	47	4	608	8	86	96	760	856

Seven deaths from "lupus" recorded during the decennium have not been included in the above table. They were all deaths of adult persons (2 males and 5 females) excepting 1, aged 13 years.

It will be seen that the term "tubercular disease" includes "phthisis," "tables mesenterica," "tubercular peritonitis," "tubercular meningitis," "acute hydrocephalus," with other forms of tuberculosis (scrofula, &c.). Of these the mortality from phthisis forms by far the greatest part of the whole. Thus, in 1907 there were 612 deaths from phthisis out of a total of 856 deaths from all tubercular complaints. Of 612 deaths by phthisis, only 4 were of persons under 5 years of age.

Examination of the next table, giving the full series of ages of persons who died from tubercular disease during the year 1907, shows that of 35 deaths from tabes mesenterica, with tubercular peritonitis, 16 were of children under 5 years. Also that, of 115 deaths from tubercular meningitis, with acute hydrocephalus, 68 were of persons under 5 years, and 33 from 5 to 20 years. Under "other forms of tuberculosis" (excepting phthisis) the greater numbers of deaths are at ages under 30 years.

The mortality from phthisis is heaviest at 25–30 years, being 114 deaths out of 612 of all ages; but large numbers are found in the columns as far as that for the advanced term of 65 to 75 years, at which the deaths for 1907 were 16, and 10 deaths from this cause are of persons of 70 years and upwards.

Table showing the Number of Deaths from Tubercular Diseases registered in New Zealand during the Year 1907, arranged in Groups of Ages.

Persons.

—	Under 1 Year.	Under 5 Years.	5 to 10.	10 to 15.	15 to 20.	20 to 25.	25 to 30.	30 to 35.	35 to 40.	40 to 45.	45 to 50.	50 to 55.	55 to 60.	60 to 65.	65 to 70.	70 to 75.	75 to 80.	80 and upwards.	Total, 5 Years and over.	All Ages.
Tabes mesenterica, tubercular peritonitis	10	16	1	1	5	6	1	...	1	2	...	...	2	...	...	...	...	...	19	35
Tubercular meningitis, acute hydrocephalus	32	68	17	7	9	4	7	1	...	1	1	...	...	...	...	...	...	...	47	115
Phthisis	1	4	3	10	64	89	114	94	65	33	31	41	18	20	16	6	2	2	608	612
Other forms of tuberculosis, scrofula	4	8	5	3	14	17	15	7	5	7	5	2	1	3	...	2	...	...	68	94
Totals ...	47	96	26	21	92	116	137	102	71	43	37	43	21	23	16	8	2	2	760	856

To show the mortality from tuberculosis in various parts of New Zealand, a table giving the deaths in the various provincial districts is added, which, however, only shows that the mortality is distributed very much according to population. The deaths in the South Island are, however, found to be 16 more than those for the North Island, or 436 deaths and 420 deaths for those divisions respectively :—

Table showing the Number of Deaths from Tubercular Disease registered in each Provincial District of New Zealand during the Year 1907.

Provincial District.	Tabes Mesenterica, Tubercular Peritonitis.	Tubercular Meningitis, Acute Hydrocephalus.	Phthisis.	Other Forms of Tuberculosis, Scrofula.	Total Deaths from Tuberculosis.
Auckland ...	5	24	142	19	190
Taranaki ...	1	3	21	4	29
Hawke's Bay ...	1	3	31	7	42
Wellington ...	6	28	106	19	159
Marlborough ...	...	...	11	...	11
Nelson ...	3	2	27	4	36
Westland ...	...	...	11	4	15
Canterbury ...	11	20	135	13	179
Otago ...	8	35	128	24	195
Totals ...	35	115	612	94	856

Cancer.

The deaths from cancer during the year 1907 were 674. There were more deaths of males than of females, the numbers being—males 361, females 313. The rate of mortality per 10,000 living was 7·33. The apparent increase in deaths from this disease is shown further on, and compared with that of England. But the increase is not believed by all authorities to be a fact to the extent represented, but partly the result of more careful certification of the causes of death, and of improved diagnosis in cases of what is termed inaccessible cancer.

It is certain, however, that out of a total of 10,066 deaths from all causes in New Zealand during 1907, 674, or 6·70 per cent., were caused by cancer.

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

A decennial table shows that the deaths from cancer per 10,000 persons living rose from 6·40 in 1898 to 7·10 in 1903 and 7·33 in 1907.

Table showing for each of the Ten Years 1898 to 1907 the Number of Persons registered as having died from Cancer, the Proportion of Deaths from Cancer per 10,000 living, and the Percentage of all Deaths attributed to Cancer.

Year.	Estimated Mean Population.	Deaths from Cancer.	Total Deaths, all Causes.	Deaths from Cancer per 10,000 of Living Persons.	Percentage of Total Deaths due to Cancer.
1898	736,260	471	7,244	6·40	6·50
1899	749,984	468	7,680	6·24	6·09
1900	763,594	430	7,200	5·63	5·97
1901	777,968	515	7,634	6·62	6·75
1902	797,793	536	8,375	6·72	6·40
1903	820,217	582	8,528	7·10	6·82
1904	845,022	571	8,087	6·76	7·06
1905	870,000	566	8,061	6·51	7·02
1906	895,594	623	8,339	6·96	7·47
1907	919,105	674	10,066	7·33	6·70

To exhibit how cancer affects the different parts of the human body in respect of each sex, the experience of five years (1903 to 1907) is shown in a succeeding table. Of any single organ affected, the stomach is the one most liable to be the seat of cancer among males, while the mouth, lips, tongue, and throat, taking all these organs together, show a large number. Next to the stomach, the liver is with males the organ which is the most often attacked, to judge by mortality records, and next in order come the intestines and rectum. Afterwards follow the kidneys, bladder, and urethra.

Among the females, the organs of generation—ovaries, uterus, and vagina—as a group, show most cases of mortality from cancer; but, as with the males, the stomach is, of any single organ, the one most affected, the breast, liver, intestines, and rectum following. Females do not contract cancer in the mouth (judging by the returns of deaths), tongue, lips, and throat to nearly the same extent as prevails among males. Whatever may be the cause, the figures are remarkable, being only 7·2 out of every 100 deaths from located cancer among females, against 30·3 out of every 100 of males dying from the same cause, or, expressed in numbers, 89 deaths of females occurred against 463 of males from cancer in the mouth, &c., in a five years' experience of mortality.

Deaths from Cancer, 1903 to 1997.—Table showing the Number of Deaths of Males and Females from Cancer during the Years 1903 to 1907, classified according to the Part of the Body affected.

Part affected.	1903.		1904.		1905.		1906.		1907.	
	Number of Deaths.	Proportion of Specified.	Number of Deaths.	Proportion of Specified.	Number of Deaths.	Proportion of Specified.	Number of Deaths.	Proportion of Specified.	Number of Deaths.	Proportion of Specified.
Males.										
		Per Cent.		Per Cent.		Per Cent.		Per Cent.		Per Cent.
Mouth, lip, tongue, throat, neck, &c.	99	33·56	99	32·46	79	26·69	94	31·02	92	28·05
Stomach	96	32·54	107	35·08	107	36·15	104	34·33	98	29·88
Intestines, rectum	35	11·87	34	11·15	29	9·80	35	11·55	49	14·94
Liver	35	11·87	42	13·77	49	16·55	44	14·52	58	17·68
Kidneys, bladder, urethra, &c.	17	5·76	13	4·26	25	8·45	18	5·94	17	5·18
Leg, foot, &c.	4	1·35	7	2·30	4	1·35	5	1·65	11	3·35
Lung	9	3·05	3	0·98	3	1·01	3	0·99	3	0·92
	295	100·00	305	100·00	296	100·00	303	100·00	328	100·00
Not specified	30	...	18	...	17	...	34	...	33	...
Totals	325	...	323	...	313	...	337	...	361	...
Females.										
		Per Cent.		Per Cent.		Per Cent.		Per Cent.		Per Cent.
Mouth, tongue, throat, &c. ...	21	9·05	12	5·17	19	8·09	21	8·37	16	5·50
Breast	33	14·23	25	10·78	38	16·17	38	15·14	48	16·50
Stomach	51	21·98	55	23·71	51	21·70	42	16·73	47	16·15
Intestines, rectum	28	12·07	32	13·79	34	14·47	32	12·75	53	18·21
Kidneys, bladder	5	2·16	4	1·72	7	2·98	3	1·20	4	1·37
Ovary, uterus, vagina ...	48	20·69	58	25·00	49	20·85	68	27·09	73	25·09
Liver	38	16·38	35	15·09	27	11·49	42	16·73	39	13·40
Gall-bladder, spleen, pancreas...	4	1·72	1	0·43	4	1·70	5	1·99	6	2·06
Lung, spine, thigh, shoulder ...	4	1·72	10	4·31	6	2·55	...	...	5	1·72
	232	100·00	232	100·00	235	100·00	251	100·00	291	100·00
Not specified	25	...	16	...	18	...	35	...	22	...
Totals	257	...	248	...	253	...	286	...	313	...

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

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

Deaths from Cancer.—Decennial Return.—Table showing the Number of Persons (Males and Females) at Different Ages registered as having died from Cancer in New Zealand during the Ten Years 1898 to 1907.

Year.	Under 1 Year.				Total under 1 Year.	1 to 2.	2 to 3.	3 to 4.	4 to 5.	Total under 5 Years.	5 to 10.	10 to 15.	15 to 20.	20 to 25.	25 to 30.	30 to 35.	35 to 40.	40 to 45.	45 to 50.	50 to 55.	55 to 60.	60 to 65.	65 to 70.	70 to 75.	75 to 80.	80 and upwards.	Total 5 Years and over.	All Ages.
	Under 1 Month.	1 to 3 Months.	3 to 6 Months.	6 to 12 Months.																								
1898	..	..	..	..	..	..	..	2	..	2	1	2	2	5	5	8	17	36	47	47	77	79	69	35	30	9	469	471
1899	..	..	..	..	..	..	..	1	..	1	3	3	..	1	4	6	15	21	42	48	82	64	87	45	27	19	467	468
1900	..	1	..	..	1	..	..	1	..	2	..	..	6	2	2	6	7	16	40	35	75	78	59	51	31	20	428	430
1901	..	..	1	..	1	..	..	..	..	1	2	..	4	5	5	8	20	31	53	60	65	80	74	63	33	11	514	515
1902	..	..	..	..	..	..	..	..	..	..	1	..	3	5	5	7	22	35	49	50	72	88	86	67	31	15	536	536
1903	1	..	..	..	1	..	..	..	..	1	4	1	2	6	10	9	20	37	47	68	69	87	96	72	38	15	581	582
1904	..	..	..	1	1	..	..	..	1	2	3	1	3	2	9	6	15	25	35	57	72	99	99	79	31	33	569	571
1905	..	..	..	..	..	..	..	..	1	1	..	1	3	1	9	10	15	26	39	58	67	84	96	99	38	19	565	566
1906	..	1	1	..	2	1	1	..	..	4	..	..	3	3	9	8	25	29	48	57	70	102	107	82	50	26	619	623
1907	..	1	..	1	2	..	..	2	1	5	1	1	1	2	7	11	24	45	49	62	74	101	104	100	65	22	669	674

The numbers of deaths of persons from cancer in each provincial district are given in another table, according to age-groups, but the result merely shows the disease to be one found everywhere throughout the Dominion—at least, there is not sufficient evidence of climatic conditions affecting the mortality to a great extent in any particular part of the country.

Table showing the Number of Deaths from Cancer registered in each Provincial District of the Dominion of New Zealand during the Years 1904–7.

Provincial Districts.	1904.			1905.			1906.			1907.		
	Under 5 Years.	Over 5 Years.	Total.	Under 5 Years.	Over 5 Years.	Total.	Under 5 Years.	Over 5 Years.	Total.	Under 5 Years.	Over 5 Years.	Total.
Auckland ...	1	114	115	...	110	110	...	127	127	1	146	147
Taranaki ...	...	21	21	...	20	20	...	25	25	...	30	30
Hawke's Bay	...	25	25	...	16	16	...	33	33	...	32	32
Wellington ...	...	113	113	...	106	106	2	122	124	1	113	114
Marlborough	...	5	5	...	6	6	...	15	15	...	15	15
Nelson ...	...	32	32	...	25	25	...	26	26	...	20	20
Westland ...	...	16	16	...	10	10	...	19	19	...	16	16
Canterbury ...	...	109	109	...	112	112	...	114	114	2	153	155
Otago ...	1	134	135	1	160	161	2	138	140	1	144	145
Totals ...	2	569	571	1	565	566	4	619	623	5	669	674

The death-rates for cancer in respect of each sex are given for each of ten years, selected to show the position as from 1886 to 1907:—

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

Year.	Males.	Females.	Year.	Males.	Females.
1886	3·69	3·67	1903	7·51	6·63
1890	4·72	4·79	1904	7·23	6·23
1894	6·65	5·27	1905	6·79	6·18
1898	6·77	5·98	1906	7·10	6·79
1901	6·48	6·77	1907	7·41	7·25

The mortality was higher among the males than among the females (with the exception of 1890 and 1901), which is the reverse of English experience, where the rate was 7·94 per 10,000 males and 10·32 of females for the year 1906. In the United Kingdom, however, the rate of increase is so much higher among males than with females that the Registrar-General calculates equilibrium will be reached in about the year 1932, and thereafter the rate among males would exceed the rate among females.

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

Deaths from Cancer in every 10,000 Persons living.

Year.	New Zealand.	England.	Year.	New Zealand.	England.
1881 ...	... 2·69	5·20	1900 ...	... 5·63	8·28
1886 ...	... 3·68	5·90	1905 ...	... 6·51	8·85
1891 ...	... 4·68	6·92	1906 ...	... 6·96	9·17
1896 ...	... 5·50	7·64			

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

	Males.	Females.	Totals.		Males.	Females.	Totals.
1891	154	141	295	1901	265	250	515
1892	173	134	307	1902	296	240	536
1893	188	144	332	1903	325	257	582
1894	240	168	408	1904	323	248	571
1895	208	175	383	1905	313	253	566
1896	205	184	389	1906	337	286	623
1897	210	185	395	1907	361	313	674
1898	263	208	471				
1899	271	197	468	Totals ...	4,378	3,567	7,945
1900	246	184	430				

MORTALITY FROM DEVELOPMENTAL DISEASES.

The total of deaths from developmental diseases was 1,092, or 11·88 per 10,000 persons living. The mortality from premature births comprised 359 deaths, and that from atelectasis, cyanosis, and other congenital defects 62 deaths. The proportion of deaths from premature birth varies from 12 to 15 out of every 1,000 births, and that from congenital defects from 2 to 4 per 1,000 births. Particulars for ten years exhibit the annual rates:—

Number and Proportions per 1,000 Births.

Year.	Deaths from Premature Birth. Number.	Proportion per 1,000.	Deaths from Congenital Defects. Number.	Proportion per 1,000.
1898	... 251	13·24	... 54	2·85
1899	... 261	13·86	... 47	2·50
1900	... 276	14·12	... 55	2·81
1901	... 264	12·88	... 63	3·07
1902	... 303	14·66	... 79	3·82
1903	... 301	13·79	... 67	3·07
1904	... 291	12·78	... 58	2·54
1905	... 360	15·20	... 41	1·73
1906	... 337	13·90	... 51	2·10
1907	... 359	14·31	... 62	2·47

Stating the result in another way, there was one death from premature birth to every 70 births in 1907, and one death from congenital defect to every 405 births. In England the proportion of deaths from premature birth to every 1,000 births was as high as 20·38 in the year 1906.

OLD AGE.

Deaths from old age in 1907 numbered 671, against 588 in 1906.

MORTALITY FROM LOCAL DISEASES.

Death by diseases of the nervous system were 910, or 9·04 out of every 100 deaths from all causes, and 9·90 out of every 10,000 persons living. Of the 910 deaths, 330 were due to apoplexy, 110 to convulsions, and 130 to inflammation of the brain and its membranes. Paralysis, including hemiplegia and paralysis of the insane, caused 159 deaths, and locomotor ataxia 14 deaths. Paraplegia, with diseases of the spinal cord, caused 32 deaths. Deaths from nervous diseases (excluding convulsions of children) numbered 800, or 8·70 per 10,000 persons living.

Diseases of the circulatory system resulted in 1,233 deaths, being 12·25 out of every 100 from all causes, and 13·41 per 10,000 persons living. Of the total number in this order, endocarditis and valvular disease of the heart contributed 805 deaths. From angina pectoris there were 32 deaths, from syncope 192, from aneurism 36, and from other forms of heart-disease (hypertrophy, fatty degeneration, and pericarditis) 77.

Diseases of the respiratory system show 1,146 deaths, of which 958 were attributable to bronchitis and pneumonia. Taken together, these two complaints were the cause of more deaths than was phthisis; and adding 48 from pleurisy, 20 from croup, 32 from laryngitis, and 88 from other respiratory diseases, the mortality in the order is found to be 11·39 per cent. of the total deaths, and 12·47 per 10,000 of the population.

Deaths from diseases of the digestive system also formed a large proportion of the whole (9·96 per cent.), the number being 1,003. Enteritis was most fatal, showing 419 deaths, liver-diseases (104), gastritis (99) coming next, while 86 deaths were due to apendicitis.

Of 414 deaths from diseases of the urinary system in 1907, the deaths from Bright's disease of the kidneys (albuminuria) numbered 211.

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

As the figures are highly important, a special comparative statement has been made out, giving besides the number of deaths of mothers the proportions in every 10,000 children born. These proportions, taken over ten years' comparison, fluctuate irregularly, the extreme limits being 38·37 per 10,000 births in the year 1900, and 58·64 for the year 1903.

Women dying in Childbirth.

Year.	Deaths of Women in each Year.			Deaths of Mothers to every 10,000 Children Born.*
	In Childbirth.	From Puerperal Fever, &c.	Total.	
1898	72	19	91	48·01
1899	71	15	86	45·66
1900	51	24	75	38·37
1901	70	20	90	43·92
1902	85	25	110	53·26
1903	100	28	128	58·64
1904	85	21	106	46·56
1905	79	21	100	42·23
1906	76	18	94	39·11
1907	87	29	116	46·23

* Stillbirths are not registered.

But any conclusion drawn from the above figures must be held as qualified by the remarks on page 3 touching the matter of diminished fertility of wives at child-bearing ages.

VIOLENT DEATHS.

Deaths from violence form a large item in the total mortality. In 1907 the proportion per 10,000 of persons living was 7·76, the total number of deaths having been 713.

Of 602 males who died violent deaths, 92 were suicides. The deaths of females by violence were far fewer than those of males, amounting to 111, and out of these only 10 committed suicide. A table given previously states the full list of deaths from external or violent causes for the year 1907.

Accidental deaths numbered 605—males 506, and females 99. Of the total male deaths, 210 resulted from fractures or contusions, and 161 from drowning. Of the female deaths, 25 were due to drowning.

INFECTIOUS DISEASES.

The following table is worthy of more than passing interest. It shows the number of infectious diseases reported to the Department from the several health districts:—

Nature of Disease.	Health District.								Total.	Deaths.
	Auckland.	Hawke's Bay.	Wellington.	Marlborough.	Nelson.	Westland.	Canterbury.	Otago.		
Enteric fever	353	55	102	6	23	1	80	36	656	53
Scarlet fever	277	133	959	4	27	22	205	246	1,873	25
Diphtheria	165	36	296	17	6	8	95	58	681	55
Blood-poisoning	76	8	39	..	..	..	52	33	208	..
Bubonic plague	2	..	..	..	..	..	..	..	2	2
Tuberculosis	198	52	171	9	4	9	83	152	678	856
Leprosy	..	..	1	..	..	..	..	..	1	..
Puerperal fever	..	..	..	1	..	..	..	..	1	..
Hydatids	..	..	5	..	..	..	21	..	26	15
Actinomycosis	..	..	1	..	..	..	..	..	1	..
Totals	1,071	284	1,574	37	60	40	536	525	4,127	..

There are difficulties in the way of assessing with any degree of accuracy the relationship between the number of cases and the number of deaths. As I have already pointed out, the years

do not coincide, nor must we assume that every case of infectious disease is notified to the Department. For what they are worth I place the reported cases alongside the number of deaths.

Nature of Disease.	Number of Cases notified.	Number of Deaths.	Percentage of Deaths to Cases.
Enteric fever	656	53	8·08
Scarlet fever	1,873	25	1·33
Diphtheria..	681	55	8·08
Bubonic plague	2	2	100·00
Hydatids	26	15	57·70

Cost per Head and per 10,000 of Population for Notification Fees.

Year.	Per Head. d.	Per 1,000. £ s. d.	Year.	Per Head. d.	Per 1,000. £ s. d.
1902–3 ..	.. 0·401	1 13 5·9	1905–6 ..	.. 0·077	0 6 5
1903–4 ..	.. 0·256	1 1 4·8	1906–7 ..	.. 0·092	0 7 8
1904–5 ..	.. 0·098	0 8 2·7	1907–8 ..	.. 0·109	0 9 1

LEPROSY.

I am glad to say that under the careful attention of Dr. Upham, the case located on Quail Island in March, 1906, has lately shown signs of great improvement. As soon as Professor Deycke's report with regard to "nastin" was published I cabled Home for some, and the patient was placed under treatment. Dr. Upham reports a marked improvement already.

In speaking of Professor Deycke's discovery the *British Medical Journal* of the 4th April, 1908, says,—

From time immemorial the search for a remedy for leprosy has been carried on. When we consider the hideousness, the chronicity, and the practically hopeless nature of the disease, this is not to be wondered at. Although almost every year brings forth a new "cure," and although in the aggregate such cures amount to legion, we have to confess that hitherto the quest has been in vain. It is true that certain drugs do appear to have some influence on the progress of the disease, and it is equally true that a small proportion of lepers recover, yet it can hardly be affirmed that we can cure leprosy even in a limited sense, or any more than it can be said that we can cure cancer. When Hansen discovered the germ cause of the disease, and more particularly when it was found that tuberculin produced in certain cases of leprosy a definite reaction, it was thought by many that in that substance we might find the long-sought-for remedy, or, at all events, an indication of the direction in which search should be made. Unfortunately, the attempts to find the remedy were baffled from the outset, for it has been found impossible to cultivate the germ from which such a remedy might be manufactured. It is true that Rost and others claim to have grown the lepra bacillus, but their statements and the cures they say they have effected have not hitherto been confirmed. We print to-day a lecture by Professor Deycke, in which he states he has cultivated, if not the lepra bacillus itself, at all events an organism closely related to it; from this organism he has extracted a fatty principle—nastin—which on being injected into lepers gives rise to a reaction similar to that produced by tuberculin in tuberculosis, and which when combined with benzoyl-chloride and administered in appropriate dose brings about, if not in every case complete cure, at least the arrest of the disease in all but the most hopeless. According to Professor Deycke, the combination of nastin and benzoyl-chloride acts directly on the lepra bacillus by depriving it of its fatty element, thereby killing it and leaving it an easy prey to the protective influences of the tissues. The microscopic specimens and lantern-slides which he showed at his lecture at the London School of Tropical Medicine seemed to support his statements. We sincerely hope that further experience of nastin therapy will be found fully or even partially to bear out what Professor Deycke claims for it. The object of his visit to this country was to obtain permission to try his nastin treatment on a large scale in some of the numerous leper asylums in British colonies. As the treatment involves no risk or pain to the patient we have no doubt that the Colonial Office, which of recent years has shown itself so keen to assist medical research, will afford him every facility, and also, on behalf of the innumerable leper subjects of King Edward, carefully watch the effects of the treatment. This is the least the Colonial Office can do. Any one who reads Professor Deycke's paper can see that it is based on careful work carried through with ability and in a truly scientific spirit, and all will agree that he has earned the opportunity he asks for. It is not the leper only who has a direct interest in the result, for there appears to be a side issue in the direction of tuberculosis. The latter may prove of importance, but, even failing that, if nastin therapy is found to cure or even to mitigate the misery of the hundreds of thousands of lepers who at the present moment are slowly rotting to death, Professor Deycke will have earned a place among the great benefactors of our race.

On the 8th November, 1907, a young Maori was found to be affected, and he was transferred to a cottage on Quail Island. This case I am glad to say is of such a nature as to cause little or no danger to the public. He was taken to the Quarantine Station more in order that he might be under the skilled supervision of Dr. Upham than that he endangered others. I hope that ere long he may be fit to be allowed to return home.

Elephantiasis.

The illustrations given herewith were taken from what I believe to be the only case of this disease that has ever been seen in New Zealand. The patient applied for some place where he could be treated, and until that time none of the Health officers had any knowledge of the existence of the case. After some difficulty we were able to arrange for his reception with Mother Mary Joseph—that ideal helper of the poor and the sick.

When we bear in mind that there has not been found in New Zealand any of the mosquito families which are credited with transferring the filaria, our surprise at meeting with this case can be easily imagined.

The patient had been a sailor, but had resided in the Dominion for about fifteen years. He was not able to give any clear history of the duration of his ailment, but, as he had been for some considerable time in the southern parts of America, there is little doubt but that he had been inoculated there.

Food and Drugs.

Already good has resulted from the passing of the Sale of Food and Drugs Act of last year. Some regulations have been gazetted, and others are in preparation. In regard to these, I wish to acknowledge the help which Drs. Maclaurin and Makgill have rendered. In the setting-up of standards we are availing ourselves not only of the work which has been done in this direction in other countries, but we have received great help from manufacturers, indentors, and merchants throughout the Dominion.

To Dr. Norris, President of the Board of Health for Victoria, we owe special thanks for sending us the regulations and standards set up by his Board.

Patent Medicines.

I am glad to say that the amendment to the Postal Act which was passed recently still continues to offer an effectual bar against the gentlemen for whom it was intended, and in no wise interferes with traders in honest medicaments. As I said before, our Press is now one of the cleanest from a quack-medicine point of view. The only offenders are some of the small country papers. They, too, will soon drop them, when the advertiser ceases to pay, as assuredly he will when he finds that his mail-matter will not be carried through the post.

I beg to record my thanks to Mr. R. H. W. Bligh, of the White Cross Mission, for the great help he has rendered us in this crusade against quackery in its most dangerous and despicable form, and also to Mr. D. Robertson, General Secretary to the Post Office, without whose care and interest in the matter nothing could have been done.

Medical Inspection of School-children.

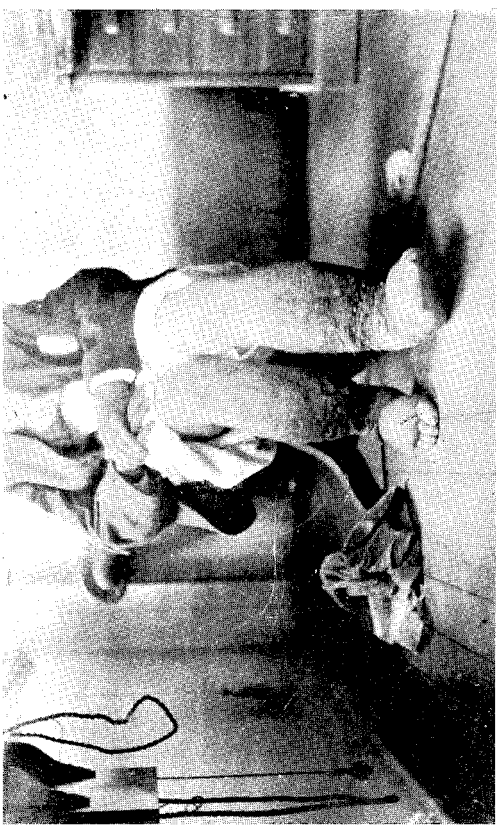
I would again most respectfully urge that the scheme of inspection outlined by me should be undertaken either in whole or in part. I need not repeat the arguments used by the medical and teaching professions when this important matter was discussed at the Dunedin meeting of the Medical Association. Since then the Imperial Parliament has made such an inspection compulsory, and appointed a special staff of highly trained medical men to carry out the work. It ill behoves New Zealand to linger thus behind those countries which we are wont to regard as slow and old-fashioned.

The pamphlet written by Dr. Ogston has been of great service, and school-teachers all over have asked for copies. In some districts the medical men have generously offered to undertake an inspection free of charge. While these examinations will be of the very greatest value, more concentrated work will be necessary if we are to secure that the child who is required to attend our schools is in a fit physical condition to receive the best at the hands of his teachers. An accurate yearly assessment of the health of our school-children would give future historians, physiologists, and economists much valuable data. Reporting on this matter last year I said,—

Medical inspection of schools.

By the authority of the Hon. J. McGowan (then Acting Minister of Public Health), I submitted the suggested system of inspection to the Education Department, and all the Education Boards, School Inspectors, school-teachers, the medical, and the dental professions. In every instance the scheme was approved. As I have pointed out, to establish such supervision was to follow in the footsteps of most of the older countries. It was no fresh experiment, but an absolute necessity, if we were to pay that regard to child-health which it is our duty to do. The private schools in England and Scotland have long done more than is suggested should be done under the proposed system. The colleges in New Zealand carry it out. As far back as 1860 Germany instituted these examinations, and they obtain in Belgium, France, Switzerland, and the United States. Our most recent ally, Japan, has more Medical Inspectors of Schools than the whole of the Old World put together—6,500.

I have had many conversations with the various Inspectors serving under the Education Boards, and in every instance I have found them fully alive to the importance of the sanitation of



ELEPHANTIASIS.

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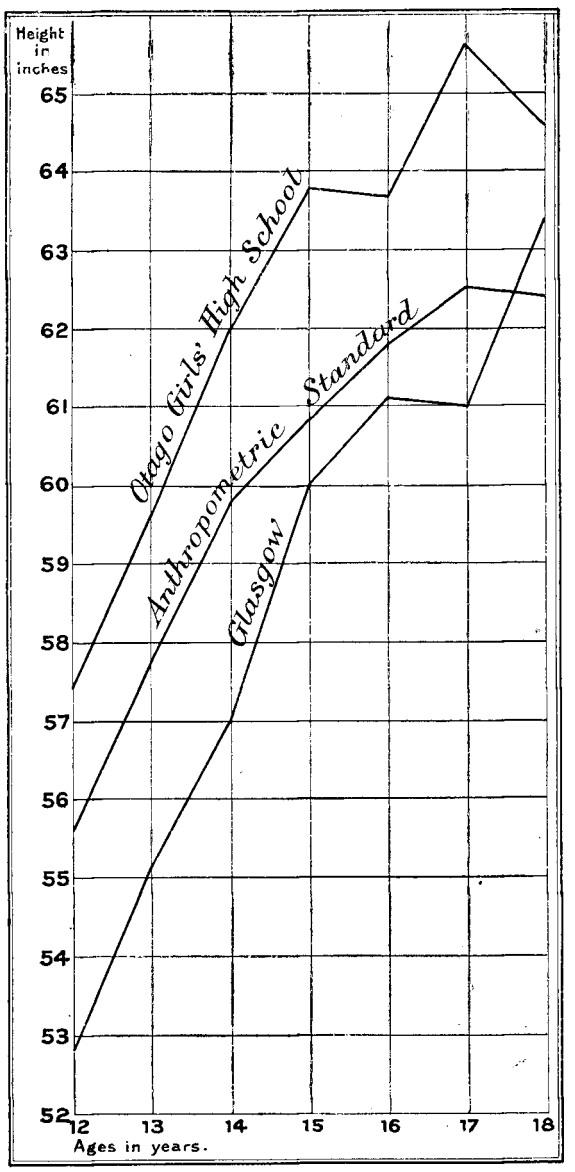

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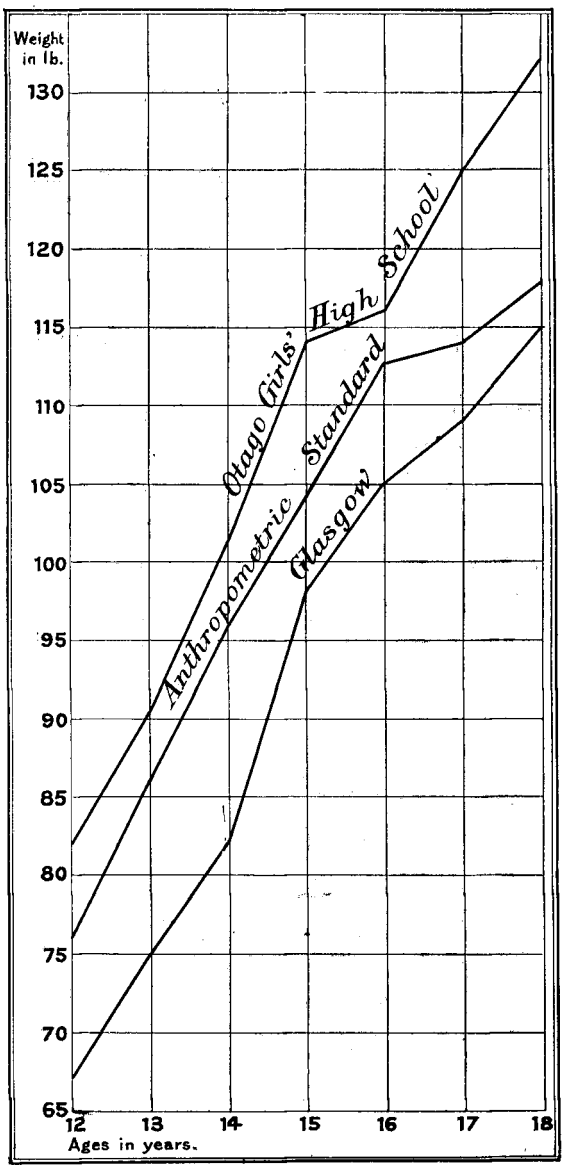

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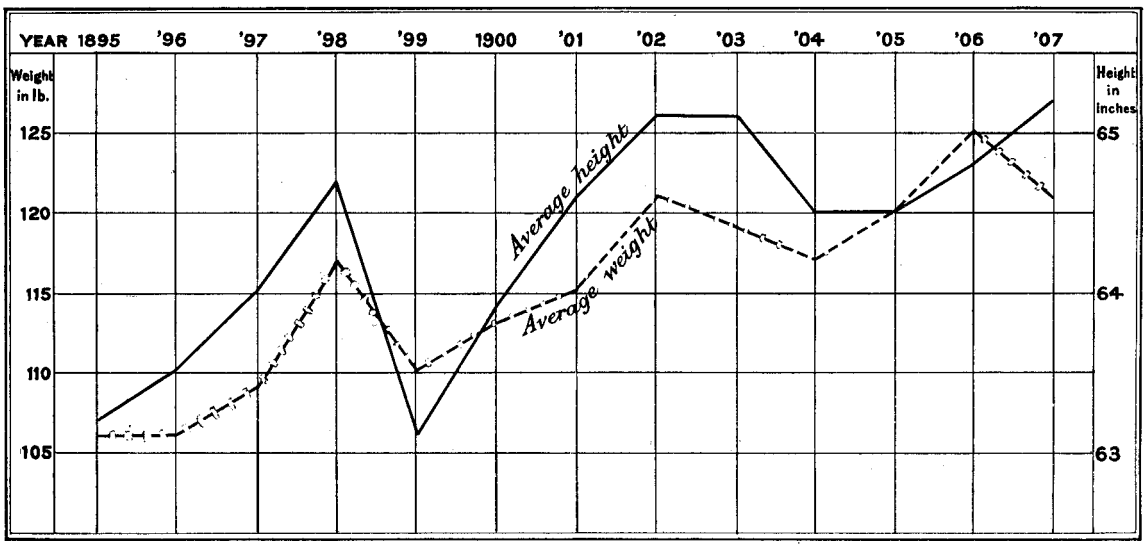

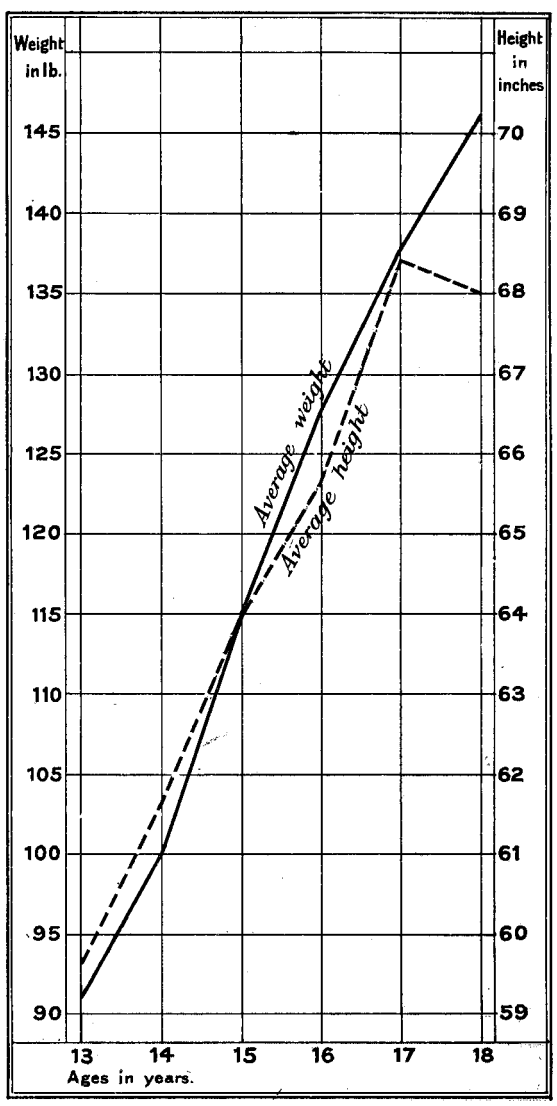

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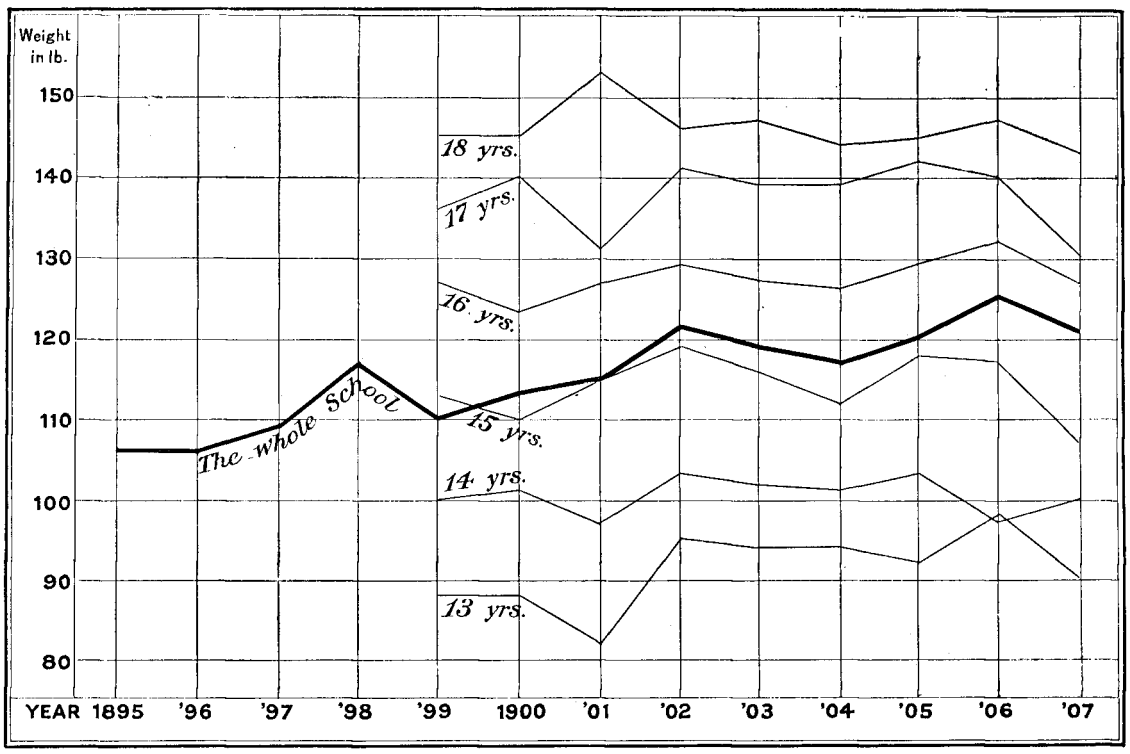

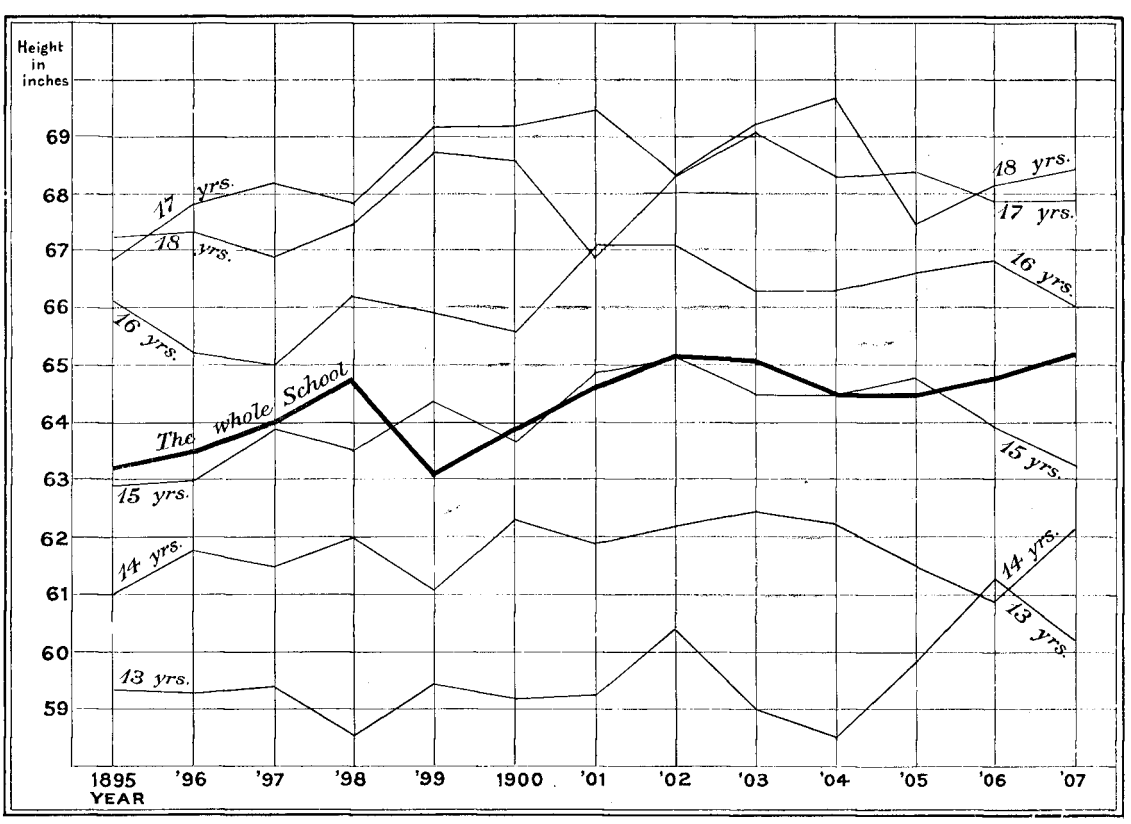

(Supplied through the courtesy of W. Empson, Esq., Headmaster.)

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the schools; but they have one and all expressed their desire for expert help in bringing about the reform they have deemed necessary.

It may be advantageous to set out briefly again the scheme suggested. With a sparsely populated country such as ours it would be unwise to attempt to set up a system of medical inspection such as obtains in Belgium, Germany, France, America, or England. On the Continent of Europe, in addition to inspection during school life, all children are carefully examined before they are allowed to begin their studies. That this is of the very greatest value is attested by the fact that last year about 11 per cent. of the children about to begin school were referred back for periods varying from one to more years.

Such a system of inspection would not be impossible here; but I suggest that we should begin in the manner least likely to entail a large initial or annual expenditure. Again, in nearly all of the countries where medical examination obtains *all* children attending school are examined by the medical officer. I have suggested that, instead of the medical inspector sorting out the abnormal from the normal, this should be done by the teacher. It may be said that the teacher cannot do the work as well as an expert. That must be admitted, and here again the sacrifice of efficiency is done solely to lessen the cost. After all, the number of cases that will be missed by the teacher will be small. I have found throughout the colony that the teachers, with few exceptions, do take a great interest in the physical welfare of their pupils, and as a matter of fact many of them are actually doing the work which I suggest should be done by them under the suggested scheme. It is proposed that the schoolmaster should keep a list of all his pupils who, in his opinion, are below normal in health. The child who complains that he cannot see the figures on the blackboard, the scholar who always turns one ear to the teacher, who sits with open mouth, who complains of frequent headaches, suffers from constant toothache, who coughs, suffers from a rash, who mopes or limps about the playground, or who suggests in any way that he is not well, should be placed upon the list. This list would be given to the Medical Inspector at his visit. Thus, instead of having to examine the whole school, his time would be spent over, say, some 10 or 12 per cent. With this reduced number it would be possible, I think, for four or five officers to examine all the schools in the colony. There would certainly be plenty of work for them to do; but, at any rate, the scheme might be begun with such a staff.

I reproduce a graphic representation of the weights and heights of the pupils attending the Girls' High School, Dunedin. I am enabled to do this through the courtesy of Miss Marchant, the Principal of the school. The numbers are comparatively few, and therefore the "mean error" has to be borne in mind. It is most interesting, however, to see that both in weight and stature the Dunedin schoolgirl exceeds the anthropometric standard as well as the girls attending the North London Collegiate School of Girls. (See facing page.)

Through the kindness of W. Empson, Esq., Principal of the Wanganui Collegiate School, I am able to reproduce the following graphs of the weight and height of the scholars attending that well-known school. The records embrace the period 1895–1907, and the average number of pupils was 180 per annum. (See facing page.)

I sincerely hope that next year the data at our disposal will be greatly increased.

STATISTICS regarding the Average WEIGHT, HEIGHT, and CHEST-MEASUREMENT of GIRLS attending the OTAGO GIRLS' HIGH SCHOOL, Dunedin, taken during Two Years from 1906 to 1908.

Number of Observations.	Ages in Years.	Height, Average.	Weight, Average.	Chest-girth, Average.
		In.	Lb.	In.
31	12	57·4	82·2	27·2
220	13	59·7	90·7	29·4
498	14	62·0	101·7	30·0
306	15	63·8	115·0	26·4
151	16	63·7	117·0	32·2
99	17	65·6	125·3	33·0
29	18	64·6	132·0	33·6

SIMILAR STATISTICS of GIRLS attending the NORTH LONDON COLLEGIATE SCHOOL FOR GIRLS, from May, 1893, to May, 1902. (From the Report of the Royal Commission on Physical Training (Scotland) 1903.)

Number of Observations.	Ages in Years.	Height, Average.	Weight, Average.	Chest-girth, Average.	Waist-measurement.
		In.	Lb.	In.	In.
88	12	57·91	84·14	27·17	23·55
110	13	59·82	91·69	27·91	24·66
129	14	61·66	105·48	29·14	24·01
151	15	62·42	112·43	29·87	23·90
131	16	62·44	114·54	29·57	24·13
42	17	62·46	120·66	29·90	24·33
8	18	62·15	121·00	30·07	24·67

For the information of some members of the Committee of the Upper House who considered the Sale of Food and Drugs Act, I append the following statement and diagram taken from the last report of the Medical Officer for London with regard to the effect of tobacco upon the young:—

Tobacco.—It has been evident lately that there is a great increase in cigarette-smoking among young people. Cigarette-manufacturers hold out inducements in the way of photographs, foreign stamps, or prize coupons to children to purchase these cigarettes. Boys, even as young as ten years of age, have been seen in our examinations with tobacco-stained fingers.

The definite effect of tobacco, apart from the initial sickness and nausea, is difficult to assess. We believe that it interferes with nutrition and growth, and particularly with the evolution of the highest nervous centres, which are attaining full functions in later childhood, so that the moral character is apt to be weakened. Palpitation and inability for exertion are frequently seen, and it is said that, in addition to mere slackness, which is common, a peculiar condition of indifference and apathy is noticed in many boys who smoke. In addition to this there is sometimes difficulty in vision, the acuity presenting great variations from normal, and the writing being affected. This is capable of demonstration: an illustration showing samples of the writing of two cigarette-smoking boys in the same class is given, showing the deteriorated writing, and later recovery on giving up tobacco. (See facing page.)

Rainfall and Temperature.

The graphical illustration of the rainfall and temperature of the Dominion is valuable and interesting. (See facing page.)

Statistics for Diagram showing Mean Rainfalls and Temperature for the North and South Islands of New Zealand, computed from the Climatological Tables published in The *New Zealand Gazette*, 1907–8.

——	1907.									1908.		
	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March.
						Rainfall, in Inches.						
North Island ..	5·51	5·47	4·42	5·15	5·24	5·00	5·06	2·59	3·30	0·40	1·06	8·05
	3·98	*5·28*	*4·97*	*5·50*	*3·70*	*4·52*	*4·41*	*3·66*	*2·99*	*4·72*	*3·63*	*3·89*
South Island ..	3·13	3·13	1·72	2·34	3·72	5·52	4·86	2·64	3·27	1·47	1·08	5·99
	3·20	*3·74*	*3·84*	*3·78*	*2·95*	*5·00*	*4·18*	*3·41*	*2·90*	*3·34*	*3·52*	*4·42*
						Temperature, in Degrees Fahrenheit.						
North Island ..	59·9	51·5	47·2	47·2	49·2	51·2	53·9	59·9	65·3	64·7	63·5	62·3
	57·5	*52·7*	*48·6*	*48·6*	*49·7*	*51·6*	*54·8*	*58·2*	*62·7*	*62·6*	*63·0*	*61·5*
South Island ..	55·5	47·9	42·5	42·1	43·9	46·9	50·6	56·9	62·2	62·5	60·4	58·4
	52·9	*48·1*	*43·8*	*42·9*	*44·5*	*47·7*	*51·6*	*55·6*	*59·7*	*59·5*	*60·0*	*58·4*

N.B.—The averages for the same months in previous years are shown underneath in italic type.

Observations.

The leading features of the year (April, 1907, to March, 1908, inclusive) show a cold winter, with a dry period in midwinter, especially in South Island, and a hot and dry summer following—on the whole the driest on record in the Dominion.

In temperature April, 1907, was above the average in both Islands; but May to October, both inclusive, were all below the mean, and the latter five months, November to March, inclusive, were all above.

With regard to rainfall, until November, 1907, the rainfall over the North Island did not differ remarkably from the average of former years; but the extremely low records of January and February were followed by the heavy rains of March, which mean was double the means of three years previous. In the South Island only September, October, December, and March showed a slight excess, but droughts prevailed in June and July, and in January and February.

The reports of the District Health Officers, their Inspectors, the Maori Health Officers, and those of the Bacteriologist and Analysts, are appended.

I have, &c.,

J. M. Mason, M.D., F.C.S., D.P.H. Cantab.,

Chief Health Officer for the Dominion.

The Hon. the Minister of Public Health, Wellington.

Diagram II.

A. H.
MAY 1905.

When the people of France saw that the English men were making a good deal of money about of the fur trade some of them also crossed the Atlantic and took

MARCH 1906

When the people of France saw that the Englishmen were making a good deal of money out of fur trade

J. S.
MAY 1905.

The Eskimo and other arctic tribes kill large numbers along the shores of Greenland the Arctic archipelago Labrador

FEB. 1906

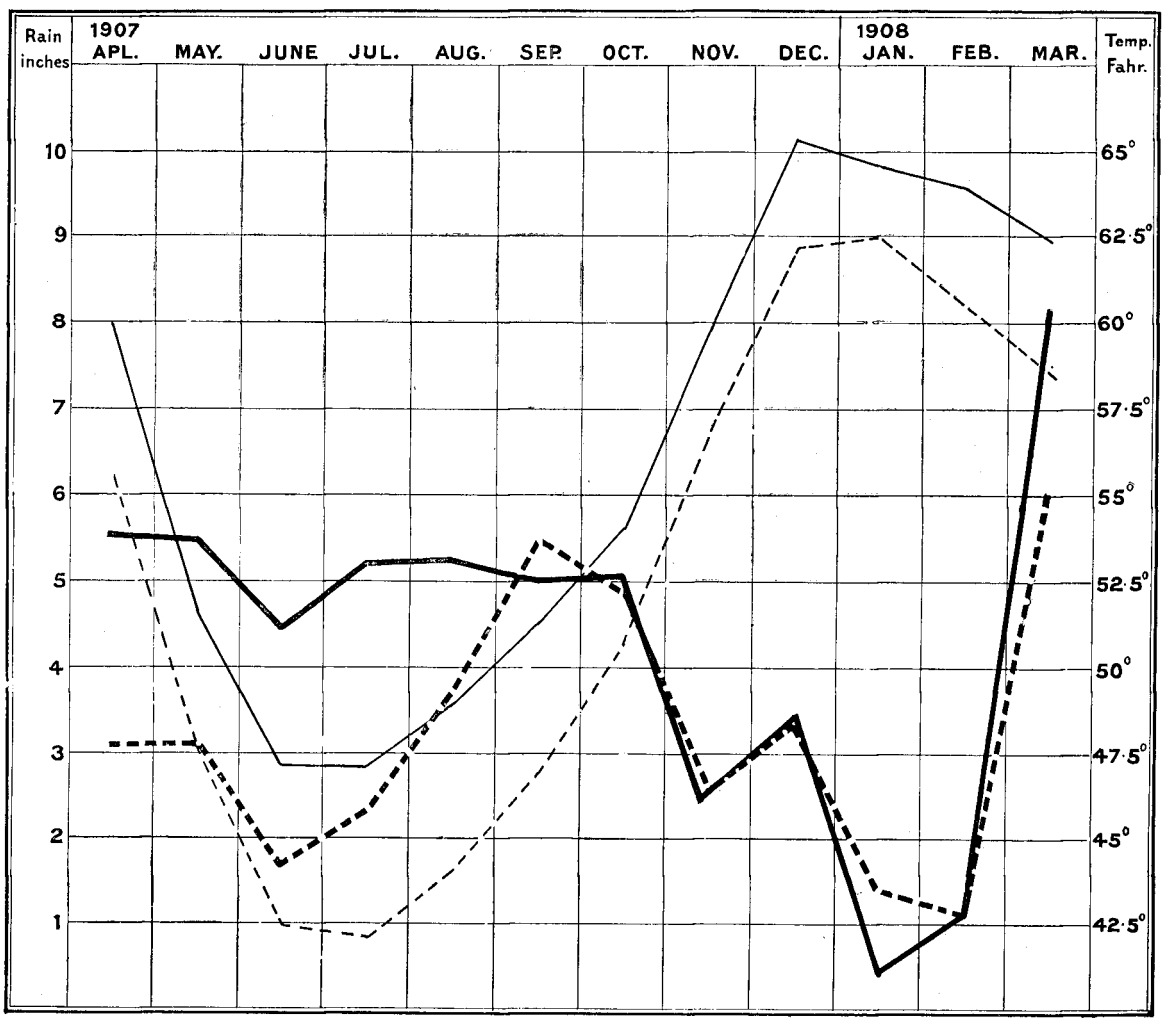
They also became hunters and trappers in the same way as the English had done

A.H., aged 12, Standard IV. Vision recorded in 1904 as $\frac{6}{12}$. In March 1905 it had fallen to $\frac{6}{18}$. The first specimen of writing was then made, shewing want of alignment, and some ataxic characters. It did not appear to be due to any colour scotoma, although this was not actually tested. Cigarette smoking to a considerable extent was acknowledged by the boy, who abandoned the habit. At the succeeding school testing he was absent suffering from scarlatina, but on return had normal vision, no tremor and wrote the specimen as illustrated.

J.S., aged 13, in the same class, had normal vision recorded in 1904, but only $\frac{6}{24}$ in March, 1905. He had similar handwriting and smoking habits to his friend and equally recovered on abstaining. At the school inspection in February, 1906, the second specimen was written. His vision normal and hands steady and the teacher stated that there was considerable improvement in character.

A boy who wants to do accurate work of any kind will eschew tobacco. But for the full development of the highest mental qualities which make up the moral control, as well as for the sake of good physique, there should be legislation to prevent the use or purchase of tobacco by young persons.

2,100–7/08–613



Mean Temperature Curve for North Island, thus - - - - - -
" " " South " - - - - -
Mean Rainfall Curve for North " ——————
" " " South " ▪ ▪ ▪ ▪ ▪

[*To face p. 46.*

BACTERIOLOGIST'S REPORT.

Department of Public Health (Pathological Laboratory), Wellington,
SIR,— 10th June, 1908.

I have the honour to submit the following report on the work of the Bacteriological and Vaccine Laboratories during the year 1907–8.

Each year we find the medical profession make an increased use of the opportunities afforded them for getting pathological investigations done by the Department, and the past twelve months is no exception. At the Museum Street laboratory we have made 224 more examinations than last year, the total being 1,439, to which must be added the specimens examined by Mr. Gilruth at the Veterinary Laboratory, Wallaceville. The amount of work required of us has more than doubled in the last four years, so that, although I have been relieved of the district-office work by the transfer of Dr. Frengley to Wellington, I have found it impossible to attempt more than the routine examination of specimens and the more important water-analyses.

The outbreak of plague at Auckland made a considerable inroad on my time, as I was there altogether about four weeks during May and June, while subsequently I paid several visits in connection with the examination of rats. Other matters not directly connected with the laboratory also occupied my time and attention, such as collecting data for the proposed regulations for the control of "gas-producer" plants, and general sanitary supervision in the Marlborough and Nelson Districts, while for the first few weeks of the year, before Dr. Frengley arrived, I still continued to do the general district work for Wellington Province. In all I have paid thirty-eight visits to various districts during the year, the majority being in connection with water-supply analyses.

Much special work has been required in the laboratories owing mostly to the unsatisfactory results from some of the vaccine lymph. Altogether it has been a busy year, and but for the fact that I have so able an assistant in Mr. Hurley, it would have been impossible to cope with the amount of work. In previous reports I have drawn attention to the excellence of the work done by this officer, and this year he has more than ever earned the fullest measure of praise I can give. In connection with the Vaccine Laboratory, the duties have fallen chiefly on Mr. Green, who has shown himself to be a careful and diligent worker. The fact that laboratory reports and letters have numbered 1,356 during the year indicates the extent to which we are indebted to Mr. Steward, Chief Clerk, and Miss Martelli, typist, of the District Health Office. Our work is increasing so rapidly that it throws a severe strain on the clerical staff.

I have to acknowledge the able assistance of Mr. Gilruth in the examination of many specimens which, owing to my absence from Wellington, or other causes, had to be referred to him. Mr. G. H. Barker, as formerly, superintended the supply of media to the Sydney Street laboratory, and during Mr. Hurley's absence prepared the bulk of the sections for microscopical examination.

The rapid growth of the work shows that it is appreciated by the medical profession, and it has now become of sufficient importance to warrant the establishment of a properly equipped building. The time has also arrived when it becomes necessary to consider the necessity for additional expert assistance. At present too great a strain has to fall on Mr. Hurley, who has to spend too much time in such insanitary surroundings. In the matter of water-supply analysis alone there is sufficient work, if it is to be done systematically, to occupy the whole time of one man expert in this direction.

As regards the pathological investigations, there is evidently a tendency in some cases to lean too heavily for assistance on the departmental laboratory. Evidence of this is found on glancing at the accompanying tables, where it is shown that on ninety-four occasions we were called on to make analyses of urine for the presence of sugar and albumen, while in Auckland

also a good deal of this sort of work is required of the Department. These simple tests are certainly well within the scope of the general practitioner, and, with the object of preventing too much use being made of the laboratory in this and similar directions, it has been recommended that a fee be charged for all examinations, except those involving public-health questions. It will be of interest to note the effect of this regulation should it be approved, but unless it results in a great reduction in the investigations of minor importance an increase of staff will be imperative.

Examination of Water-samples.

In all, fifty-eight samples of water have been bacteriologically examined. In twenty-eight cases I visited public water-supplies, or proposed supplies, and made my observations on the spot, which is the only satisfactory method of making such analyses. Unfortunately, it occupies much time, more especially where the intake is many miles from the town. So far as possible I have made analyses of the water as it comes from the taps, and also at the intakes and reservoirs, and have made an inspection of the catchment-area. In one or two instances where the result left an element of doubt, I have revisited the place and made further observations, and obtained samples for chemical analyses by Dr. Maclaurin. But it must be said that unless the work is done systematically and regularly, and each supply examined at least twice a year, much of the value is lost. Chemical analysis is also necessary to check the bacteriological results, since it is only by a full knowledge of the evidence afforded by each of these methods that a right interpretation of results can be reached. But to undertake even an annual examination of every water-supply in the Dominion would be impossible at present. Fortunately, the majority of catchment-areas are so situated as to render it unlikely that any dangerous pollution of the water can arise, so that meanwhile one can devote attention to the more suspicious supplies, and take the others gradually.

The following table indicates the principal results obtained :—

Source of Water.	Organisms per Cubic Centimeter.		*Bacillus coli.*	*Bacillus sporogenes.*
	At Normal Temperature.	At 37°.		
Wanganui,—				
Okehu (after rain)	1,160	1,034	..	..
Virginia Lake	490	..	..	..
Christchurch (Sydenham),—				
Artesian spring	20	..	..	..
Tank No. 1	135	..	..	..
Tank No. 2	112	..	..	..
Sludge-deposit	..	..	..	..
Marton,—				
Tap	1,300	193	..	..
Reservoir	..	110	..	..
Sludge	..	..	..	..
Napier,—				
Tap	52	..	..	..
Pump-well	2	..	..	..
Onehunga,—				
Tap	40	30	1	..
Pump-well	30	15	..	..
Manukau Trust,—				
Tap	..	40	1	..
Pump-well	30	14	..	..
Picton,—				
Reservoir	100	14	1	..
Tap	150	..	..	..
Ditto (second visit),—				
Reservoir	75	4	..	..
Tap	24	..	..	..
Nelson,—				
Reservoir	21	4	..	..
Tap	100	42	..	..
Dunedin (North-east Valley)—Tap ..	160	22	..	..

Source of Water.	Organisms per Cubic Centimeter.		*Bacillus coli.*	*Bacillus sporogenes.*
	At Normal Temperature.	At 37°.		
Wellington,—				
Tap No. 1	400	..	..	..
Tap No. 2	350	75	..	..
Stratford—Tap	1,220	115	..	..
Featherston,—				
Tap	710	154	1	..
Stream	433	80	1	..
Auckland,—				
Tap	380	80	1	..
Western Springs	650	..	1	..
Waitakeri Ranges Main	420	..	..	..
Palmerston North—Tap	1,100	450	1	..
Hamilton,—				
Tap	150	5	..	..
Intake	270	3	..	..
Hospital Creek	..	32	1	..
Petone,—				
Tap	230	..	1	..
Intake	195	36	1	..
Reservoir	230	81	1	..
Hastings,—				
Maraetotara River	193	60	1	..
Artesian well	17	18	..	..
Hawera,—				
Tap	213	..	1	..
Intake	800	..	1	..
Eketahuna—Makakahi Stream	100	24	..	..
Pahiatua—Intake	..	..	..	..
Hunterville—Stream	6,000	500	..	..
Devonport,—				
Tap	80	40	..	..
Lake Takapu Intake	65	56	..	..
Okura Farm,—				
Creek	180	100	..	..
Spring	300	..	..	..
Fort Bastian	..	..	..	..

In addition to these, eight samples from other sources were examined at the laboratory, and two filters were tested for efficiency. The deposits in the reservoir at four places were examined for special organisms. Much difficulty was experienced during the hot weather in getting the cultures back to the laboratory. To avoid this in future a special type of ice-chest is being designed.

Vaccine Laboratory.

The results obtained by the Public Vaccinators this year with the lymph prepared by this Department have been most disappointing. A great deal of time has been devoted to this branch of the work, and many attempts have been made to ascertain where the fault lies and introduce remedies. Latterly the lymph has regained its potency, but results are still somewhat uncertain. The dilution has been reduced, and the method of sterilising the lymph with chloroform-vapour has been introduced without very marked improvement. The Public Vaccinators have very naturally complained frequently of the uncertainty of getting a good reaction, but until we have a vaccination station attached to the laboratory so that the potency of the lymph can be ascertained before we issue it, we cannot do more than guarantee that the lymph is free from harmful properties. It is some satisfaction at least that the complaints have been only as to weakness, and never as to unpleasant results. A detailed special report on the frequent failures has been prepared and submitted to you. The case-success has been 75 per cent., and the insertion-success only 65·5 per cent. during the year, showing a great falling-off from the 91 per cent. and 95 per cent. of case-success in previous years. In all, twenty-one calves have been vaccinated during the year, and about 3,000 cubic centimeters of lymph prepared. As before, we have been handicapped by the carelessness of many vaccinators in sending in their returns. It is more especially important when the lymph is uncertain in action that we should get these results in early, so that a weak issue may be withdrawn as soon as possible. In all, 9,015 tubes of lymph have been issued, but reports on only 1,467 have been received, showing how lax some are in this matter.

The following table summarises the result:—

Series.	Number of Scarifications.	Number of Vesicles obtained.	Remarks.	
			Cases done.	Cases successful.
		Per Cent.		Per Cent.
22	921	724 = 78·6	318	280 = 88·0
24	70	42 = 60·0	25	17 = 68·0
25	160	108 = 67·5	68	48 = 70·0
26	71	36 = 50·0	21	15 = 71·0
27	22	12 = 54·5	9	6 = 66·6
31	278	128 = 46·0	103	69 = 67·0
32	166	107 = 64·4	62	49 = 79·0
33	181	130 = 71·8	60	54 = 90·0
34	42	34 = 81·0	16	13 = 81·3
35	584	497 = 85·1	179	173 = 96·6
36	27	8 = 29·6	8	3 = 37·5
37	124	19 = 15·3	44	10 = 22·7
38	35	16 = 45·7	12	7 = 58·3
39	344	62 = 18·0	116	27 = 23·2
40	447	262 = 58·6	155	112 = 72·2
41	285	250 = 87·7	100	93 = 93·0
42	344	181 = 52·6	121	86 = 71·0
42 (kept at normal)	150	87 = 58·0	50	38 = 76·0
	4,251	2,703 = 63·5	1,467	1,100 = 75·0
Revaccinations	170	81 = 47·6	55	33 = 60·0
Total	4,081	2,622 = 64·2	1,412	1,067 = 75·6

Pathological Examinations.

The following table shows the pathological examinations made at the Health Department Laboratory, Museum Street. They are classified according to the nature of the research made, while the solid tissues are subclassified according to results. In all branches of work there is an increase, but most markedly in the urines, which have run from 145 last year to 296; swabs for diphtheria, from 75 to 169; blood, from 27 to 71; and tissues, from 204 to 250. These returns do not include the work I did at the Auckland Laboratory, where many hundreds of specimens in connection with plague were examined by myself or under my supervision. The following table shows general results of the examination of pathological specimens:—

Material.	Object of Examination.	Result.		Total.
		Positive.	Negative.	
Sputum	For tubercle	129	256	385
	„ other conditions	14	2	16
Total	...	...	...	401
Purulent and other discharges—	For gonococcus	17	18	35
	„ pyogenic organisms ...	4	2	6
Pus	„ tubercle bacilli	...	4	4
	„ plague	2	3	5
	„ other conditions	...	8	8
Pleuritic fluid ...	„ tubercle	...	7	7
	„ influenza bacillus ...	1	...	1
Other discharges	Bacteriological	6	...	6
Total	...	...	...	72
Blood-samples	For Widal reaction	14	39	53
	„ estimation of leucocytes, &c.	5	...	5
	„ malaria	1	1	2
	„ leprosy bacillus	2	1	3
	„ other organisms	5	3	8
Total	...	...	...	71
Swabs from the throat, &c.	For diphtheria	67	93	160
	„ streptococci	5	1	6
	„ pneumococci	3	...	3
Total	...	...	...	169

Material.	Object of Examination.	Result.		Total.
		Position.	Negative.	
Urine	Chemical	110	48	158
	Bacteriological	12	34	46
	Microscopical	80	12	92
Total	...	...	...	296
Solid tissues requiring section	For malignancy	101	119	220
	„ bacteria	9	12	21
	„ other conditions ...	6	...	6
	Spoiled in transit	...	...	4
Total	...	...	...	251
Fæces	Chemical and microscopical ...	3	2	5
Vomit	Chemical and microscopical ...	8	4	12
	Bacteriological	...	1	1
Total	...	...	...	18
Parasites	For hydatids—			
	Sputa	...	9	9
	Other fluids	...	5	5
	For *tinea circinata*—			
	Hair	...	2	2
Total	...	...	...	16
Foodstuffs	Milk—			
	For pus	1	4	5
	„ tubercle	...	7	7
	„ *Bacillus coli*	2	...	2
	„ other bacteria... ...	1	2	3
	„ preservatives	...	4	4
	Tinned milk, for bacteria ...	...	1	1
	Meat, for bacteria	2	...	2
	Sausage, „	...	1	1
	Bread, „	...	1	1
	Flour, „	1	2	3
	Cheese, „	...	1	1
Total	...	...	...	30
	Other Examinations.			
Local anæsthetics	For pyogenic organisms ...	...	6	6
Surgical ligatures	„ ..	...	3	3
Stains on clothes	For blood	...	1	1
Other examinations	...	...	...	3
Total	...	...	...	13
Water-samples ...	Bacteriological	...	...	58
	Sludge-deposits	...	...	4
	Filters tested	...	...	2
Total	...	...	...	64
Animals	Rats, for plague (not including those done at Auckland)	1	20	21
	Rats, for other diseases ...	...	1	1
	Guinea-pigs inoculated—			
	For plague	2	...	2
	„ tubercle	4	5	9
	„ diphtheria	1	...	1
	„ pneumococci	1	...	1
	„ water-analyses ...	2	1	3
	„ pathological moulds in bread	...	1	1
	„ purity of vaccine ...	...	2	2
	Rabbit, for purity of vaccine ...	...	1	1
Total	...	...	...	42
Bacteriological examinations of vaccine lymph	...	...	...	62
Total specimens examined	...	...	...	1,439

Details of Urinary Examinations.

Method.	What sought.	Positive.	Negative.	Total.
Chemical analyses—				
Quantitative ...	Estimation of urea	...	...	46
	" albumen ...	...	...	1
	" sugar	...	...	13
Total	...	...	...	60
Qualitative ...	For albumen	39	32	71
	" sugar	7	16	23
	" other conditions... ...	4	...	4
Total	...	...	...	98
Bacteriological ...	For tubercle bacilli	8	28	36
	" *Bacillus coli*	3	2	5
	" gonococcus	...	4	4
	Others	1	...	1
Total	...	...	...	46
Microscopical	For casts, blood, pus, &c. ..	80	12	92
Total urinary examinations	...	...	...	296

Table showing Results of Examination of Tissues.

Conditions found.	Digestive System.		Respiratory System.		Circulatory System.	
	Tongue, Lips, Mouth, &c.	Stomach, Intestines, Liver, and Viscera.	Lungs.	Larynx Bronchi.	Heart.	Vessels.
Carcinoma	4	4	...	...	...	..
Sarcoma	2	1	...	2	...	...
Benign tumours ...	3	1	2	...	...	...
Normal	...	2	...	...	2	...
Results of simple inflammatory processes	1	10	...	2	1	...
Bacterial—						
Tubercle	...	2	...	...	...	...
Plague	...	1	...	...	...	...
Others	...	...	...	...	...	...

Conditions found.	Lymphatic.	Urinary.		Reproductive.				
	Glands.	Kidney.	Bladder and Ureter.	Uterus.	Ovary.	Breast.	External Organs.	Testicle and Prostate.
Carcinoma	8	...	1	13	3	14	...	2
Sarcoma	2	...	...	...	...	1	...	2
Benign tumours ...	...	...	...	13	3	8	...	2
Normal	2	...	...	12	1	...	...	...
Results of simple inflammatory processes	8	2	...	18	...	11	1	1
Bacterial—								
Tubercle	2	...	...	...	...	...	...	1
Plague	1	1	...		...	...	...	...
Others	1	...	...	...	...	...	...	...

Conditions found.	Nervous.		Integumentary.	Locomotive.	Total.
	Spinal Cord and Nerves.	Special-sense Organs.	Skin.	Bone, Muscles, &c.	
Carcinoma	...	4	12	4	69
Sarcoma	...	4	2	16	32
Benign tumours	...	...	7	9	48
Normal	1	1	3	1	25
Results of simple inflammatory processes	...	1	4	3	63
Bacterial—					
Tubercle	...	...	...	...	5
Plague	...	...	...	...	3
Others	1	...	...	...	2
					247
Received spoiled	...	...	...	...	4
Total	...	...	...	...	251

PLAGUE-OUTBREAK AT AUCKLAND.

Case 1.

On the 16th May we received from Dr. Purdy, District Health Officer, Auckland, the kidney, inflamed gland, and portions of the spleen of a case (K) of suspected plague which had arisen in Auckland. Sections of the kidney showed cloudy swelling and detachment of the epithelium of the tubules. Smears made from the spleen and gland contained very numerous cocco-bacilli, the majority of which showed marked bipolar staining typical of the *Bacillus pestis*. Others were irregular in type, being boat-shaped, oval, or almost round. Many of these did not show bipolar staining, but all were decolorised by Gram's method. Cultures on agar and serum and in broth were made, and a guinea-pig was inoculated with a portion of the spleen-pulp. In twenty hours œdema appeared at the seat of inoculation, in twenty-four hours the animal was extremely ill, and in fifty hours it was dead.

Post-mortem on Guinea-pig (A).—At the *post-mortem* the seat of inoculation showed great thickening and œdema of the tissues, with exudation of blood-stained serum. On the same side the superficial, deep inguinal, and popliteal glands were swollen. There was œdema of the abdominal wall, and hæmorrhage into the muscles. The liver was mottled, and both it and the intestines were intensely congested. Spleen was not greatly enlarged, and showed very little mottling, and none of the usual yellowish spots. Smears from the seat of inoculation, from the swollen glands, and from the liver showed the same bipolar-staining bacilli as were found in the original tissues. The spleen, however, though enlarged, was free from any organismal infection, and none of these bacilli were visible in the heart-blood, although they were obtained from there by culture. The rapid death of the guinea-pig, and the *post-mortem* appearances, show that we had to deal with a very virulent type of organism.

Smears on agar, made direct from the spleen of the patient, developed in twenty-four hours a growth in the form of translucent discs composed of bacilli, which were found to agree microscopically with those found in the tissues and in the guinea-pig, except that the polar staining was less in evidence. This has generally been observed as regards *Bacillus pestis*. After about forty-eight hours the growth usually got whitish grey in the centre, and tended to spread out with thin wavy edges. The consistence was slimy and sticky. Involution forms were very marked, yet in spite of the great variation in appearance they still retained the power of discharging the stain by Gram's method.

Broth cultures were made from the patient's spleen and from blood taken from the heart of the guinea-pig (A). In both a turbid growth occurred in about eighteen hours, which later tended to form a whitish film on the side of the glass, and to deposit a sediment at the bottom. We found too much vibration in this laboratory to be able to demonstrate satisfactorily the stalactite growth, though I was able to demonstrate this in the Auckland laboratory in subcultures from those made from the patient's spleen. On plating out the broth from the patient's spleen, besides the clear colonies of bipolar-staining cocco-bacilli, there were found rapidly growing whitish colonies of a streptococcal-like organism. These were not found in the guinea-pig cultures, and, as they were absent from the cultures made by Drs. Frost and Purdy in Auckland, which I had an

opportunity of examining later, I believe this streptococcal growth was an accidental infection of the specimen in transit. The bacilli in broth culture tended to grow in chains. They showed no motions of translation, but Brownian movement was marked. No nitrite or indol reaction was found after two weeks. On blood-serum growth was readily obtained. Grown in milk at 37° C. no curdling resulted. In gelatine stab no liquefaction resulted, but a growth formed as a white line along the track of the needle, and spread only over the surface of the gelatine. On potato a slight yellowish-white growth was formed.

On my arrival in Auckland I examined cultures made by Dr. Purdy from the spleen and cardiac blood of the patient. The same cocco-bacillus was present as we found in the spleen sent to Wellington, but here it was apparently in pure culture. The general characteristics of *Bacillus pestis* were demonstrated by subculture in broth, agar, gelatine, and so forth, and in broth on which oil drops floated a feeble development of stalactites was obtained. In neutral red broth no colour-reaction developed.

A *post-mortem* examination of a guinea-pig (B), which had died sixty hours after Dr. Purdy had inoculated it with pulp from one of the enlarged glands of the patient, showed the presence in heart-blood, bubo, and spleen of organisms with all the morphological and culture characters of the *Bacillus pestis*. In this animal the spleen, though enlarged, was not mottled in the usual way, but the bacillus was abundantly present.

By courtesy of Dr. Frost, Honorary Pathologist of the District Hospital, I was enabled to make a *post-mortem* on a guinea-pig (C), which did not die till the eighth day after inoculation. In this the bipolar-staining cocco-bacilli were present in the heart's blood, lungs, and enlarged glands, as also abundantly in the spleen, which was typically enlarged, and mottled with patches of fatty degeneration. From this spleen pure culture of *Bacillus pestis* were obtained in agar-streak and in broth. I inoculated a fourth guinea-pig (D) with an agar culture made from the spleen of guinea-pig (B). The animal became ill in twenty-four hours, and on the fifth day was killed by chloroform when in a dying condition. The usual chain of enlarged glands leading from the inflamed and œdematous seat of inoculation was found. The spleen was typically enlarged and mottled, and pneumonic patches were found in the lungs. The bipolar-staining bacilli were practically universal in the body, and pure cultures were grown on agar streak from the spleen-pulp.

Case 2.

Drs. Frost and Purdy had prepared smears from the spleen, bubo, and heart-blood of a second case of suspected plague (M). This patient had worked in the same building in Queen Street as did Case 1. On examining these I found a bipolar-staining cocco-bacillus with the same morphological and cultural characters as detailed above. In the spleen and bubo they were very abundant, but more scanty in the blood. A guinea-pig (E) inoculated by Dr. Frost with pulp from the spleen of this patient died on the sixth day. At the seat of inoculation in the right thigh there was marked œdema and hæmorrhagic patches, and from here a chain of enlarged glands stretched to the abdominal wall and into the iliac region; enlarged glands were also present in the right axilla. The spleen was typically enlarged and mottled, the liver was enlarged and congested, and the lungs showed pneumonic patches. Cocco-bacilli with all the characters of *Bacillus pestis* were found in buboes, spleen, and blood. Pure cultures were obtained from the spleen-pulp. I inoculated a second guinea-pig (F) from the spleen-pulp of this case. It became markedly ill on the third day, and on the fourth day I killed it. The appearance at the *post-mortem* were much the same as in guinea-pig (E), but the spleen though enlarged and mottled contained few bacilli. Pure cultures were obtained on agar slope from the blood.

I have no hesitation in saying that both of these cases had died from plague.

Case 3.

With the kind assistance of Dr. Frost, I made a bacteriological examination of a case (P) sent in to the isolation hospital as suspicious. There was a small superficial furuncle on the right inner thigh, and an enlarged inguinal gland on the same side. The temperature was high. Smears made from the blood of furuncle and gland showed a small diplococcus, but not resembling *Bacillus pestis*. A guinea-pig (G) was inoculated with serum drawn from the gland by an aspirating needle, and cultures were made in broth. On the fourth day the guinea-pig remained unaffected, and no growth was present in the broth. As the patient's temperature had returned to the normal he was discharged on the following day.

Infection among Rats.

For about two years prior to 1907 such rats as could be obtained from about the wharves and lower parts of Auckland were examined at the Health Office, and any suspected ones were forwarded to the Wellington laboratory. From the 1st April till the 15th May some seventy rats had been thus examined, and during April, while on a visit to Auckland, I examined some of these specimens without finding anything resembling plague. After the two cases (K. and M.) had developed, an examination of the premises wherein they worked revealed beneath the floor of one room a dead rat which was submitted to me for examination. It was in a fairly advanced stage of decomposition. There was some glandular enlargement in the left groin, the spleen and liver were enlarged, and the lungs showed pneumonic patches. Typical bipolar-staining bacilli were found in gland, spleen, and heart-blood. These decolorised by Gram's method. Putrefactive sporulating organisms were also present. No inoculative experiments were made, but from the microscopic characters I am convincted that this rat died from plague.

During the next few days as many rats as could be obtained were examined at the laboratory. In some forty of these microscopic examination was made, and in three, which had been sent from a small coastal steamer at Onehunga, some bacilli were found in the spleen-pulp which resembled the *Bacillus pestis*. Unfortunately, in his efforts to avoid infection the sender had thoroughly boiled these rats, so that they were not available for cultural methods. It was ascertained that rats had been dying on this boat, and also, it was said, near the wharf at Onehunga. Another rat, which was described as sick, was obtained from the boat, and on examination liver and spleen were found enlarged, and the latter showed spots of degeneration. The lung was congested and pneumonic. In spleen, lung, and blood, bacilli morphologically agreeing with *Bacillus pestis* were found. A guinea-pig (H) was inoculated with pulp from the rat's spleen, and this guinea-pig became ill on the third day, and on the fifth day was in a dying condition. It was killed, and on *post-mortem* examination the seat of inoculation showed hæmorrhagic œdema, and from here a chain of enlarged glands led up to the groin and abdominal wall. The spleen was enlarged and typically mottled. The liver was congested and enlarged. There was a large pneumonic patch at the base of both lungs. *Bacillus pestis* was present in the enlarged glands, but could not be found in the blood. In the spleen they were scanty, but a few were found, always within the leucocytes. Bacilli were also present in the lungs. There is no doubt that the rats on this boat suffered from plague.

Examination of all rats brought to the laboratory was continued throughout the year, and in June, July, September, December, and March, I visited Auckland and supervised the work. During the visit in September I detected in another rat, which had been picked up dead in a back yard near Lower Queen Street, suspicious symptoms. The spleen and liver were swollen, and the former contained bipolar-staining cocco-bacilli, which decolorised by Gram's method. Some spleen-pulp was forwarded to Wellington, while I also inoculated a guinea-pig at the Auckland laboratory. This animal died on the fifth day, and at the *post-mortem* all the usual plague-symptoms were found, cocco-bacilli being present in glands, spleen, and blood. At the Wellington laboratory another guinea-pig was inoculated, and died after four days and a half with similar results, and from the spleen a pure culture of *Bacillus pestis* was obtained on slant agar. In both these guinea-pigs the spleens were enlarged, typically mottled, and the bacilli were abundantly present.*

The examination of rats has been continued systematically at Auckland throughout the year, but no further evidence of plague has been discovered. In other centres the following investigations were made in connection with suspected plague:—

Gisborne.—The tissues removed at *post-mortem* on a case of a sudden death were forwarded to me for examination. No trace of *Bacillus pestis* was found, but an examination of the heart revealed rupture of the mitral valve.

Timaru.—Some specimens forwarded by Dr. Finch from a suspicious case proved free from *Bacillus pestis*.

* It is of some interest to note the relationship between the condition of the spleen in this series of guinea-pigs and the stage of the disease. In former outbreaks I had noticed that if the guinea-pigs were killed by artificial means after they were seriously ill, but some hours before death would naturally have occurred, the spleens, although swollen and mottled, did not contain the *Bacillus pestis*, though it might be abundantly present in the affected glands. In the above series this was again observed. If the animal were allowed to reach a very advanced stage of illness a few bacilli were present in the spleen, but only within the leucocytes. The guinea-pigs inoculated with the fresh spleen-pulp of the first patient died very rapidly, and in these the spleen showed no mottling, and in one dying within fifty hours of inoculation no bacilli were visible in the spleen or heart-blood. Presumably the mottling by patches of fatty degeneration is caused by the toxins present in the blood independently of the presence of the bacilli in the spleen-tissue, and the actual invasion of that organ by the bacilli only takes place at a late stage—perhaps when the blood is generally invaded. In the animals dying very rapidly the fatty degeneration of the spleen-pulp had not time to take place, and possibly in the most rapid case death took place from toxin-poisoning before the bacilli had time to thoroughly invade the blood.

Nelson.—Blood from bubo: Micrococcus present, but no *Bacillus pestis.*

At Wellington during May and June some twenty rats from the neighbourhood of the wharf were examined without any disease being discovered.

The following matters outside my duties as Bacteriologist received attention:—

Air-analysis.—Investigations into the ventilation of one Government building and one private school were made. In each case a series of observations were made as to the amount of carbonic acid present in the air at various periods of the day or night.

Special Reports were prepared on the following subjects: Working of the District Sanitary Inspectors' scheme; regulations for the sanitary control of boardinghouses; model by-laws, night-soil services; regulations for the control of producer-gas plants; tree-planting camps for consumptives.

In connection with the general sanitary work in Nelson and Marlborough Districts, the following received attention: Houses inspected, 24; revision of Nelson drainage by-laws; suggestions for building by-laws, Picton; medical examinations in connection with infectious cases, 4.

Attendances were made at the Magistrate's Court in connection with prosecutions on three occasions.

Mr. Gilruth, Pathologist, has kindly supplied the following particulars of work done for this Department during the year:—

In the past year nearly twelve hundred tubes of various nutrient media have been supplied to the Head Laboratory of the Department. All calves required for the production of vaccine have been carefully examined for disease both before the inoculation and after slaughter.

Only sixty pathological specimens for diagnosis have been received here, but during the absence from headquarters of Dr. Makgill or of his Chief Assistant, Mr. Hurley, our services have been requisitioned from time to time.

I have, &c.,

R. H. Makgill,

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

APPENDIX.

REPORTS OF DISTRICT HEALTH OFFICERS.

SIR,— Department of Public Health, Auckland, 31st March, 1908.

I have the honour to present the annual report of the Auckland District.

The district covers approximately 20,000 square miles, with a population of 200,000, of whom more than a third—81,000—live in an area of 28,000 acres situate on the isthmus between Waitemata and Manukau Harbours.

For a student of sanitary problems few fields offer more opportunity than the District of Auckland. Here we have almost every form of administrative government, including 3 Native Town Boards, 83 Road Boards, 23 County Councils, 7 Town District Boards, 7 Borough Councils, a City Council, and the interesting form of government direct by the Government of the Town of Rotorua.

The Health Department for the province, as represented by a District Health Officer, a staff of four Inspectors located respectively at Auckland, the Waikato, Thames, and Whangarei, supervises the work of the various local authorities besides acting as an advisory body under the Chief Health Officer. As the district is large and the requirements of sanitary reform numerous, much of the work has to be done by the issue of letters, memoranda, circulars, and instructions from the Auckland Office. A pleasing feature during the past year has been the frequency of requests for advice on the part of local authorities who are becoming conscious of their responsibilities with regard to sanitation. More especially is this noticeable in outlying districts such as the King-country, Hokianga, and Hikurangi.

As far as Auckland is concerned, we are still in swaddling-clothes with regard to progressive sanitation. The past year has not been without its object-lesson of the dangers of procrastination. Fortunately, however, owing to the initiative and strenuous advocacy in season and out of season of our leading citizen, the much-delayed comprehensive drainage scheme now bids fair to pass beyond the stage of discussion. Seen through spectacles untinted by parochialism, the natural concomitant of residence in prescribed areas, it seems unnecessary to prolong the present multiplicity of control. A city which not only in name embraces socially and commercially one community, one watershed, one water-supply, one drainage system, with streets continuous or contiguous, at present controlled by seventeen representative bodies, calls for one responsible authority in order to do justice to its unique natural endowments, its present prosperity, and its future as a centre of commerce in the southern Pacific. Parts of each arbitrary division are for some purposes known by the name of the adjoining area of which they are in reality an extension; as a matter of actual fact it has not been unknown for one authority unwittingly to refer to another the upkeep of a road in their own district. Small wonder, therefore, that some people are not aware where they live as regards local administration until the tax-gatherer calls for the rates. Large numbers of children living in one district attend school in another. Frequent difficulties arise in the allocation of notifications of infectious disease through part of a street being under a Council and another part under a Road Board. A dairyman resident in the city must comply with regulations more stringent than a competitor who opens a milk-shop a few doors further up the street. Many institutions are as convenient for adjoining districts as those for which they were primarily intended. Auckland is not unique in this respect, but has simply repeated the experience of other towns which have developed by a process of accretion and the opening-up of suburbs. There are many people, however, who realise the advantages of amalgamation for purposes of sanitary administration. However, much previous experience has imbued me with the advantages of dealing with public-health problems on a definite plan, and the concentration of administrative control. A year's occupation of the position of District Health Officer in Auckland has almost sufficed to make this preconceived opinion a conviction. The lack of uniformity in the by-laws, and in one case even the absence of such by-laws, were it not for the existence of a Department directly responsible for the administration of a Public Health Act, all-embracing in its enactments, would multiply the difficulties of sanitary supervision. Fortunately we have in the City Council the nucleus of a body which, when strengthened by representatives of the outlying authorities, all pledged to a policy of progressive reform, bids fair to evolve an administrative authority worthy of a city which for natural assets has few equals.

VITAL STATISTICS.

As this subject is extensively dealt with in the report from Head Office it will suffice merely to record some figures which are instructive as illustrating the health of Auckland and district.

It is unfortunate that owing to parts of what will in all probability ultimately become Greater Auckland being still in the embryonic stage of local government nominally as Road Boards, general statistics for purposes of comparison are only available for Auckland City and the Boroughs of Birkenhead, Devonport, Grey Lynn, Mount Eden, Newmarket, and Parnell. The periods covered in compiling general vital statistics are for the calendar year. For infectious diseases the period still commences on the 1st April, the beginning of the departmental year.

The populations upon which the year's statistics are treated are:—

Auckland City (mean of 1907)	41,916
Auckland with the surrounding boroughs	70,068
The population of Greater Auckland by the census of 1906 was ...	82,101

Birth-rate.

The births in Auckland City were	1,242
In Auckland and suburban boroughs (Road Boards not included) ...	1,924

	Per 1,000 of Mean Population.
Auckland City	29·63
Auckland and suburban boroughs	27·46

The satisfactory increase in the birth-rate referred to in three previous reports as to Auckland District is thus maintained.

It is again observed that both the birth and death rates and the infantile-death rate are greater within the city than in the surrounding boroughs, the increase as to the two last factors being proportional to the aggregation of population per acre. Deaths occurring in hospital are omitted except where deceased previously resided in the city or suburban boroughs.

Death-rate.

	Per 1,000 of Mean Population.
Auckland City	13·38
Auckland and suburban boroughs	11·43

The increase during the last year is due to the prevalence of epidemic diseases such as enteric fever, scarlet fever, diphtheria, whooping-cough, measles, and infantile diarrhœa, all of which have been rife in this district.

For the last five years,—

	Auckland City.	Auckland and Suburban Boroughs.
1903	12·97	12·23
1904	11·11	10·20
1905	12·15	10·52
1906	12·51	9·90
1907	13·38	11·43

The deaths in Auckland in 1907–8 were	561
And in Auckland and suburban boroughs	801

Infantile Mortality.

In Auckland and suburban boroughs,—

Deaths of infants under one year were	187
Between one year and five years	76
	263

Deaths of children under one year to every 100 births for five years,—

	Auckland City.	Auckland and Suburban Boroughs.
1903	12·08	12·15
1904	6·93	7·01
1905	10·13	9·15
1906	9·92	8·58
1907	10·55	9·72

Slight increase due to infectious or preventable diseases.

Natural Increase of Population.

	Total Births.	Total Deaths.	Natural Increase.	Natural Increase per 1,000 of Mean Population.
Auckland City	1,242	561	681	16·25
Auckland and suburban boroughs	1,924	801	1,123	16·03

Causes of Death.

Zymotic Diseases.—Auckland and suburban boroughs, 103 deaths. For the last five years: 1903, 86; 1904, 52; 1905, 45; 1906, 42; 1907, 103.

These 103 deaths were from—

Diarrhœal diseases	19
Influenza	10
Typhoid fever	6
Scarlet fever	1
Diphtheria	8
Whooping-cough	36
Measles	17
Other zymotic diseases	6
	103

The deaths under this head from diphtheria, whooping-cough, and measles are unusually high; otherwise the figures follow those of the previous year. The comparatively large number of deaths from measles and whooping-cough, which unfortunately are diseases often lightly viewed by the public, warrants the prosecution of the present crusade to educate the mothers in the rearing and nursing of children, in addition to the important question of feeding. Good results are already being seen from the great attention recently given by the public to this matter.

Hydatids.—1 death at Hamilton. This disease is much less frequent than formerly.

Cancer.—50 deaths.

Phthisis and other Tubercular Diseases.—66 deaths.

Diseases of the Respiratory Organs.—102, against 78 for the previous year. The Registrar-General notes a very considerable increase under this head also in Wellington and Christchurch. No doubt this is accounted for by the exceptionally wet weather. In Auckland we had 42 in. of rain during the first nine months of the year.

N.B.—From this point statistics cover the period of the departmental year—1st April, 1907, to 31st March, 1908.

Infectious-disease Notifications.

Notifications of infectious diseases made from every part of the health district are in excess of those of the past five years:—

	Totals.
1903–4	777
1904–5	620
1905–6	616
1906–7	642
1907–8	1,071

The increases over 1906–7 for the last year are,—

Auckland City	109
Suburban boroughs	66
Road districts	33
Country districts	208
Auckland Hospital, Mental Hospital, Gaol, and shipping	13
	429

Compared with 1906–7, the notifications show,—

	1906–7.	1907–8.	Increase or Decrease, Present Year.
Enteric fever	153	353	+ 200
Scarlet fever	268	277	+ 9
Diphtheria	103	165	+ 62
Tuberculosis	96	198	+ 102
Blood-poisoning, including suspected plague	22	76	+ 54
Plague		2	+ 2
			429

The increase in notifications, more especially with regard to tuberculosis, may be due in some measure to the administration with regard to notification having been vigorously carried out. There was a notable increase after a medical practitioner had been mulcted in a fine of £7, and costs.

The following table exhibits the distribution of the cases:—

Summary of Notifications of Infectious Diseases from 1st April, 1907, to 31st March, 1908.

City, Borough, &c.	Extent.	Population (1906).	Enteric Fever.	Scarlet Fever.	Diphtheria.	Tuberculosis.	Blood-poisoning.	Plague.	Total.
	Acres.								
Auckland City	1,786	37,736	88	70	43	47	34	2	284
Birkenhead Borough ..	2,700	1,266	1	2	..	..	..	..	3
Devonport Borough ..	640	5,073	1	16	19	3	4	..	43
Grey Lynn Borough ..	900	5,882	9	6	3	6	1	..	25
Mount Eden Borough ..	1,400	6,888	18	9	12	5	1	..	45
Newmarket Borough ..	150	2,342	23	8	2	1	..	..	34
Onehunga Borough ..	1,200	3,693	5	2	11	2	2	..	22
Parnell Borough ..	480	5,253	2	16	4	2	2	..	26
Arch Hill Road District ..	154	1,752	..	5	1	1	..	..	7
Avondale Road District ..	2,870	1,489	1	..	..	1	1	..	3
Eden Terrace Road District	95	2,338	19	2	1	2	1	..	25
Epsom Road District ..	360	1,591	6	2	..	6	..	..	14
Mount Albert Road District	2,450	3,583	11	3	5	9	2	..	30
Mount Roskill Road District	4,650	883	..	..	2	..	..	..	2
Mount Wellington Road District	..	1,084	1	1	..	3	1	..	6
One-tree Hill Road District	6,030	1,915	3	2	2	..	2	..	9
Point Chevalier Road District	1,200	902	2	..	..	1	..	..	3
Remuera Road District ..	2,520	3,082	4	4	4	2	..	..	14
Tamaki West Road District	..	415	..	..	..	1	..	..	1
	Sq. miles.								
Bay of Islands County ..	826	2,692	6	..	..	2	..	..	8
Coromandel County ..	403	2,841	3	21	3	..	..	..	27
Hobson County	688	5,424	..	1	..	1	1	..	3
Hokianga County ..	972	2,514	5	..	..	3	..	..	8
Kawhia County	373	688	..	..	..	1	..	..	1
Manukau County ..	791	13,480	1	13	19	6	7	..	46
Mangonui County ..	934	2,801	1	..	..	1	1	..	3
Marsden County ..	..	..	..	..	..	..	..	..	..
Ohinemuri County ..	478	5,895	5	10	6	2	2	..	25
Otamatea County ..	364	2,921	..	..	..	1	..	..	1
Piako County	1,095	3,761	1	13	..	6	1	..	21
Raglan County	824	2,282	4	..	..	1	2	..	7
Rodney County	566	4,185	..	8	..	3	..	..	11
Rotorua County ..	984	2,657	11	..	2	10	1	..	24
Thames County	494	4,286	7	8	3	8	..	..	26
Tauranga County ..	577	1,999	6	1	..	1	..	..	8
Waikato County	591	4,532	5	8	3	4	1	..	21
Waipa County	282	4,849	14	11	3	3	..	..	31
Waitemata County ..	613	7,949	12	7	4	9	2	..	34
Waitomo County ..	1,604	1,226	1	..	..	2	..	..	3
West Taupo County ..	1,594	1,397	..	..	..	2	..	..	2
Whakatane County ..	1,716	1,015	9	1	..	15	1	..	26
Whangarei County ..	928	7,306	2	1	..	6	..	..	9
Whangaroa County ..	160	801	..	..	3	..	..	..	3
	Acres.								
Cambridge Borough ..	1,083	1,244	1	5	..	1	..	..	7
Hamilton Borough ..	1,600	2,150	27	2	4	9	1	..	43
Te Aroha Borough ..	200	1,109	1	..	..	1	1	..	3
Thames Borough ..	2,560	3,750	18	9	2	1	1	..	31
Waihi Borough	3,130	5,594	8	6	1	2	2	..	19
Shipping	..	..	6	..	..	3	..	..	9
Auckland Hospital ..	..	..	3	4	3	..	1	..	11
Mental Hospital ..	..	..	2	..	..	1	..	..	3
Gaol	..	..	..	..	..	1	..	..	1
Total	..	..	353	277	165	198	76	2	1,071
City of Auckland ..	..	..	88	70	43	47	34	2	284
Suburban boroughs ..	..	..	59	59	51	19	10	..	198
Suburban road districts ..	..	..	47	19	15	26	7	..	114
Country districts ..	..	..	148	125	53	101	24	..	451
Auckland Hospital ..	..	..	3	4	3	..	1	..	11
Mental Hospital ..	..	..	2	..	..	1	..	..	3
Gaol	..	..	..	..	..	1	..	..	1
Shipping—from overseas ..	..	..	6	..	..	3	..	..	9
Total	..	..	353	277	165	198	76	2	1,071

Monthly Table of Same Notifications.

—	Enteric Fever.	Scarlet Fever.	Diphtheria.	Tuberculosis.	Blood-poisoning.	Plague.	Total.
1907.							
April	25	35	30	9	1	..	100
May	24	31	25	8	7	2	97
June	14	14	24	13	4	..	69
July	8	28	16	6	7	..	65
August	4	26	11	11	5	..	57
September	23	22	11	19	11	..	86
October	7	19	9	39	7	..	81
November	12	24	5	24	8	..	73
December	22	10	4	21	6	..	63
1908.							
January	58	9	6	15	5	..	93
February	77	36	9	21	6	..	149
March	79	23	15	12	9	..	138
Total	353	277	165	198	76	2	1,071

Rainfall and Temperature, 1907–8.

—	Rainfall.		Temperature.	
	1907–8.	Average of Previous Years.	1907–8.	Average of Previous Years.
1907.	In.	In.	Deg.	Deg.
April	2·94	3·15	63·3	61·5
May	3·97	4·21	55·5	57·2
June	3·61	4·83	52·4	53·9
July	6·33	4·86	51·1	52·0
August	6·44	4·22	52·3	52·4
September ..	5·42	3·39	53·4	54·8
October	5·02	3·35	56·7	57·0
November ..	1·09	3·23	62·6	60·4
December ..	5·15	2·64	66·7	62·4
1908.				
January ..	0·45	2·69	67·4	67·1
February ..	0·54	3·52	67·5	67·4
March	8·12	2·51	65·5	64·3
	49·08	42·60	59·5	59·2

Aspersions have been made on the climate of Auckland as to "hot and muggy weather." Observations do not bear this out. After residing a year in Auckland I have come to the conclusion that the climate is excellent. The appearance of the school-children as illustrated by, for example, the boys of King's College in their hygienic costume, or by a visit to the school-cadet camp certainly negatives a contrary opinion. The fact that in athletics the young men and women of this district not only hold their own, but are at present ahead of any other part of the Dominion, is also confirmatory evidence. When medical inspection of schools becomes general I think that the anthropometric measurements of the children of the northern half of the North Island will compare with those of any other portion of the Empire.

Enteric Fever.

The notifications of cases of enteric fever recorded throughout the health district for the past five years have been—1903–4, 231; 1904–5, 180; 1905–6, 172; 1906–7, 153; 1907–8, 353.

The increase during the year, compared with the numbers of the previous year, is distributed as follows:—

	1906–7.	1907–8.	Increase.
Auckland City	27	88	61
Suburban boroughs	13	59	46
Suburban road districts	18	47	29
Country districts	93	148	55
Hospitals and shipping	2	11	9
			200

Two areas which have largely contributed to the total are Newmarket, the smallest borough as to area, and Eden Terrace, the smallest road district. In the former the incidence has been 23 cases; in the latter 19 cases.

Of the country districts the increase has been chiefly experienced in Hamilton Borough, Waipa and Waitemata Counties; while in all eighteen counties have been affected, against twelve in the previous year.

Admissions to Hospital.—During the year 126 cases of enteric fever were admitted to the General Hospital, Auckland. Of these, at the end of the year (31st March, 1908), 37 had been discharged, 19 had died, and 70 remained in that institution. This gives a death-rate of 15·07. Dr. Inglis, Chairman of the honorary staff of the Auckland Hospital, reports that the majority of the cases have been of a severe type.

Scarlet Fever.

The notifications for the last five years are—1903–4, 367; 1904–5, 273; 1905–6, 240; 1906–7, 268; 1907–8, 277.

The increase during the year is distributed as follows:—

	1906–7.	1907–8.	Increase or Decrease.
Auckland City	98	70	– 28
Suburban boroughs	67	59	– 8
Suburban road districts	35	19	– 16
Country districts	66	125	+ 59
Hospital and shipping	2	4	+ 2
Increase			9

Though Auckland City shows a large decrease compared with the previous year, the decrease for the province is only 12 below that of the average of the previous five years.

The localities suffering most in the country districts, as compared with the previous year, are Coromandel, Manukau, Ohinemuri, Piako, Waikato, and Waipa Counties, with Thames County and Borough, while Cambridge Borough has, unfortunately, had 5 cases. The epidemic prevailing in Hamilton during several years has been reduced to 2 cases, and in Waihi the cases have been reduced from 13 in 1906–7 to 6 last year. Of the 13 cases set against Manukau County 6 occurred in one family at Drury, otherwise the numbers are not unusual. Of the 21 cases set down to Coromandel County 17 occurred at Mercury Bay. The 10 cases of scarlet fever in Ohinemuri County occurred within the area of some twelve by four miles, extending from Paeroa to Waikino, in which it was noted in last year's report that some 16 cases of diphtheria had been notified.

As has been observed in Great Britain, little benefit in checking the spread of scarlet fever has occurred from isolation in hospital, owing to the incidence of return cases. Except where a milk or food supply or a hotel or boardinghouse is concerned, removal to hospital is not encouraged.

With regard to scarlet fever, although the type in New Zealand appears less virulent than in England, it is a more serious disease even than measles, assuming that the latter is not treated, as often happens, as a trivial complaint. The consensus of expert medical opinion now is that the infectiousness of such cases before the child vomits or the rash appears is overrated. A child without other symptoms, but with the rash just appearing, is not very infectious; where, however, there is any suspicion of scarlet fever instructions have been given that any child who vomits at school should be sent home at once, the room should be cleared of children for the day, the ejected matter promptly removed, and strong disinfectants used, as it is unsafe to regard this material as other than a source of contagion. "Peeling," contrary to what used to be taught, is now known not to be particularly dangerous, as the result of bacteriological research. The really dangerous "carrier" cases are convalescents with suppuration or catarrh of the ear or nose. It is for this reason that no child who has been in an infectious-diseases hospital should return to school for at least a fortnight after discharge. In some countries where school hygiene has been highly specialised it is necessary to produce certificates showing that a bacteriological examination has proved negative before the child returns to school. With regard to scarlet fever, my experience in Auckland goes to show that except where patients reside in hotels, boarding-houses, or are associated with the sale of milk or other foods, there is little to be gained by sending these cases to an isolation hospital.

Diphtheria.

The notifications for the last five years are—1903–4, 71; 1904–5, 63; 1905–6, 97; 1906–7, 103; 1907–8, 165.

The increase during the year is distributed as follows:—

	1906–7.	1907–8.	Increase or Decrease.
Auckland City	20	43	+ 23
Suburban boroughs	33	51	+ 18
Suburban road districts	12	15	+ 3
Country districts	35	53	+ 18
Hospital	3	3	...
Increase			62

Auckland City, Devonport, Mount Eden, Onehunga (11 cases, against nil last year), Eden Terrace, Mount Albert, Remuera, Coromandel County, Manukau County, Rodney County are localities chiefly responsible for the increase, though various other portions of the health district contribute their quota. Of the 19 cases in Manukau County, 13 lay within an area of some five square miles, a triangle lying between Pokeno, Paparata, and Pukekohe. Noticeable decreases are observable in Grey Lynn, Parnell, and Whangarei (from 7 cases to nil).

Domestic pets, more especially cats, are carriers of the disease. In one street in Auckland two cases in all probability arose from a cat having become infected and having introduced the disease to a household.

Tuberculosis.

The cases notified for the five years are—1903–4, 92; 1904–5, 86; 1905–6, 86; 1906–7, 96; 1907–8, 198.

As has been remarked in reports from this office in previous years, notifications of this disease are an imperfect indication of its prevalence, and perhaps the increase this year is due almost entirely to more perfect notification. Lack of accommodation has nullified to some extent the benefits of compulsory notification. The various Hospital Boards in the district, however, now have either provided, or are at present providing, consumptive annexes. Thanks to the initiative of the Auckland Hospital Board, and the willing work of Dr. King and Mr. Bannerman, the medical attendant and manager of the Costley Home, shelters have been erected there to accommodate twenty-four cases. The opening of the Karere Tree-planting Camp provided a home for six Auckland cases which had improved at Te Waikato Sanatorium.

Blood-poisoning.

Cases notified during the past five years are—1903–4, 21; 1904–5, 16; 1905–6, 15; 1906–7, 19; 1907–8, 76.

The increases over last year are,—

	1906–7.	1907–8.	Increase or Decrease.
Auckland City	4	34	+ 30
Suburban boroughs	5	10	+ 5
Suburban road districts	1	7	+ 6
Country districts	9	24	+ 15
Hospital		1	+ 1
Increase			57

Noticeable increases have occurred in Auckland, Devonport, and Manukau, while cases have been distributed over almost the whole of the district. This increase may in some measure be attributed to the stringent measures taken to enforce notification.

The 76 cases reported are to be classified thus:—

Septicæmia (unclassified)	23
Erysipelas	23
Tetanus	7
Puerperal	23
	76

Only 3 cases of puerperal septicæmia were reported in 1906–7.

Septicæmia.—Septicæmia, erysipelas, and puerperal fever may all be classed as preventable or "dirt" diseases. They originate from specific micro-organisms which enter the body either by abrasions, wounds, or contact with mucous membranes. People whose resisting-power has been lowered through living under insanitary conditions, from accident, or women after parturition, are especially prone to these diseases unless minute attention is given to scrupulous cleanliness and the details of disinfection.

To attempt in some measure to prevent the spread of infection, all registered midwives in attendance on such cases have been suspended, whilst monthly nurses have been prohiibited from practice for one month by arrangement with the Inspector-General of Hospitals. Although no doubt such a seemingly arbitrary proceeding may in some cases appear severe, more especially where the nurse was in no way to blame, yet, in the interests of lying-in women, this precaution was deemed necessary. In Johannesburg even more drastic precautions were taken. "In all notified cases *the hands* of midwives or other female attendants were as far as possible disinfected in the presence of the Inspector, by cutting and cleaning the nails, soaking the hands in ether after a preliminary wash, then scrubbing vigorously with yellow soap and very hot water for five to ten minutes, and finally soaking in 1 to 200 of izal or cyllin for five minutes. Clothing and other possibly contaminated articles were also disinfected, and the persons in question were required to bathe." In Auckland some midwives have voluntarily brought their baskets or kits for disinfection.

The occurrence of a case of puerperal fever is often a source of considerable loss to a medical practitioner, owing to his occasionally having to give up all further obstetric work for a period varying according to the conscientiousness of the individual.

Tetanus.—The occurrence of seven cases of tetanus, all fatal, and all with one exception associated with cuts received by barefooted children playing on the seashore, suggests that parents would be well advised to provide children with sandals. Although the practice of going barefooted is to be commended from a hygienic standpoint, in localities where there is a danger of the feet being injured by broken glass or a rusty nail, as, for example, at Onehunga, where cases are most frequent, abrasions and slight wounds should be carefully and aseptically treated.

Plague.

Auckland, being the nearest port to Sydney, San Francisco, Calcutta, and other centres of infection, is the most likely point of entrance to the Dominion. During the past seven years sporadic cases have occurred, all, strange to say, with one exception, within a short radius of the last focus of infection—Lower Queen Street, at a short distance from the chief wharf of the harbour.

The last outbreak, in which two young women died within three days with symptoms clinically similar, and *post-mortem* appearances identical—typical cases of bubonic plague of the septicæmic type—came like a thunderclap on the community. The fact that both patients were employed in the same building, one occupying a position on the floor almost immediately above the other, the finding of a rat which had died from natural plague in the same building, the grossly filthy condition of the cellars, and the unaccountable accumulation of dirt and rags under the floors of the topmost room, the prompt and drastic measures taken to curtail the outbreak entailing considerable hardship on a large number of citizens, all combined to arouse public interest to fever-pitch. In all countries where plague has broken out the first great difficulty has been to convince the public that the disease was really and truly one of Oriental bubonic plague. Fortunately, as far as diagnosis was concerned, there was not a vestige of doubt in either of these cases, the *Bacillus pestis* being easily demonstrated in each of the numerous specimens examined, combined with the cultural and biological tests being positive. Smears of blood from the heart, spleen, and kidneys all showed the typical cocco-baccillus with bipolar staining. A guinea-pig inoculated with cultures taken from the first case died of plague, so in the second case a guinea-pig similarly inoculated also died of plague.

Both patients were residents of Parnell, Dr. Ferguson being the medical attendant in each case. That he should, together with Dr. Lindsay, who was called in consultation in the first case, but arrived just after death, have suggested bubonic plague as the cause of death, more especially in the first case, showed considerable clinical acumen.

It is interesting to note that during the same week as the two fatal cases occurred in Auckland there was an outbreak of plague among rats on a coastal steamer carrying bonedust transhipped from a ship recently arrived at Auckland from Calcutta.

The results of the Commission of Investigation in India having now definitely proved that plague is carried from rat to rat, and from rat to man, by the flea, it is now possible to concentrate preventive measures against rats and fleas. With regard to the latter, the whole building in which the cases occurred in Auckland, after disinfection with corrosive sublimate, was swabbed out with kerosene.

The following extract from a letter by Dr. Turner, Executive Medical Officer, Bombay Municipality, in answer to a query as to the results obtained there by the use of "Pesterine," a bye-product in the destructive distillation of petroleum, is of interest:—

"We are using 'Pesterine' freely in Bombay, and killing rats. Whether it is the 'Pesterine,' the rat-killing, or both I can't say, but this is the mildest epidemic we have had. During the past three months we have killed 90,000 rats, and 9,850 have been infected. We use 'Pesterine' in the places after infected rats are found and plague cases occur, and also in collections of water, and privies, and stables."

I am firmly convinced from experience in Natal, Egypt, and more recently in New Zealand, as well as by experimental proof, that in petroleum we have an effective material for preventing fleas becoming a pest in houses. I have not, however, found it a panacea for all insect pests. In attempting to clear a vessel of the Northern Steamship Company of cockroaches, not only petroleum, but also benzine, strychnine, creolin, turpentine, and other insecticides were found of little use. Mr. Pruden, of Tauranga, however, succeeded in a few days in clearing the vessel of all cockroaches by means of Pruden's Cockroach-exterminator. This substance is effective in killing cockroaches within thirty-six hours of contact. In Auckland a vigorous crusade has been carried out against rats, both the Harbour Board and City Council entering heartily into the work. Culture of Danysz' bacillus were not found of any use as a means of exterminating rats. Common-sense Rat-exterminator, a preparation hailing from Toronto, however, has been an unqualified success. Extensive trials were made at the Quarantine Station at Motuihi. The officer in charge reports that he speedily cleared all rats from the vicinity of the buildings. Our progressive Harbour Board, by the reconstruction of the wharves in ferro-concrete and the making of stores and warehouses rat-proof, together with the disappearance of many old dilapidated buildings. has greatly mitigated the nuisance from this pest.

An organized crusade by the City Council, assisted by the Chamber of Commerce and other interested local organizations, would go far to assist in clearing the rats out of the town—a consummation devoutly to be wished for economic reasons, apart from their potential source of danger as carriers of disease.

Action taken under the Midwives Act.

Owing to their having been in attendance upon midwifery cases where puerperal septicæmia has supervened, I have issued eleven orders of suspension from attendance upon other cases for a period of one month.

BUILDINGS CONDEMNED AS INSANITARY OR ORDERED TO BE IMPROVED.

Auckland.

Portion of stable, premises occupied as living-place by man, wife, and child, ordered not to be so occupied.
No. 38, Vincent Street: Outbuilding ordered to be renewed.
No. 236, Karangahape Road: Alterations to outbuildings ordered.
Cook Street: Whole street of houses demolished.
Sheds on wharf: Flooring, &c., removed and renewed.
Fish-market: Demolition.
Boardinghouse, Wyndham Street: Eventually demolished.
33 College Hill: Extensive repairs.
Fish-curing establishment: Condemned and demolished.
Pickle-factory, Freeman's Bay: Vacated under alternative of condemnation.
Shirt-factory, Chancery Street: The same.
Butcher's shop, Symonds Street: Condemned, and re-erected in brick.
Baker Street: Structural improvements ordered.
42 Alexandra Street: Stable; case contested, and taken by City Council before Magistrate; demolition.
Shed, &c., Hobson Street: Demolished.
Part of 186 Victoria Street: Condemned; whole area renovated.
Shed at rear of 26, Sale Street: Removed.
Old dwellinghouse, 154 Victoria Street: Removed.
17 Baker Street: Structural alterations.
Restaurant, Durham Street: Demolished on a three-weeks' notice.
Corner Middle and Spring Streets: Structural alterations.

Newmarket.

Lean-to, Manukau Road: Demolished.
Old shed and privy: Demolished.
Stable: Demolished.
Shed: Demolished.
Stables: Eventually rebuilt after requisition for improvement.
Two shops in main street rebuilt by agreement with owner.

Mount Albert.

House, Elizabeth Street: Ordered to be vacated until locality was sufficiently drained to allow reoccupation. The Road Board refused building-permits over a considerable area at one time under water.

Mount Eden.

House, Mount Eden Road: Generally insanitary, and, after infection by tubercle, demolished.

In addition to the foregoing, substantial repairs and improvements have been effected to numerous properties where the circumstances did not appear to warrant actual demolition. This applies to residences, stables, outbuildings, restaurants, shops, and factories, as well as to lodging-houses, in respect to which I have hesitated to take extreme measures owing to the danger attending casting the inmates upon the streets. Legislation to deal with common lodginghouses is much needed. At the present time the regulations are evaded by the inmates being weekly tenants.

Some of the matters referred to have been effected in conjunction with the Inspector of Factories, with whom I have made frequent inspection of shops and factories, and have paid much attention to their location, construction, sanitary arrangement, and ventilation. Several cases of overcrowding have been dealt with by declaring the existence of a nuisance arising therefrom. In all cases the condemnatory notices have been carried out on the order of the local authority. In only one case was it necessary to have resort to the Police Court in order to carry out the demolition.

As to the effects of occupation, with the exception of a few cases of miners' phthisis on the goldfields, I have not come across any diseases due to occupation. Not so, lack of it. Whilst a certain section of the community has earned leisure by a life of labour, a smaller section has not yet begun to do so. A few of those occasionally go in for an open-air lodging in the parks. The opening of Bell's Island as a retreat for inebriates has removed a few who were victims to alcoholism. A course of work would improve both classes.

There has not been found, fortunately, any demand for sandwichmen in Auckland since exception was taken to this degrading kind of employment.

PROSECUTIONS UNDER THE PUBLIC HEALTH AND ALLIED ACTS.

Final Hearing.	Defendant.	*Re.*	Results.
September 30, 1907 ..	Dr. P. ..	Non-notification of infectious disease	Fined £7, and costs.
„ 30, „ ..	Mrs. H. ..	Being in charge of patient suffering from infectious disease, not informing owner of nature thereof	Convicted (costs remitted).
October 7, 1907 ..	T. Q. ..	Premises of which he was occupier being in insanitary condition	Fined £5, and costs.
November 2, 1907 ..	H. (Limited)	Dirty and insanitary premises	Fined £2, and costs.
February 7, 1908 ..	M. G. ..	Falsely representing himself to be a qualified medical practitioner	Fined £30, and costs.
		Selling poison—ergot, to wit—without being a registered chemist, &c.	Fined £10, and costs.

In addition to the prosecutions directly instituted by the Department, evidence was provided by Inspector Grieve and myself during the hearing of cases brought by the Department of Agriculture in connection with the condition of dairies and the milk-supply. The officials of the two Departments have been able to co-operate in improving the milk-supply. Together with Chief Inspector Haynes, of the City Council, and Inspector Grieve, of our Department, I made an inspection of the milk-shops and dairies in the city. A few premises declared unsuitable for the sale of milk had their licenses withdrawn. In others alterations and improvements were made. Speaking generally, the milk-supply of Auckland will compare favourably with that of other centres. The new regulations adopted by Onehunga are perhaps as up to date as any in vogue in any part of the world. A noticeable feature is the prohibition of any person suffering from any skin or loathsome disease being allowed to handle milk for purposes of sale. The diseases of syphilis and itch are specifically mentioned in the regulations, probably for the first time in any sanitary regulations, with the exception of the New Zealand Quarantine Regulations and the old Contagious Diseases Act.

EXAMINATION OF OFFICERS FOR PUBLIC DEPARTMENTS.

In all 20 officers have been examined on behalf of Public Departments—for the Post Office, 12; Public Works Department, 6; Police, 1; Registrar of Medical Practitioners, 1. In some cases repeated examinations of these officers were made.

The allocation of claims for compensation through alleged accidents contracted whilst in Government employ entails much minute examination, as well as the exercise of judgment as to the assessing of the damage to the employee as a working-unit. Although the work is interesting, it hardly falls within the province of a Medical Officer of Health. The examination of cadets for the Post and Telegraph service might also be more efficiently carried out by a medical man attached to that Department. The allocation of sickness-leave, in my opinion, should also devolve upon a medical man specially allotted for this work.

LECTURES.

In addition to numerous addresses made to local authorities, Hospital Boards, Native Conferences, meetings of inhabitants in rural districts, Farmers' Association (*re* Milk Regulations), the following lectures have been given:—

Nil Desperandum Lodge, Foresters: "The Economic Aspect of Sanitation."
Maori Conference: "Work, the Salvation of the Maori."
At Leys Institute: "The *Rôle* of Insects as Carriers of Disease."
Two lectures at the Drill-hall on "Military Hygiene."
Two addresses to the Native Sanitary Inspectors.
Young Men's Christian Association: "Bible and Sanitation"; delivered at my request by Mr. Symons, District Clerk.
Mass-meetings at Taumarunui, Te Kuiti, and Hikurangi.
Addresses on cremation to Liberal and Labour Federation, and Trades and Labour Council.
Liberal and Labour Federation: "Infant-life Protection."
Meeting of milk-vendors addressed by Dr. Mason, Chief Health Officer.
Conference with medical practitioners and teachers on medical inspection of schools.
Conference with Master Hairdressers' Association and Chief Health Officer.
Conference with Auckland Chamber of Commerce and Chief Health Officer: The sale of Food and Drugs Act.

LOCAL SANITATION.

Onehunga.—Together with Dr. Makgill, I attended the meeting of ratepayers *re* the extension of a water-supply, and am pleased to report that the vote was carried. Mr. Midgley Taylor, having been requested to report on the drainage scheme formulated by Mr. Metcalfe, strongly urged the inauguration of the work.

Whangarei.—This Council has approved the principle of the introduction of a comprehensive drainage scheme, and will submit it to the ratepayers.

Otahuhu.—Must introduce a water-supply to cope with the influx of settlers.

Northcote has installed a water-supply, and with an old and tried servant as its first Mayor and a zealous Corporation is at present drawing up by-laws.

Hamilton.—The Council obtained a loan of £2,000 to extend their sewerage system. There was much discussion *re* the discharge of an effluent from the Hospital septic tank into the Waikato River.

Cambridge.—This town maintains its good record, the progressive policy of the Council being justified by results.

Thames.—This is, in my opinion, as regards progressive sanitation, the most painstaking authority. Much improvement has resulted from their work in demolishing old property and by the introduction of the excellent water-tables for drainage.

Waihi.—This town has not yet seriously considered the introduction of a water-carriage system of sewerage-disposal; otherwise progress is satisfactory for a new district.

Tauranga.—The cost of the introduction of a water-supply is the only deterrent to progress in sanitary matters.

Te Aroha.—A water-carriage system is a necessity here in order that tourists may be encouraged to visit this health resort.

Te Kuiti.—This town, which is progressing faster than any other settlement in the province, only suffers from the want of local government and the means of raising funds for sanitary purposes. The Waitomo County Council, however, has established a nightsoil service.

Hikurangi.—Nightsoil service being introduced.

Queen Street, Auckland: Scavenging.—Owing to my representations regarding the accumulation of horse-manure at the cab-stand and about the entrance to the railway-station in Lower Queen Street, the City Engineer has arranged with the cabmen in front of the railway-station to provide a box in which to keep a broom and shovel for their use, and they in their turn undertake to keep their stand clean and tidy. The Railway Engineer has granted tentative permission to keep the box inside the railway-station enclosure, so that it will be well out of sight.

General Sanitation.

Nightsoil-removal.

Nightsoil-removal is a troublesome problem to most of the authorities The city, however, has a fairly up-to-date method of removal by barges to Harkins Point. The introduction of the sealed-pan system under the supervision of the City Engineer has been a distinct improvement. The pans are washed before they return to the city. The dipping of the pans in boiling creosote would still further reduce the dangers of the pan system. According to Dr. Porter, Medical Officer of Health, Johannesburg, "The boiling creosote acts not merely as a thermal and chemical disinfectant, but forms a coating on the buckets which covers and imprisons infected material remaining there after washing, and is also apparently obnoxious to flies—a most important point. The inclusive cost of washing and creosoting is 3s. 8½d. per 100 buckets."

Water-carriage System.

The only areas in which this has been completely introduced are Devonport and Parnell, both of which stand out as object-lessons of the superiority of this system in urban districts as instanced by their freedom from typhoid fever.

Disposal of Refuse.

The introduction of galvanised-iron pans with lids in the city has marked a much-needed improvement. Outside authorities which avail themselves of the use of the city destructor have also adopted these in principle if not in fact. Those which have no organized system of removal and disposal naturally suffer through the dumping of the refuse into vacant allotments in their own or some-one-else's area. A special cart with a penthouse roof with a hinged top in sections would be an improvement.

Disposal of Fish-offal.

This question has been a difficult one to solve owing to the refusal of the use of the city destructor. In inquiring as to the method of disposal in other countries, information has been obtained through the courtesy of the Town Clerks of cities in Australia and South Africa.

In Cape Town the offal is carted out to sand-flats and buried eight miles from the town. The experiment, however, is now being tried by taking it out to sea.

At East London the offal is taken to sea in the trawlers and put overboard outside the three-mile limit.

At Durban, condemned fish and offal is passed through the city destructor, as much as 5 tons having been passed through in one day.

At Port Elizabeth, where some years ago the Tramway Company damaged their furnace by attempting to burn the city fish-offal, resort has been had to burial.

In Brisbane the fish-shops are supplied with pans—nightsoil-pans, as a matter of fact—in which the offal is placed pending removal, which takes place every night per medium of the sanitary wagons; the full pans are hermetically sealed for removal, and clean pans left in lieu thereof. The contents of the pans are deposited in the Pacific Ocean along with all the other city refuse and nightsoil, about sixty miles from Brisbane, the steamer making a daily trip for the purpose.

In Perth, Western Australia, the offal is carted to the Horsfall destructor, and destroyed there.

In Adelaide, the offal is taken from the fish-market for the purposes of manuring fruit-trees, lucerne, &c.

In Melbourne fish used to be treated at the destructor. Recently, however, condemned fish has been sold to one of the local manure-manufacturers.

In Auckland, after the use of the city destructor for the disposal of fish-offal was prohibited, an unsuccessful attempt was made to dump fish-offal in the harbour. Objections were then raised in one district to the burial of the offal on land. Much of the offal has, however, proved a valuable

source of manure, although the cost of transit has been considerable. I was present when some tins were tipped overboard outside the area controlled by the Harbour Board, and can testify to the rapid disappearance of the offal. A few minutes after it was thrown overboard it would have been difficult to locate the place. It is a pity, however, that such a valuable manure should be lost, although, no doubt, outside the harbour it is largely eaten up by fish and sea-birds. It is gradually being recognised that the removal of refuse and excreta should be left neither to private initiative or to a contractor. Municipal control is the correct solution. According to Colonel Morse, sanitary engineer, New York, "The inherent mischief of the contract system is mainly that, being awarded in competition, the successful competitor is often compelled to work at a small margin of profit, giving poor services, causing complaint to be general and annoyance constant." In Auckland nightsoil-removal at least has proved to be a profitable undertaking when land was available at a convenient distance. Many of the present complaints, more especially from suburban residents, would be removed by the local authorities combining to take over the removal of all nightsoil. The repeated outbreaks of typhoid fever in Auckland and suburbs, whilst calling for the instant abolition of all wooden receptacles in certain, at one time notoriously, insanitary areas outside the city, cannot be kept under control until a separate system is introduced for the removal and treatment of the excreta from all infected houses. I have little doubt that flies were the main factors in disseminating this disease, more especially in Newmarket, the first focus of infection.

Disinfection.

The City Council has followed the good example of Grey Lynn in abolishing all charges for disinfection.

Formalin lamps and sprays are now generally used by the local authorities. The principle of steam disinfection has been so far indorsed as to have justified specifications for a Washington Lyon apparatus being cabled from England. Two City Councillors, members of the Hospital Conference, also returned from Wellington advocates of this method of disinfection. Unfortunately, provision for such does not appear on the estimates of the City Council. Space should at least be marked off for the erection in the future of a disinfector near the new morgue, as one caretaker would do for both.

House-to-house Inspection.

By request, all the Auckland local authorities instituted a house-to-house inspection during the plague scare. Those undertaken directly by our Department revealed the necessity for an organized system of inspection. The introduction of the "card system," with a card allotted to each house, filed in streets, makes a record which can be consulted at any time. Without a system of regular house-to-house inspection there is no continuity in sanitary administration, and always lack of supervision.

Military.

The Easter manœuvres passed off without any outbreak of disease. The waters of Fort Bastion and the other forts were examined, and, where necessary, improvements made.

The school-cadet camp at Papakura was a model sanitary camp. Shallow latrines are now becoming general. The teachings of the Chief Health Officer in this respect are being generally followed.

Offensive and Allied Trades.

Westfield Chemical Manure Works: Better system of ventilation introduced.

Two fish-curing establishments were removed from the city.

Cemeteries.

St. Mark's, Remuera: A report was made on this well-kept cemetery, with a recommendation that it be closed for further burials owing to close proximity to a residential area.

I was present at the exhumations necessitated by the erection of the Symonds Street Cemetery Bridge. Little remained of any of the skeletons. Although, as president of the local society, strenuously advocating cremation, I recognise that superficial earth burial is not objectionable from a hygienic standpoint if there is no question of contamination of a water-supply or the air of dwellinghouses built on adjoining ground. The action of the City Council in closing Symonds Street Cemetery is to be commended. No doubt before the close of the century this area will no longer be given up to the dead.

Public Buildings.

Magistrate's Court: At the request of the Stipendiary Magistrate this building was fumigated and some improvements in ventilation introduced.

The Telephone Exchange: Separate transmitters were allotted to each operator.

Our own offices have been much improved.

Lodging-houses.

Midnight inspections to find out whether the occupants were "tenants for the night and strangers to each other," or weekly and so not within the scope of the regulations, were the means of abolishing three ramshackle residences which had existed too long. Others applied for licenses, and after complying with the regulations some were granted, others were not. In the interests of commercial travellers and tourists, more especially in prohibition districts such as the King-country, regulations for boardinghouses are much required.

Ambulance.

An effort was made without success to induce the Hospital Board to take over the ambulance service. Nurses are now provided, however, to accompany special cases in the ambulance.

Maori Hygiene.

Opportunity has been taken to co-operate with Dr. Buck in his interesting and useful work among the Maori people. Inspections were made, together with the Matron of the Te Waikato Sanatorium and the Native Health Officer, of the Maori whares at Whakarewarewa and Ohinemutu, in order to award the prizes given by the Mayor of Auckland, the Health Department, and Mr. Leo Buller. Her Excellency Lady Plunket took an interest in this work, presenting certificates to the prize-winners. Dr. Pomare and I toured through the Bay of Islands, visiting Native schools and pas.

Open Spaces.

Newmarket initiated in this district the movement to remove the railings round open spaces. Sanitary conveniences are provided in the numerous Auckland parks.

Quarantine.

Thirteen ships were visited at the request of the Port Health Officer. In no case was it necessary to institute quarantine. An outbreak of measles on the N.Z.S. "Amokura" was met by the isolation of three cases in the Auckland Hospital, and the subsequent landing of four cases at Motuihi, where the ship was disinfected and painted.

Infant-life Protection.

Auckland has been fortunate in having been the centre of a crusade to introduce a better system of artifically rearing children, the mothers of whom were unable to bring them up on the breast. Her Excellency Lady Plunket and the local committee, with Mrs. Parkes as secretary, have already done much good in educating the public on this subject. The lives of children have been saved. I am confident that as a result of Nurse Chappel's work as Plunket Nurse there will be a reduction in the infant mortality.

Miss Jackson, District Agent under the Infant Life Protection Act, is doing excellent work. In a letter on her work Miss Jackson says, "I have only to say that I find naturally the great source of infant mortality is the substitution of patent foods and bottle feeding for the food which nature provides, and the substitution of the foster-mother for the natural mother with her instincts and sympathy for the child who is her own." Thus Miss Jackson, who has the supervision of the licensed homes, finds these, even when well regulated, but a poor substitute for that which unfortunately is denied to some children—a home with a mother's love and a father's care.

Mrs. Hutchinson, with an experience of twenty-seven years in Melbourne, Sydney, and Brisbane, whose work at the Door of Hope is well known in Auckland, also states, "That attention to details of cleanliness, and more especially the sterilising of feeding-bottles, prevented the loss of infant life." She thinks that the sale of bottles with tubes should be prohibited. Certainly I think the imposition of a prohibitive tariff on these death-traps would prevent their introduction into the country. The only reason why they are favoured by some mothers is that they are less trouble, and do not require holding up by the nurse. Mrs. Hutchinson's experience teaches her that a baby cannot be comfortably fed in a cradle—satisfactory bottle feeding can only be carried out with the modern boat-shaped bottle.

Closure of Schools.

As to the vexed question of closing schools owing to outbreaks of infectious disease, a subject to which much attention has been given of late years, public-health experience shows in New Zealand, as in older countries, that, with the exception of Native schools in isolated districts of the Dominion, the rules enforced by the London County Council after consultation with the Society of Medical Officers of Health, in addition to the Memorandum to the Local Government Board issued in 1904, the latest authoritative ruling on the question, are in the main applicable to the schools under the control of the Auckland Education Board.

The complement to exclusion is seclusion. The prohibition of exposure in the public way is intended to enforce the isolation of an infected individual in the house or hospital. As to the question whether an outbreak is best combated by closing the school or by excluding the children from infected households: If the cases are few and their origin known, the prompt exclusion of children from infected households often suffices in checking such diseases as diphtheria and scarlet fever. With regard to measles, however, the infective period is greatest during the pre-eruptive stage, which may last for four days before the appearance of the rash; it might seem, therefore, that my pronouncement against the closure of schools on the occurrence of measles was not advisable. Experience, however, has shown that in dealing with this disease the closure of a school has practically no effect in checking or mitigating an epidemic. Thus, in Auckland, to have closed any of the schools in which measles had broken out for a fortnight, as suggested, would have had no material effect, as in most cases the epidemic had already secured a firm hold on the children, and the opportunities for the spread of infection were so many that unless every sufferer could have been removed to an isolation hospital the risk of contracting the disease would have been minimised.

In coming to the above conclusion, evidence showed that the disease does not seem to spread unless 30 to 40 per cent. of the children have not previously suffered, and it ceases to spread when only 15 to 20 per cent. remain unaffected. The age of commencing school attendance in the Dominion is also two years in excess of that in Great Britain, and the conditions of home life, speaking generally, among the working-classes are better. We have no margin of the population of this country on the verge of starvation, nor has it been necessary to invoke either private charity or State aid to feed the children. School-teachers have unequalled opportunities for observation of the children under their care. It is highly desirable, especially in the absence of qualified medical attendants, that they should be acquainted with the early signs and symptoms of these diseases, so that they may take immediate steps to exclude any children suspected to be suffering from an infectious disease. Most of the headmasters of the district whom I have met both in their schools and in conference seem to have knowledge in this direction, and willingly exclude all children. I would suggest, however, that we District Health Officers might give two lectures and demonstrations on this subject to each of the training classes at the chief centres during the course of the session, and that any other teachers interested be asked to attend. The lectures given to Native Sanitary Inspectors on this subject during the Maori Sanitary Conference, together with the instruction on disinfection, certainly were the means of imparting information which was speedily put to practical use.

Preventable Disease.

In reviewing the health of Auckland during the past year the feature which stands out most prominently is the unusual incidence of infectious or preventable diseases due to direct infection or as a result of insanitary environment.

With the exception of whooping-cough and influenza, at present largely beyond the control of sanitation, there has been an arithmetical progressive decline during the last three decades in the incidence of preventable disease, coincident with the development of preventive medicine, and the prompt and efficient execution of prophylactic and sanitary measures, such as disinfection, compulsory notification of infectious disease, hospital accommodation, and last but not least the awakening of the public conscience to a due appreciation of the value of health and of the facilities for its protection offered by an educated medical profession skilled in the knowledge of disease. Clinical instruction in infectious diseases and the important subjects of bacteriology and public health having now become a compulsory part of the medical curriculum, an ever-increasing power of combating these diseases is being evolved. Whilst the private medical attendant's first duty is to his patient, the next to the patient's family, it is seldom that he is wittingly remiss in his duty to the public, although this is the chief concern of the sanitary officials responsible to State and municipality.

Unfortunately, amongst the poorer classes especially, medical attendance is often restricted, for pecuniary reasons, to a brief period, ceasing with the acute stage of the disease, the subsequent but still infectious stages running their course without any skilled medical supervision or the adoption of any precautionary measures.

An expansion of the system of medical inspection of schools by having medical attendants attached to each school, whose duties would also extend to visiting the homes of those excluded from school owing to infection, in cases where there was no family practitioner in attendance, and the compulsory requirement of medical certificates before attendance could be resumed in our public schools, would, in my opinion, considerably add to our power of checking the dissemination of disease.

Diphtheria, enteric or typhoid fever, diarrhœa, and phthisis are the diseases which call for most watchfulness on the part of the sanitarian.

In addition to the seasonal curves observed in the annual prevalence of most infectious diseases in certain months, due apparently to conditions of temperature, humidity, or the movements of the ground—water favouring bacterial development—*e.g.*, of enteric fever and diarrhœa in the soil—or to those conducing to the diminished resisting-power on the part of man, now scientifically spoken of as "a lowering of the opsonic index," such as catarrhal affections of the larynx, pharynx, and bronchi, favouring infection of those tracts, there is a tendency towards a rapid increase in the virulence and fatality of a disease during the rise of an epidemic and to a diminution towards its close. There are also periodical recurrences of epidemics, especially well seen in the case of measles. The lesser curves are due to the reaccumulation of a young and susceptible population; the cause of the greater is more obscure.

Although even the most ideally administered towns are not yet immune from visitations of scarlet fever, measles, and whooping-cough, yet the high rate in the incidence of diphtheria, enteric fever, and infantile diarrhœa in Auckland is a warning that the sanitation of the district is not what it should be.

In April an outbreak of diphtheria at Devonport was traced to a camping party at Narrow Neck. From this focus the disease spread not only to the town but far afield. The schools were not closed. Had closure of schools been resorted to in the Auckland District on the occasion of outbreaks of epidemics many of the schools would seldom have been open during the winter months.

A circular and schedule embodying recommendations for dealing with outbreaks in schools allayed local opposition to the non-closure of schools. All schools affected were fumigated and thoroughly cleaned by order and at the expense of the Education Board. Wherever a water-carriage system is possible it has been introduced.

The occurrence of epidemic diseases being almost absolutely beyond the control of the headmaster, certificates indicating a fall in attendance of 10 per cent. owing to infectious disease were

granted, the staffing of schools and the salaries of teachers being based on average attendance. One hundred and twenty-five such certificates were given.

Recently a circular on the cleansing and disinfection of schools has been drawn up after a conference with the Chief Health Officer, the Architect of the Auckland Education Board, and the Director of Technical Education. A novel feature is the use of sawdust saturated with a carbolic disinfectant to lay dust before sweeping. This, with the general introduction of damp dusting and the use of oil brooms, should remove to some extent the source of infection, particulate matter in all cases.

Experiments with the Vacuum Dust-extractor showed that this machine was excellent for private houses, but the plant in Auckland was too small for public buildings.

Executive.

The clerical work during the year has more than doubled, as instanced by the number of letters having increased from 1,536 in 1906–7 to 3,524 in 1907–8. This increased work necessitated extra work on the part of the staff, none of whom have spared themselves.

In my monthly report for May I made special reference to the enormous amount of additional work imposed upon all the officials of the Department during the outbreak of plague. I am pleased to say that the members of the staff all evince enthusiasm for their work, and are unsparing in their efforts to improve the sanitation of the district. To Mr. Symons I am indebted for the compilation of most of the details of this report. The addition of Mr. J. W. Taylor to the staff has been a boon. Mr. Symons is now able to devote more time to the compilation of statistical and graphic records as well as to laboratory work, for which he has much aptitude. Our typist, Miss Leonard, in undertaking much extra work has still further added to her usefulness as an energetic member of the staff. Inspector Grieve's work is sound. His experience as an Inspector in Durban and Kimberley, especially in the administration of the Food and Drugs Act, has been most serviceable. He has loyally assisted me in a series of midnight inspections more especially associated with common lodginghouses. In my absence he has carried out the administrative duties under the Act with acumen and success. Inspector Bennett, Hamilton, has shown much initiative and resource, backed up by unflagging energy. Inspector Franklin's special knowledge of plumbing has been most serviceable at the Thames. Inspector Winstanley has given such satisfaction at Whangarei as to have obtained a request for his services from the local authority.

As a result of your efforts as Chief Health Officer to bring the inspection by local authorities more into line with our work, I am pleased to record that Cambridge, Hamilton, Frankton, Whangarei, Te Kuiti, Taumarunui, and Newcastle have asked our Inspectors to take over the duties of local inspector.

Reports are appended from Mr. Symons, District Clerk, and Inspectors Bennett, Franklin, Grieve, Middleton, and Winstanley.

In view of the Auckland Drainage Bill being introduced during the coming session, a special report has been added on the incidence of typhoid in Auckland, and the question of sewage-disposal in the Auckland Harbour.

In conclusion, I have to thank you, sir, for much assistance and advice not only during the past year as District Health Officer, Auckland, but also for having first imbued me with a desire to take up so interesting a branch of our profession as that of preventive medicine.

I have, &c.,

J. S. Purdy, M.D., C.M. (Aberd.), D.P.H. (Camb.).

Dr. Mason, Chief Health Officer, Wellington.

Department of Public Health, District Office, Auckland, 31st March, 1908.

Dr. J. S. Purdy, District Health Officer.

I have the honour to submit a summary of the work done in the office and laboratory.

Office Work.

As had to be expected, the Department's work of past years, with its better appreciation by the public as years roll on, evidenced during the past year by numerous applications for assistance and advice, largely increased every portion of the work of the office staff, involving the despatch of 3,524 letters outward and of 747 telegrams; the issue of 232 orders for admission to the hospital for infectious diseases; the examination and allocation of 53 applications for admission to Te Waikato Sanatorium; 797 notices in regard to cases of infectious diseases have been sent to local authorities; 497 tubes of vaccine lymph have been distributed to medical practitioners and public vaccinators; of memoranda, circulars, and cards, considerable numbers have been despatched. In addition, 121 requests to supply drugs and medicines to Native schools have been received, and the goods ordered from the suppliers.

Laboratory.

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

Number of Specimens.	Nature.	Suspected condition.	Result of Examination or Disposal.
76	Sputum	Tubercular	Positive.
99	,, ...	,, ...	Negative.
23	,, ...	,, ...	Pneumococci.
15	Urine	General abnormality ..	As reported.
2	,, ...	Pus	One positive.
3	,, ...	Tubercular	,,
1	,, ...	Gonorrhœa	Negative.
32	Throat swabs ..	Diphtheritic	As reported.
1	Serious exudation ..	General	,,
3	Vomit	Lactic acid or Free HCl ..	,,
1	,, ...	Tubercular	Negative.
2	,, ...	Blood and HCl	As reported.
2	Pleuritic effusion ..	Tubercular	Pneumococci.
1	Fluid *ex* liver	Pus	Positive.
1	Synovial fluid ..	Tubercle	Negative.
7	Uterine scraping ..	..	As reported.
10	Blood	Enteric	,,
1	Menses	Epithelioma	Squamous epithelia.
1	Ligatures	Septic infection	Negative.
5	Pus smear and swabs ..	Gonorrhœal	Positive.
8	,, ,, ..	,, ...	Negative.
1	Douching *ex* vagina ..	Spermatozoa	,,
1	Smear	,, ...	,,
45	Excisions, various organs and tissues	General and malignancy ..	Sent to Bacteriologist, Wellington.
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In addition, numerous specimens in conection with cases of plague and suspected plague were examined, and transmitted to the Government Bacteriologist for confirmation.

Five hundred and forty-one rats were bacteriologically examined for evidence of plague; four, during the occurrence of the two fatal cases of plague in May, were positive.

H. Symons,
District Clerk.

Department of Public Health, Hamilton, 26th April, 1908.

Dr. J. S. Purdy, District Health Officer, Auckland.

I herewith submit my report and summary of inspections from the 9th October, 1907, when I took over the inspectorship for the Waikato District, to the 31st March, 1908.

Borough of Hamilton.—The introduction of the sewerage system has necessitated constant attention to the house-drainage installations, eighty of which I have inspected and tested. It is a notable fact that no case of enteric has occurred in any house under the supervision of our Department properly connected with the sewerage system. Prosecution: G. A. S., at the instance of the Department, was prosecuted for having a dirty yard—found guilty.

Borough of Cambridge.—The drainage system here has been carefully inspected, including the testing of twenty house connections.

Outskirts of the Foregoing Boroughs.—Many household-drainage works have been advised, and their installation inspected.

Raglan.—I have paid a visit of general inspection to this township. A nightsoil service is now being introduced.

Morrinsville, Frankton, and Ngaruawahia.—These townships have been approached with reference to the introduction of nightsoil services, and there is every prospect of such being installed very shortly.

Taumarunui and Te Kuiti.—Taumarunui and Te Kuiti have practically effected the installation of nightsoil services.

King-country.—Many visits of inspection have been made to settlements in the King-country, where their scattered positions entail much travelling for the amount of work accomplished. There has been a great improvement from a sanitary point of view in the settlements along the Main Trunk line.

Demonstrations and lectures, with lantern illustrations of modern sanitary requirements, have been given in the various centres.

Inspections in Connection with Infectious Diseases.

	Inspected.	Disinfected.
Enteric fever	23	14
Scarlet fever	16	11
Diphtheria	12	11
Tuberculosis	4	2

A. P. BENNETT, Inspector.

Department of Public Health, Thames, 20th May, 1908.

Dr. J. S. Purdy, District Health Officer, Auckland.

I HAVE the honour to report as follows regarding work done during the year ending the 31st March, 1908:—

Borough of Thames and District.—Condemnation orders were issued by the District Health Officer in the case of thirty-three ruinous houses in Thames Borough, and others have been extensively repaired and improved as to sanitation.

Tauranga and District.—A nightsoil service has been established in the borough.

Coromandel and District.—Three visits have been paid to this locality.

Visits for general inspection and in connection with cases of infectious disease were paid to Waihi Borough and district, Paeroa and district, and Te Aroha and district.

SUMMARY.

Infectious diseases investigated	63	General inspections	66
,, disinfected	66	Requisitions served	20
Hotels inspected	36	Offensive trades inspected	2
Boardinghouses inspected	27	Drainage and plumbing inspected	30
Butchers' shops inspected	30	Special reports prepared	4
Bakehouses inspected	21	Aerated-water factories inspected	3
Fruit-shops inspected	43	Notices served	7
Fish-shops inspected	19	,, complied with	6
Complaints received	30		

The good effects of the plumbing class are becoming noticeable in the improvement in the work done, and will be better appreciated when drainage is introduced into the towns of the district.

B. A. FRANKLIN, Inspector.

Department of Public Health, Auckland, 26th May, 1908.

Dr. J. S. Purdy, District Health Officer.

I HAVE the honour to report as follows regarding work done during the year ending the 31st March, 1908:—

Owing to a succession of epidemics of infectious disease extending almost throughout the year, I have had little time to devote to any other class of work beyond attending to sanitary matters in the city or suburbs according to where sickness was most prevalent. A great number of scarlet fever and diphtheria cases were notified in April, and a good deal of work had to be done in the way of disinfection, &c., in order to keep some of the schools from closing. In May an outbreak of plague necessitated a considerable amount of house-to-house inspection. Later in the year there was a severe outbreak of measles; several young children died, and again we had difficulty in keeping some of the schools from closing. In November typhoid fever broke out, and it had shown but little sign of abatement when the year closed. Outbreaks of typhoid fever were investigated at places as far distant as Tauranga, Kerikeri, and Herekino in the north. I also attended to several sanitary matters at Rotorua, Warkworth, Helensville, as well as the district immediately adjoining Auckland.

The following is a summary of inspections made:—

Infectious diseases investigated	371	Schools inspected	15
Rooms disinfected	87	Factories inspected	22
Buildings inspected	81	Butchers' shops inspected	21
Building-timber inspected (lots)	13	Slaughterhouses inspected	6
Premises generally inspected	665	Dairies inspected	12
Hotels inspected	23	Milk-shops inspected	35
Boardinghouses inspected	33	Bakers' shops inspected	17
Camping-grounds inspected	6	Fish-shops inspected	13

Fishing-boats inspected	2	Rubbish-tips inspected	16
Ferry-boats inspected	2	Nightsoil-depositing sites	3
Fruit-shops inspected	7	Complaints received	202
Auction-rooms inspected	8	Notices served	197
Stables inspected	56	Water-samples collected	5
Drains inspected	105	Bags of potatoes condemned	1,000
Rags, flock, &c., inspected	5	Tins of salmon condemned	2,688

R. GRIEVE, Inspector.

Department of Public Health, Greymouth, 18th June, 1908.

Memorandum for Dr. J. S. Purdy, M.D., D.P.H., District Health Officer, Auckland.

Health Report of Hamilton, Cambridge, and the Surrounding Districts from the 1st April to the 10th October, 1907.

Inspections, Disinfections, and Sanitary Improvements were recommended, approved, and also carried out at the following places: Hamilton, Cambridge, Hautapu, Newstead, Te Rapa, Taupiri, Ngaruawahia, Ohaupo, Te Awamutu, Pirongia, Ngaroto, Frankton, Tuhikaramea, Te Aroha, and other places.

Schools disinfected.—Te Aroha, Hamilton East, and Hautapu.

Cambridge Drainage.—The whole of the drains which were let by contract previous to my being stationed in the district were relaid and tested.

Plumbers.—I made it my duty to give all the time I could possibly spare to the men who were doing the plumbing-work.

Hamilton Drainage.—Practically the same remarks may be made of Hamilton as of Cambridge, except that Hamilton has a much larger scheme, and that, owing to the sewers having been constructed under a competent engineer, there is no necessity to suspect any scamped work—the contractors having been well watched during the progress of the work.

Plumbing-work.—This is exactly on the same principle as in Cambridge, but, owing to Hamilton being a central township, it commands a better class of plumbers, who, though some of them are certificated, I found not above accepting methods which they saw were an improvement on their own style of workmanship.

Houses not able to connect to Sewers.—In both the Hamilton and Cambridge Townships there are many houses which are not able to connect to the sewerage system, and under such circumstances advice was given as to the best possible way of getting rid of waste waters by a modern system of house-drains discharging into a watertight tank, the overflow from which irrigated the garden. A good number of these were installed, and were giving the utmost satisfaction. Dr. Frengley having introduced one, I had others put in on the same lines.

Enteric-fever Outbreak.—Early in September I had notifications of enteric fever occurring in different parts of Hamilton and Frankton. After four cases were reported, and finding that all the families concerned obtained their milk from one particular farm, I came to the conclusion that the outbreak was due to the milk from this place. I saw the dairyman, who did not appear to be well, and who said that he felt sick. The same afternoon he was taken to the Hospital. I had the milk-supply stopped until I could see you, and the consequences were that you ordered the sale of milk to be prohibited until you could investigate matters yourself, which you did at a very early date. I think there were about twenty persons affected even after the supply had been stopped, and you will be aware that the dairyman and his wife were notified to us as suffering from enteric fever the day after the milk was prohibited for sale.

Auckland Infectious-diseases Hospital.—A good deal of time was spent in supervising the drainage of this place. All that I can say is that the drains I supervised were a credit to the workmen who laid them. As to the plumbing-work, this was carried out to the best advantage, and certain short lengths of waste-pipe were allowed to go under the building and over gully traps outside the building, otherwise the pipes would have been subjected to being knocked about.

E. MIDDLETON, M.R.S.I., &c.

Department of Public Health, Whangarei, 24th May, 1908.

Dr. J. S. Purdy, District Health Officer.

I HEREWITH submit my report and summary of inspections for the year ending the 31st March, 1908.

House-to-house inspections have been carried out in the following mentioned townships: Auckland, Whangarei, Kamo, Hikurangi, Whakapara, and Hukerenui.

The summary of inspections refers to Auckland, Whangarei, Kamo, Hikurangi, Whakapara, Hukerenui, Waipu, and Grahamstown.

SUMMARY OF INSPECTIONS.

Infectious-disease investigations	2	Auction-rooms	4
Dwellings disinfected	2	Offensive trades	6
Dwellings and premises inspected ..	820	Creameries	5
Private hospitals inspected	1	Hotels	7
Complaints investigated..	31	Boardinghouses	16
Meat-shops inspected	11	Schools	9
Fish-shops inspected	3	Stables	29
Bake-houses inspected	8	Aerated-water factories	1
Confectioners' shops	3	Fish-curing sheds	2
Fruit-shops	7	Fruit-canning factories	4
Dairies	3	Notices served	190
Grocer-shops	18	,, complied with	170

C. C. WINSTANLEY, Inspector.

A REVIEW OF ANNUAL RECURRENCES OF TYPHOID OR ENTERIC FEVER IN AUCKLAND AND DISTRICT DURING THE PAST EIGHT YEARS.

Previous to the creation of the Health Department with compulsory notification, the only available data as to the incidence of typhoid or enteric fever is to be gleaned from an examination of the mortality records of the Registrar-General's annual reports. Thus we learn that for the four years previous to 1900 forty-six deaths were attributed to typhoid in Auckland, whilst fifty was the record of deaths from this disease totalled by the three other combined centres. Computing the death-rate to have been as high as 1 case in 12, this gives an annual incidence of 138 cases for Auckland.

By lines drawn to a scale of 1 in. per hundred cases the incidence is thus represented :—

1896–1900	138	
1901–2	118	
1902–3	134	
1903–4	78	
1904–5	87	
1905–6	68	
1906–7	58	
1907–8	197	

Together with improved sanitary administration, the adoption of a separate service of night-soil-removal for infected houses, and disinfection directly under municipal control, until the introduction of a water-carriage system it would be wise for the Auckland Hospital Board to make provision for ninety-five cases per annum, the mean average for the past ten years.

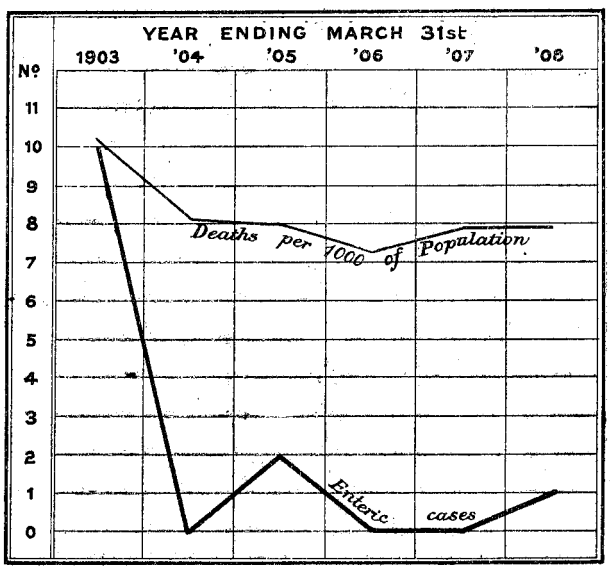
To recapitulate the reports of previous outbreaks of enteric, unfortunately of annual recurrence, we find that in 1901–2 the older parts of the city, more especially Hobson Street, Cook Street, Queen Street, and Freeman's Bay, were most affected. In these areas "the drainage connections were old and faulty, in addition to the sewers being defective. Occasional flooding of the cellars in the lower parts of the city owing to the rising tide forcing the traps, more especially in houses built on reclaimed land, pointed to serious defects of sanitation." The adoption of model by-laws by the City Council, and the supervision of all building-permits by the City Engineer, as well as the demolition of insanitary property more especially in Cook Street, have improved this condition of affairs as then existent. Much remains, however, to be done. The main cause then was ascribed to lack of regularity in the removal of excreta and house-refuse with consequent accumulation of filth in back yards—unfortunately, as the records of the Police Court for last year show, not unknown in our day. With regard to the suburbs, the lower-lying districts, to which waste water and drainage gravitate, were most affected. Dysentery and infantile diarrhœa, kindred diseases as to their origin, and association with a polluted soil, were also of sufficiently frequent recurrence as to warrant one saying they were endemic in these areas.

With regard to seasonal occurrence, the records of typhoid cases admitted to the Auckland Hospital compiled for the last fifty years indicate a steady rise from November to April, attaining its maximum in the latter month. This year the epidemic reached its zenith a month earlier, thus repeating the experience of other countries where "the hot dry months show the heaviest enteric bill."

After a rainfall unprecedented in the northern province during a period of forty-two years, the first two months of 1908 were remarkable for the nearest approach to a drought within the memory of the oldest inhabitant. Coincident with this we had the heaviest outbreak of typhoid Auckland has ever experienced. Simultaneously with the appearance of heavy rains and the disappearance of flies, typhoid also has apparently disappeared. We cannot, however, altogether

blame the elements. As Dr. Makgill states in his report for 1901–2, "the climatic differences between Auckland and the more southern towns are not sufficient to warrant the belief that these are solely, or indeed much, to blame for the high typhoid-rate. In a district like this in which typhoid or enteric has been endemic for many years, it must follow that there is a considerable degree of pollution with infected matter of the soil." Lack of drainage, local sanitary defects, isolated instances of infection of milk and oysters, and pollution of the foreshore have all been called upon to explain at different times the exceptional incidents of enteric in Auckland. As instancing how much people are at the mercy of their plumbers, Dr. Makgill records an outbreak of five cases in a boardinghouse in 1902: "All the classic faults—untrapped wastes connecting with unventilated house-drains and leading directly to the sewer, leaking soilpipes, ill-flushed closets, and so forth."

A parallel case occurred last year in a boardinghouse at the Thames. Built on an old duck-pond, this house, from which six cases were notified, had a drain directly underneath the floor. Possibly, however, the source of immediate infection arose from "a typhoid-carrier" associated with the preparation of food for the boarders.



The chart illustrates the reduction in the enteric case-rate, also in the general death-rate, following upon the adoption of a general drainage system.

The number of cases of enteric in each year is shown by the thick line; the thin line shows the number of deaths in each year per 1,000 of the population.

Dr. Makgill also traced in 1902 some thirteen cases directly to the at-one-time-common practice of bathing and fishing near the present sewage-outfalls. Other small outbreaks, such as that at St. Helier's in 1902–3, were associated with camping-parties on the beach. So far Devonport—ever zealous to maintain the reputation of the self-styled "model borough"—is the only local authority sufficiently concerned to impose any sanitary supervision or requirements on casual campers. As the regulations are the same as for householders, there have been only two campers in Devonport during the past year, both of whom have been forced to decamp.

As to the fall in the incidence of typhoid during 1904–6, Dr. Frengley attributes this "in some measure to the very favourable meteorological conditions" prevailing over that period.

At this time the installation of water-closets became obligatory in Parnell, since when the oldest suburb of Auckland has been a good second from a health standpoint to Devonport, the latter having enjoyed absolute immunity from typhoid—striking object-lessons to their neighbours of the benefits of modern drainage. On the completion of the comprehensive drainage scheme for Auckland, however, both these suburbs will have to discontinue the discharge above low-water mark of sewage into the harbour.

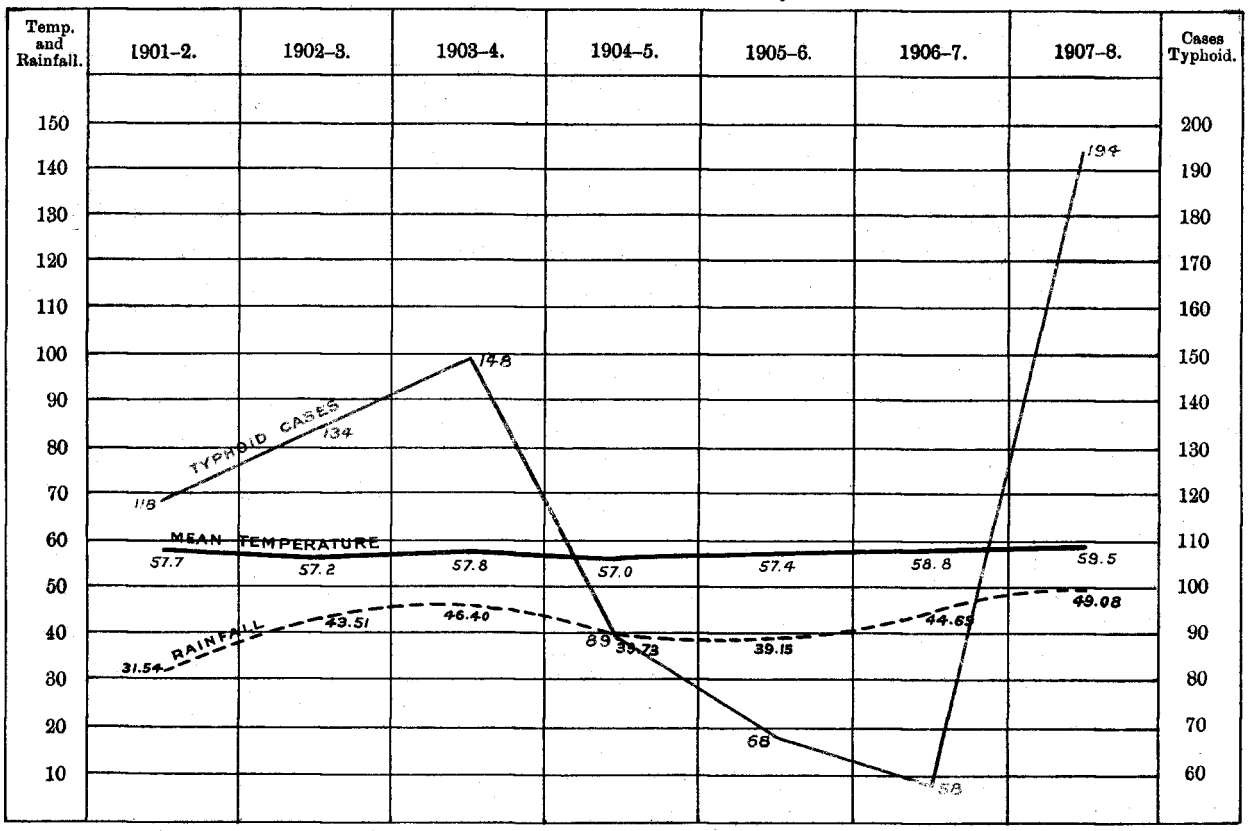
A "spot map" illustrating the local incidence of the disease in Auckland and suburbs shows even more prominently than in previous visitations that the recent epidemic has attacked certain well-defined areas, some of which had so far come under the ban of suspicion as regards sanitation as to have caused our Department to institute a house-to-house inspection, necessitating in one small borough the issue of 107 notices, sixty-three for the remedy of structural and drainage defects and forty-four for the removal of refuse in ill-kept back yards, privies, spaces under houses, fowl houses, and runs. A fortnightly nightsoil service in this area, inefficiently carried out by a contractor, with as a rule wooden boxes instead of pans as receptacles, many leaking and in a filthy condition calling for instant cremation, showed a condition of apathy and lack of a sanitary conscience by no means peculiar to this borough. Of four drains taken up, two of which belonged to dairies and one to an hotel, all had clay joints—the last had the sockets laid the wrong way. In spite of the zeal shown by the local authority to remedy this state of affairs, Providence, previously said to have been kind, singled out Newmarket as the primary focus of infection.*

*This district is now much improved. Once drainage is completed, as is the intention of the Council, this area may be as healthy as any in Auckland.

ENTERIC FEVER AND METEOROLOGICAL CHARTS
AUCKLAND AND SUBURBS.

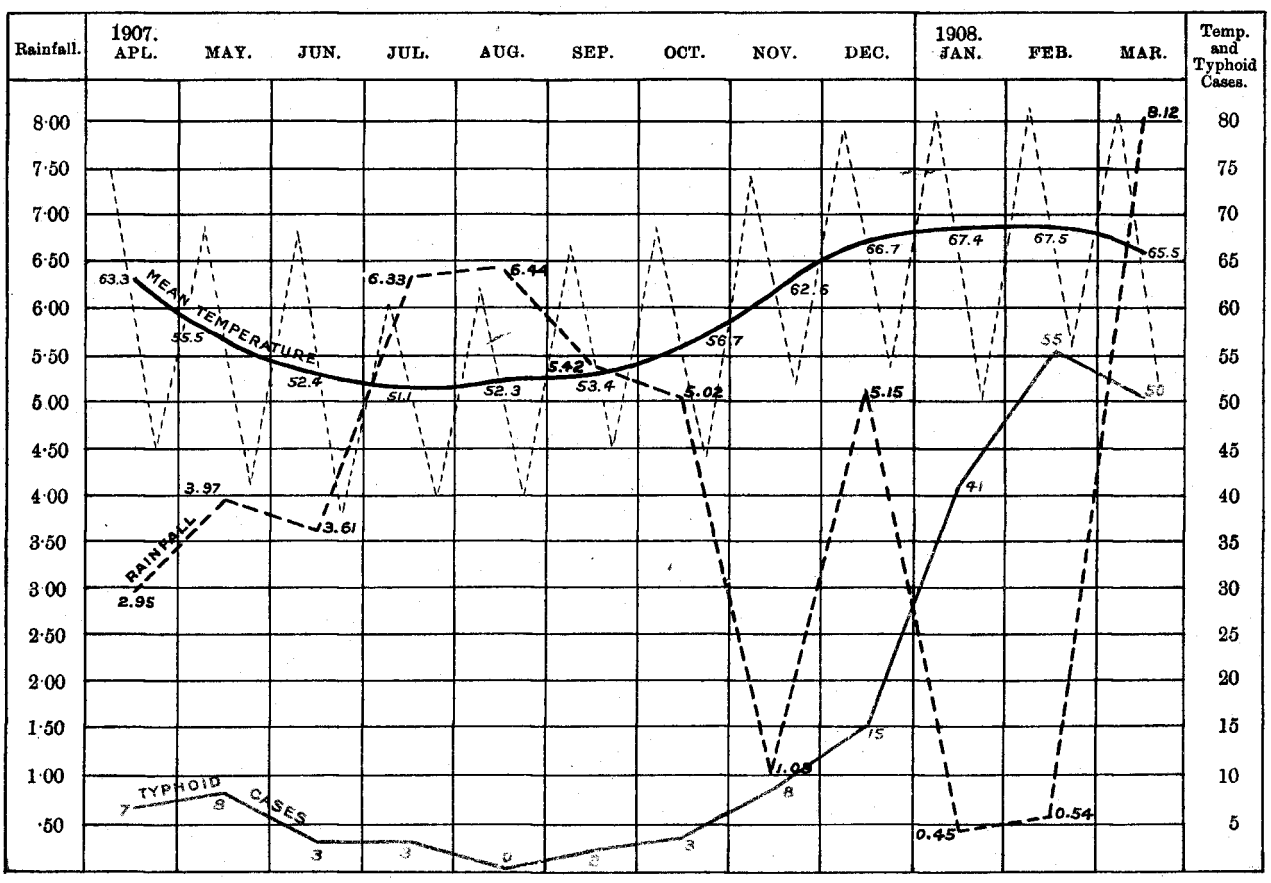
1.

PERIOD OF SEVEN YEARS, 1901-8.



2.

YEAR 1907-8.



The dotted red line shows the highest and the lowest readings of the thermometer during each month—April, 1907, to March, 1908.

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The next place to become stricken was the triangular area lying between Symonds Street, Karangahape Road, and the boundary of Eden Terrace, with natural drainage towards Arch Hill Gully. No water-closets are allowed in this area owing to lack of a sewerage system. The drains carrying slop and other waste waters are in places old and undoubtedly faulty, having in all probability clay-joint connections, as has been found to be the case with many drains laid down before the present model by-laws of the City Council as to drainage came into operation. In this respect Auckland is fortunate in having all new drains inspected by Mr. Haynes, Chief Sanitary Inspector, to whose teaching is due much of the success in sanitary science and plumbing of the Auckland Technical students. In addition to this area, part of which is under the control of the Eden Terrace Road Board, the portions affected within the city proper were the immediate neighbourhood of St. Paul's Street, Wakefield Street, Vincent Street, and the district between College Hill Road and the foreshore at Ponsonby. Here at least one-third of the houses have water-closets, the rest privies. Here also possibly the application of the smoke or other drain tests on the remodelling of the drainage will probably reveal defects.

The last but by no means least severe outbreak occurred in the otherwise healthy district of Grey Lynn, more especially in the vicinity of Cox's Creek, towards which the drainage from the slope southward of the western portion of Ponsonby—previously affected—discharges through a gully, practically an open sewer. Although the City Engineer has had the channel cleared, it is recognised that if practicable it would be advisable in the interests of the residents to commence the construction of a sewer here simultaneously with, if not even previously to, the contemplated commencement of the outfall sewer at Orakei. If this can be done without invalidating the general scheme the City Engineer will probably push this work forward. Naturally, in investigating an outbreak of enteric which speedily ran into treble figures, our first inquiry was directed to the commonest source of infection—water. The fact that the infected areas received the same supply as districts such as Parnell, parts of Remuera, and Epsom, which, as to the first at least, remained quite immune, together with the negative evidence as to the absence of contamination as shown by repeated reports by the Government Bacteriologist, the City Bacteriologist, and the Colonial Analyst, eliminated any suspicion as to specific contamination of the water at its source, the Waitakerei Ranges. Faulty drainage in certain areas infected, as contrasted with efficient drainage in some other areas not infected, might suggest possible contamination of the water after reaching individual districts, as was the case in Melbourne some years ago owing to leakage of sewage through fire hydrants.

In no area investigated, however, could water be blamed. Similarly with the milk-supply. As regards the Auckland outbreak, analysis of the cases showed no connection therewith. Not so with regard to an acute outbreak just previously in Hamilton. In this flourishing inland town, the pride of the Waikato, no less than eighteen cases occurred in rapid succession directly traceable to one milk-supply—a Frankton dairy. The first victim was the wife of the dairyman, one of the last the dairyman himself. Inspector Middleton on the 20th September reported that four cases of enteric in Hamilton had one point in common—that of the milk supplied from a dairy already marked down as previously associated with two cases notified six days previously.

As a matter of fact, the milk-vendor's wife who had been in hospital a week was actually suffering from typhoid, the symptoms, however, not having been so marked as to suggest a Widal test previous to the eve of the admission of the husband. Inspector Middleton visited the farm with the avowed intention, after investigation on the spot, of prohibiting the further supply of milk, only to find on arrival the dairyman himself so ill that *after his last milk-round* he had decided on his own initiative to go to the hospital. During the next five days eight further cases occurred, all of whom obtained milk from the same source. This outbreak is without precedent in works of reference on preventive medicine in so far as there was hardly a vestige of doubt the cause of the outbreak was direct contagion from *the hands* of the milker—first an enteric contact through nursing his wife, occupying the same bed, whilst she was suffering from the disease for a fortnight previous to her admission to the hospital, where he followed her a week later, himself an enteric —actually milking the cows and unwittingly distributing the disease to his customers, eighteen out of forty of whom contracted the disease. This conclusion was indorsed by Messrs. Gilruth and Lyons, the Chief and District Veterinarians, who assisted me in investigating the outbreak. It is of interest also to note that a previous resident of this farm had been down with typhoid only a year previously, whilst two years anterior to the last outbreak an epidemic in Hamilton attracted attention to this same farm where one of the initial cases occurred. A visit from the previous patient, probably the typhoid-carrier, possibly started the whole chain of fresh cases. It is also worthy of record that all the cases recovered in the Waikato Hospital. No nurse contracted the disease. Unlike the Auckland epidemic, none of the cases were of a severe type, a feature frequently remarked in connection with milk-borne epidemics, not peculiar to typhoid, but also seen in outbreaks of scarlet fever and diphtheria.

Where cases are not removed to hospital it would be useful to have a placard placed on each infected house warning visitors of the danger of infection. A regrettable incident was the occurrence of eleven cases among the nurses of the Auckland Hospital—more especially in this connection, as illustrating direct infection. The chairman of the honorary staff drew my attention to the fatality after an operation for perforation in which the patient recovered, but both the nurse and the porter, who cleaned the operating theatre, fell victims to the disease, resulting in the latter case in the loss through death of a faithful old servant of the Hospital. It seems only by the education of a special automatic sense of appreciation of rigid asepsis at times of extra work such as is expected of a nursing staff during an epidemic that the conveyance of infection by the hands can be avoided by those removing typhoid discharges or soiled linen.

Goodall has shown that even in the metropolitan fever hospitals during eight years for every 1,000 cases of enteric admitted as many of sixteen of the staff contracted the disease.

The Jewish ritual requiring the washing of hands after the use of *lieux d'aisances*, made mechanical by the murmur of a prayer, is not the least remarkable of the sanitary teachings of Moses.

A bowl of 1 in 1,000 biniodide of mercury at the foot of each typhoid bed in a hospital, as introduced into the London Temperance Hospital by Dr. Soltau Fenwick, a custom now almost universally copied in modern hospitals, is at least a constant reminder of the vigilance required to prevent infection.

The success of anti-typhoid inoculation as evidenced by statistics collected during the South African War, more especially among the troops stationed at Harrismith, and since verified by experience in India coupled with a personal interest in this method of prophylaxis, three of us having been inoculated after leaving New Zealand for Africa early in 1901, has impressed on me the advisability of an opportunity at least being given to all nurses under thirty of securing protection as offered by the use of Professor Wright's improved vaccine. Dr. Hardie Neil is at present, on behalf of the Hospital Board, in negotiation with Colonel Leisham, of the R.A.M. College, for a supply of vaccine which will be available in the event of a recurrence next season, as is probable, of the usual Auckland epidemic.

Although to the sanitarian typhoid is the disease *par excellence* of insanitary conditions, such in themselves are not sufficient to cause an outbreak. Enteric or typhoid fever is a specific disease dependent for its inception upon a specific virus, the *Bacillus typhosus*. In the light of quite recent discoveries, more especially illustrated by the results of an autopsy recorded in February by Dr. Dean of the Lister Institute, it is now definitely proved that the typhoid organism may retain its vitality in the human alimentary canal for an indefinite period, extending, as in this case, up to twenty-nine years after apparent recovery from the disease. The occasional occurrence of "ambulatory cases" so mild, as far as the individual sufferer is concerned, as not to have aroused a suspicion of the possibility of typhoid, the diagnosis of which is only confirmed by resort to the Widal test or other bacteriological evidence, also illustrates the ease with which a typhoid epidemic may spread in an urban community where the source of contagion, the excreta and urine, are not dealt with in accordance with the teachings of modern hygiene. A mild or unnotified case of typhoid is a more potential danger to a community than the most virulent case which of necessity comes under medical attention and isolation. A striking example came under my notice recently in the case of a Civil servant who actually was carrying out his duties during the first three weeks of an attack. The fact that long after convalescence the typhoid bacillus is voided in the urine according to some observers in at least 25 per cent. of cases, undoubtedly plays a not inconsiderable part in the dissemination of the disease. As a matter of fact, bacilli are sometimes so numerous in the urine, as in exceptional cases of baciluria, to render it turbid. Thus more readily even than fæces may this medium lead to infection of bedclothes, underclothing, and even the pollution of sources of water-supply.

Recent researches and experiments, more especially those of Colonels Firth and Horocks at the R.A.M. College, since confirmed by Pfuhl, of Berlin, have demonstrated the viability of the enteric bacillus in soil. To quote from the conclusions drawn from their report,—

"Our experiments have shown us that the *Bacillus typhosus* is able to assume a vegetative existence for considerable periods outside the body; we are therefore compelled to face the position that outbreaks of enteric fever are not exclusively water-borne, and that infective material carried by winds and flies may play a large part in the development of disease. We have shown that the enteric bacillus can survive in ordinary earth for over two months, no matter whether the soil be virgin, or polluted with sewage, or be frozen hard.

"This being the case it is not difficult to understand how certain areas, steadily fouled by surface pollution, may become endemic foci for the development of enteric fever. We think that the amount of specific pollution which a soil may receive from the dejecta of enteric-fever cases has been greatly underestimated. Observations have shown that enteric stools may contain from three to five enteric bacilli in 0·006 milligramme of dejecta, and when we consider the number and volume of evacuations from a single patient, it is obvious that the specific pollution of the soil under certain conditions must be enormous. It must further be remembered that the urine of enteric patients may add materially to the specific contamination.

"In the face of these considerations it is manifest that, for a proper exercise of preventive measures, our attention must be concentrated on the dejecta at the moment they leave the human body. It is true we can do much to protect ourselves against infection if the specific microorganisms become disseminated in nature, but our task then becomes stupendous, as our efforts have been directed to guard so many paths of infection. A full measure of success can only be expected or obtained when we commence our work before the enteric or specific bacillus has had an opportunity of assuming a vegetative existence. In other words, we have to consider how we can dispose of dejecta with the minimum of danger to health. This is no new problem, and it is one replete with difficulties; moreover, it must be considered in respect of conditions existing in both civil and military life at home and abroad.

"*In the light of our experiments we cannot help regarding the dry-earth or pail-closet system, as ordinarily carried out, to be replete with danger. The possibilities of local dissemination of infective matter either as dust or by flies are great, and, unless the dejecta are at once removed, burnt, or deeply buried, they constitute a standing menace to the public health. We hold, therefore, that any installation of pail-closets or dry-earth system of conservancy in towns or large communities is absolutely reprehensible.*"

As in the case of Johannesburg, where Dr. Porter, M.O.H., after quoting the above, concludes that "the chief causes are pollution of soil and air by the present bucket system, extensive soil-

pollution by slops, as well as contamination of food and drinks by infected dust or fly-borne impurities," so in Auckland one may re-echo the same conclusion.*

With regard to the statement of pollution of the air, there is practically no evidence of enteric fever in this respect resembling bacillary dysentery, diarrhœa, and cholera, unlike most other infectious diseases, being carried direct from one patient to another by means of the air—it is probably almost always necessary to have an intermediary. In the case of typhoid it has not been necessary to look for an intermediate stage of existence on the part of the bacillus, such as we are familiar with in the case of malaria, where the duodenum of the mosquito is a necessary temporary habitat during one stage of the development of the living virus. Ordinary house-flies (*Musca domestica*) can convey enteric-infected material not only on their legs, wings, bodies, but also on their heads, more especially the mandibles.

In my opinion, the most important factor in spreading the recent epidemic in Auckland may be ascribed to what Dr. Balfour, of Khartoum, has dubbed "the filthy feet of fæcal-feeding flies." As showing the important *rôle* played by insects as carriers of disease, in addition to the fact that malaria, filaria, and yellow fever must of necessity have special varieties of mosquitoes as intermediate bearers, we now know definitely that insects can carry anthrax, plague, zymotic diarrhœa, and cholera. Blood-sucking insects also transmit disease direct from the sick to the healthy—a common means of spreading tropical diseases. According to Professor Kenwood, such a mode of transmission is possible also in anthrax, septicæmia, pyæmia, erysipelas, leprosy, and tuberculosis. In South Africa I have seen flies feeding on typhoid stools, in Egypt on the pus from cases of contagious ophthalmia, in the Sinai Peninsula on the excreta of pilgrims dead and dying from bacillary dysentery.

Ever on the lookout for instances of the conveyance of infection by flies, advocating *ad nauseam* the regular removal of all organic refuse, more especially stable manure and excreta—favourite breeding-grounds—as well as the use of kerosene as an insecticide, I hardly expected so remarkable an example of this method of typhoid-conveyance as occurred at the commencement of the outbreak in Auckland. On the removal of one of the earliest cases to hospital, the relatives left the infected house. A wooden box, the usual receptacle in that quarter, contained the discharges of the patient. "Because it was not full" on the occasion of his fortnightly visit the contractor's man did not remove the contents. The flies immediately proceeded to do so. Some days later when Inspector Grieve, owing to further outbreaks, went round to see what the local authorities had done, he found this box "swarming with maggots."

It has not been definitely proved that typhoid organisms actually pass through the digestive tract of flies. In experiments at the Port Said Quarantine Laboratory I found the *B. coli*, a kindred organism, in the excrement deposited by what is commonly known as a "bluebottle." Just, however, as flies frequenting the latrines of Plumer's Camp, near Wakkerstrom, in January, 1901, were the probable cause of an outbreak in the Auckland squadron of the Sixth New Zealand Contingent in South Africa, so the flies which fed on the excreta of this first fatal Auckland case probably were the immediate cause of spreading the outbreak in Auckland in 1908. Whether this was actually the case or not, I am strongly of opinion that, in the future, the public, to protect themselves, as they realise the dangers from flies contaminating food, will take more stringent precautions to prevent them gaining access to meat and milk. During the summer I made some interesting observations at Motuihi on the breeding of flies. A piece of schnapper, a piece of meat, the wing of a fowl, left exposed to flies for a few hours all became fly-blown. The maggots kept in test tubes stoppered with cotton wool apparently died after twenty-four hours. A lighted taper placed in the tube went out owing to the accumulation of carbonic acid. Shortly afterwards, as oxygen entered the tube, the apparently moribund maggots revived. The most interesting point was that only when earth was placed in the tubes did adult flies develop. This is the most interesting phenomenon in connection with the development of flies, that the maggots disappear for a time to take up a pupa or intermediate stage in the superficial layers of the earth. This accounts for the periodical appearance of flies. Being fully imbued with the powers as an insecticide of kerosene, more especially in exterminating fleas and bugs, I also carried out experiments on flies. Three hours were spent by Inspector Grieve syringing the wharf at Rangitoto, where the flies were present in such masses as to make the under-surface of the wharf black. The kerosene killed them in thousands, and the bottom of the boat was littered with dead. Less success was attained by soaking newspapers in kerosene and strewing them about a room with the idea of keeping flies away. The breeding of fantails, as the New Zealand fly-catchers are called, would take the place of that of the swallows and martins in European countries, and so keep down the number of flies. The best means, however, to prevent this pest is the observance of scrupulous cleanliness, and the prompt removal and cremation of all organic refuse.

The visit of Mr. Midgley Taylor to New Zealand, which now only leaves him in the Empire one country—Canada—to conquer as a sanitary expert, has allayed opposition to a Bill which has been prepared for presentation to Parliament, the passing of which will mean the dawn of a new era—the commencement of efficient drainage, the completion of which ought to leave Auckland not only alphabetically the first city in the Dominion, the premier port, the largest in area and population, the most beautifully endowed by nature, but also the healthiest. As a matter of fact, in spite of its severe handicap through lack of drainage, its record even to-day compares favourably with that of the other centres.

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*Professor Kenwood, author of "Parkes and Kenwood's Hygiene," in a letter dated the 13th May, commenting on the above, says, "The fly-borne outbreak of enteric fever at Newmarket is one in which the evidence is very direct and convincing."

The scheme of discharging the sewage at Orakei, formulated by Mr. Midgley Taylor in London, adopted by Mr. Bush, the City Engineer, and favourably reported upon by Mr. Hamer, the Engineer to the Harbour Board, was afterwards confirmed and adopted with slight modifications, suggested to the author of the scheme on his visit to Auckland. The able and eloquent address of Mr. Midgley Taylor to the representatives of the Drainage Conference, as well as the ease with which he disposed of all objections during the excursion on the harbour with the members of the Board, practically silenced all opposition to the principles of the scheme.

Speaking generally, a review of the past sanitary history of Auckland, more especially its record of preventable diseases due to direct infection coupled with unhygienic environment, with the severe toll paid for neglect to take advantage of modern developments of sanitary science, is an indictment against a long-suffering community. Owing to lack of co-ordination and multiplicity of control—the corollary of retaining seventeen local authorities attempting each in its own way to solve a problem which from its magnitude experience has taught all the world over can only be done efficiently by one controlling authority with a well-organized and highly trained staff, with authority untrammelled by considerations of parochial politics—Auckland has repeated the experience of other cities which have outgrown their early arbitrary boundaries.

The sins of omission in not introducing modern drainage are even overshadowed by sins of commission, as represented by the condition of districts where improperly so-called systems left to the slipshod methods of contractors of nightsoil and refuse removal have been a fruitful source of never-ending complaint. Even at the present time there are rubbish-tips in fairly populous districts where no attempt is made to cover putrifying organic refuse with a mantle of nature's all-purifying medium, the most efficient of all bacteriocidal agencies—mother earth. Out of the gloom, however, appears a ray of sunshine—let us hope an anchor of faith in a pilgrimage of uncertainty—the inception of a drainage scheme. Owing to the initiative of Auckland's leading citizen, with the goodwill and common-sense of the thinking part of the populace, and with the power of the Press acting as a *vis a tergo*, and so strengthening the hands of the Chairmen of the local authorities now in conference assembled, there is at last a reasonable prospect of a translation into action of the almost unanimous call for drainage.

HAWKE'S BAY DISTRICT.

SIR,— Department of Public Health, District Office, Napier, 1st April, 1908.

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

I commenced my report for the year ending 31st March, 1907, with the following: "I am pleased to be able to report that there has been a steady advance in sanitary matters almost all along the line, and matters are shaping in several centres in such a manner that I am justified in the hope that next year I shall be able to report an equal if not more satisfactory advance." I am pleased to be able to record that my hopes have been justified with respect to many centres, which have advanced more during the past year than during the whole of the previous seven years of the existence of the Department. Even in those localities which have shown a lack of enthusiasm in the cause of preventive medicine, and only a moderate energy in carrying out my suggestions, there has been some progress.

It also gives me pleasure to again mention that friction worthy of the name between the local bodies and myself has been conspicuous by its absence during the past, as well as previous years. And in the majority of cases our relations have been most cordial.

Though the advance during each succeeding year seems to be small, or at all events less than I desire, yet when I look back on the conditions that prevailed when the Department came into existence the strides that have been made in the time have been enormous.

Up-country settlers and others living on the outskirts of towns continue to seek my advice with reference to the sanitation of their premises, and they fall in readily with the advice that I give them. The architects generally aid the cause of public health by specifying that the work is to be done in accordance with the requirements of the Napier Sanitary By-laws, and completed to the satisfaction of the Department. In all these cases Inspector Munro supervises the work and tests the drains before the work is passed.

Owing to the limited facilities for getting about in this district, this work is a great tax on the limited staff of this office, and at times Inspector Munro and myself are hard put to it to prevent the work from getting ahead of us.

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

Enteric.—Napier, 5; Hastings, 5; Dannevirke, 1; Wairoa, 4; Gisborne, 19; Nuhaka, 4; remainder of district, 17: total, 55.

Diphtheria.—Napier, 4; Hastings, 5; Dannevirke, 1; Gisborne, 9; Woodville, 1; Waipawa, 3; Norsewood, 3; remainder of district, 10: total, 36.

Scarlet Fever.—Napier, 36; Hastings, 7; Dannevirke, 31; Gisborne, 16; Waipawa, 5; Porangahau, 11; remainder of district, 27: toal, 133.

The following is a comparison of the number of cases of enteric and diphtheria notified during the present with previous years:—

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

* Not mentioned.

ANALYSIS OF THE ABOVE.

The number of cases of enteric remain about the same for the whole district, being the same for the year 1906, and 4 more than in 1907, 12 more than in 1905, 2 less than in 1904, and 27 less than in 1903. The great drop between the year 1903 and the present is most apparent in Napier, which in the former year had an excess of 30 cases over this year. It will be seen by this that Napier has progressed forward by leaps and bounds in its sanitary condition, as evidenced by the lesser number of cases of enteric notified during each year since 1903. I attribute this satisfactory condition partly to the extension of the drainage system and the increased number of the house connections, but chiefly to the improved character of those connections. This has been brought about by the excellent work done by Messrs. Kershaw and Pickering, the former Sanitary Inspector for the Department in this district, and the latter Sanitary Surveyor for the borough. It will be observed that, while the number of cases has decreased in those portions of the Hawke's Bay District where any intention has been paid to sanitation, enteric has increased in the outside districts and those towns in which sanitation is still in abeyance.

Up to 1905 Dannevirke had an ample water-supply, but no drainage, and in that year and the two preceding ones there were 8 cases of enteric amongst them. Drainage is now installed, and is being largely taken advantage of, with the result that each of the three succeeding years since 1905 have had only one case of enteric in each year.

Woodville, which has a supply of excellent water, and drainage of a kind, remains fairly free from enteric.

Hastings has a supply of excellent water from an artesian source, each house having its own well; and drainage, which may be described as "indifferent good," is standing very much where it did.

Those towns in which drainage is conspicuous by its absence, or is in a primitive condition, and the water-supply is in the future, show an increase in the number of cases. Gisborne had 19 cases, almost double those of last year. Wairoa had only 4 cases, less than half the number it had in 1907.

There has been a slight decrease in the number of cases of diphtheria notified this year as compared with the previous ones—36 this year to 43 last, and 54 in 1905 and 1906. Gisborne has the unpleasant notoriety of heading the list with 9 cases. There has been a distinct and very satisfactory drop in Hastings, from 14 last year to 5 this. Hastings has less diphtheria this year than has been reported in any of my previous annual reports except that of 1903, but the population then was scarcely half what it is now. This may be, and I believe is, the result of cleaning up many places which were in an insanitary condition. Napier keeps about level, and Wairoa has the proud distinction of having none.

There has been a widespread epidemic of scarlet fever during the past year—133 cases—Napier leading with 36 cases, and Dannevirke having a higher number in proportion to its population—31 cases. That the epidemic has been of a mild type is evidenced by the small number of deaths—3 in all, 2 being in Napier, and 1 in Gisborne.

There have been 52 cases of tuberculosis notified during the past year, against 46 the previous year, being an increase of 8 cases. Wairoa heads the list with 26 cases, nearly all of which are Maoris or half-castes living in Maori kaingas. Though they number a mere fraction of the pakeha population, half the notifications of tuberculosis in this district are of the Native race. This is a terrible indictment on the manner in which some of the Natives live.

NUMBER OF DEATHS FROM ALL CAUSES IN THE VARIOUS CENTRES DURING THIS AND PREVIOUS YEARS.

Year.	Napier.	Hastings.	Dannevirke.	Woodville.	Wairoa.	Gisborne.	Remainder of District.	Whole District.
1903 ..	153	56	31	17	9	96	90	452
1904 ..	159	56	38	23	*	91	67	414
1905 ..	140	61	31	15	*	115	70	432
1906 ..	150	57	41	15	16	106	84	469
1907 ..	145	55	63	11	25	109	54	463
1908 ..	184	51	53	16	28	146	47	535

* Not mentioned.

DEATHS FROM THE MORE IMPORTANT DISEASES DURING THIS AND PREVIOUS YEARS.

Year.	Enteric.	Diphtheria.	Cancer.	Tuberculosis.	Scarlatina.	Erysipelas and Blood-poisoning.	Total.
1903..	5	..	17	33	*	6	63
1904..	4	2	31	41	*	5	83
1905..	2	..	26	56	*	3	87
1906..	5	2	22	32	*	5	66
1907..	3	5	45	52	3	4	104
1908..	4	4	32	59	3	6	108

* Not mentioned.

It will be observed that there is a discrepancy between the number of cases of tuberculosis notified and the deaths that have occurred from that complaint, both this year and last. The discrepancy is both real and apparent—real, as some cases are only seen when the disease has advanced and the practitioner takes it for granted that the patient has been under previous treatment, and the case has already been notified; apparent, because some of the cases come to Hawke's Bay in the last stage which have been under treatment elsewhere, and the cases have been already notified. Also, as cases of consumption linger on, some die whose cases have been notified in previous years. At the same time I am of opinion that the same care in notifying cases of tuberculosis is not exercised as in the acute infectious diseases. The death-rate from the other important diseases remains fairly even.

There is a large increase in the number of deaths from all causes, this being most marked in Napier and Gisborne. At first sight this appears to be disquieting, but when looked into it is seen that there is no cause for dissatisfaction. There have been a number of deaths from Bright's disease, old age, appoplexy, and other causes that do not reflect on the sanitary condition or general healthiness of the district. This especially applies to Napier, where deaths from all causes number 184, against 146 for last year, at which figure it has remained almost stationary for the last six years. The number of deaths from tuberculosis remains fairly stationary, but it is liable to fluctuate in accordance with the number of patients suffering from this complaint who have come to these parts in hope of deriving benefit in this incomparable climate.

THE SANITARY CONDITION OF VARIOUS CENTRES.

Napier.

"Happy is the country that has no history," and happy is the town that calls for few comments from its Medical Officer of Health.

I am glad to be able to report that the perambulations of the nightcart through the streets of this clean and otherwise well-ordered borough have become so restricted as to be scarcely in evidence. In this connection Mr. Archer, Overseer and Sanitary Surveyor to the borough, in reply to my inquiries, informs me that "there are now only fifteen houses to connect with the sewer. Nine are so situated that they cannot connect until the sewer is extended; the others have been called on to drain into the sewer."

A proposition is on the *tapis*, and a loan of £6,000 has been sanctioned by the ratepayers for the purpose of providing baths of all descriptions on the sea front of Napier. This will add to the many attractions in the town, and both directly and indirectly make for sanitation—directly as the overflow of the baths will be used for flushing the sewers. Every engineer who has reported on our drainage scheme has emphasized the necessity of flushing.

The swamp is now completely reclaimed, and is being surveyed and cut up into building-sites, which will be offered for sale during the present month. The area will be provided with good lungs in the shape of a park of 20 acres in extent, which has been secured by the Borough Council, and another of 10 acres which has been secured by the Caledonian Society as a sports-ground. The building-sites available on this reclaimed area will do much to relieve the congestion that is rapidly becoming acute in Scinde Island. The sewer-outfall still remains as before, but its

condition has been seriously considered by the Borough Council. Several methods of dealing with the matter have been suggested, but I have strongly opposed the spending of one penny in this direction until a report has been obtained from a sanitary engineer of approved reputation. Acting on this, the Council took advantage of the presence of Mr. Midgley Taylor, in Auckland, to make arrangements for him to visit Napier, report on our sewerage, devise a scheme for its completion, and where necessary reconstruct. The result is that the town has been put in possession of a plan that will complete the sewerage in an up-to-date manner, provide for all time, and is so designed that the future residents in Napier South (the reclaimed swamp land) will be able to take full advantage of it. The estimated cost of Mr. Midgley Taylor's scheme is £40,000. This is a serious expense for the ratepayers to face, but sooner or later they will have to do it, and for their sakes and the good of the town the sooner the better.

Clive, Meeanee, and Taradale.

The first two of these townships are very much *in statu quo ante;* the last continues to progress, especially in the direction of Greenmeadows, which is fast becoming a township itself.

Havelock.

This pretty township continues to attract people. There is very little sickness at present, and until it becomes congested it is likely to retain its salubrity, for fewer towns could be more healthily situated. No effect has yet been given to the scheme for water and drainage obtained from Mr. C. D. Kennedy some years back. When the business site of the town becomes more built over, water and drainage will become an absolute necessity. At present the Hawke's Bay County Council is the local authority, but there is some talk of forming a Town Board. When this is done it is probable that a scheme for drainage will be more seriously considered.

Hastings.

This town continues to increase rapidly, and has outgrown the sanitary scheme that was designed for it by Mr. Rochefort upwards of twenty years ago, and the ideas of many of the older residents of the town, from whom the members of the Borough Council are chiefly drawn. Many seem to think that what was good enough for Hastings when it was a sheep-run or an unimportant country village is good enough for it now that it has become a progressive and important town. Hastings, with half the population of Napier, has the same number of cases of enteric notified, and one more case of diphtheria. It may congratulate itself on the small amount of sickness in the face of its defective sanitary arrangements. This immunity from sickness is largely due to the extended area of the borough, which permits so many open spaces even in and around the more congested area, and the high winds which so frequently sweep the Heretaunga Plains, in which it is situated. It is necessary that Hastings should now seriously consider the question of installing a proper system of drainage, and take warning by the experience of Napier, which has not yet completely lived down the evil reputation it earned by the severe epidemics of enteric with which it was scourged in 1880 and 1881.

I regret to have to record that the Hastings Borough Council is more apathetic in the cause of sanitation than the best friends of the town could wish. The Mayor has actually delivered himself of the extraordinary statement that the by-laws should not be strictly administered. The consequence is that many of the residents have taken to regard the notices served by the Council as so much waste paper, and it is not until proceedings are actually in progress that attention is paid and nuisances abated. One of the papers published in Hastings, when referring to the relations that existed between the Department and the Hastings Borough Council, stated, "The local authorities in Hastings cannot flatter themselves that they have assisted the Department as they might have done; in fact, in many cases they have put obstacles in the way of reform."

It is only by persistently pegging away that I am able to get anything done, but there are signs that a better state of public opinion is arriving.

There have been thirty-seven houses connected with the sewer during the past year. This is, so far, good. More would probably have been connected, but, owing to the rise in the Ngaruroro River and consequent drowning of the outlet, coupled with the blockage of the sewer from all sorts of extraneous articles which are tipped into it with the nightsoil, the sewage was backed up, and until the matter was remedied it was not advisable to augment the fluids entering the sewer. The Council should think seriously of abandoning the practice of tipping the nightsoil—plus other matter which find their way into the pans—into the sewer, and a suitable piece of ground should be secured as a nightsoil-depot.

In my last report I mentioned, "Hastings has now increased to such an extent that the duties of the Borough Engineer and Inspector of Nuisances, which have hitherto been combined under one head, have become too arduous for one person to carry out effectively, and the necessity of appointing some suitable person to give his whole time to the inspecting and reporting of nuisances is becoming acute." I am glad to say that this state of things has been recently remedied. Mr. Cook, the holder of multiple offices, resigned, and in his place the Council has appointed one gentleman to carry out that portion of Mr. Cook's duties combined under the head of Borough Engineer and Road Overseer, and another as Inspector of Nuisances. Both gentlemen appear to be competent, take an interest in their work, and good results have already accrued from their labours. The resignation of Mr. Cook, the former holder of combined offices, is regretted by many, and most of the ratepayers in Hastings, in common with myself, would have wished to see his services retained for a portion of the duties he had to perform. But the duties he undertook had become too great for one person to perform satisfactorily, and though he did his best

some of the veneer was necessarily laid on too thin. Had he been relieved of the office of Inspector of Nuisances, I feel sure that there would have been no reason to be dissatisfied with the manner in which he would have discharged his other duties.

During the year the Borough Council requested Mr. Rochefort, who designed the present sewer, to confer with Mr. Rogers with reference to the extension of the Hastings sewerage. When they consulted together these gentlemen found that they held such divergent views that each determined to send in an independent report. The two schemes were wide as the poles asunder, and the services of Mr. Metcalfe, of Auckland, were obtained to report on the merits or demerits of the two schemes before the Council. This resulted in Mr. Metcalfe sending in a scheme of his own, which was more in accordance with that of Mr. Rochefort than the one proposed by Mr. Rogers. With these schemes before them it seems strange that the Council should have requested the Road Overseer to report upon the whole question. "When doctors differ who shall decide?" Mr. Rogers's scheme has this advantage—it will drain by gravitation the whole of the borough; while the sewer designed by Mr. Rochefort is above the level of much of the land on which Hastings is built, so that if the lower-lying portion of the borough desired to make use of the present sewer a pumping scheme would have to be installed. Then the sewer is said to be badly constructed and leaky, and it discharges into the Ngaruroro River; this passes down past the Township of Clive, and when Hastings grows, and its drainage system is largely taken advantage of, it is debatable whether it would be in the best interests of public health to permit untreated sewage to be discharged into the river. Mr. Rogers's scheme for the drainage of Hastings provides for the treating of the sewage by a septic tank and filter-beds. If it were adopted, the Township of Havelock would be able to take advantage of it. If the scheme is sound from an engineering standpoint, these facts tell much in its favour, and should weigh in its adoption.

At the request of the Borough Council Mr. Rogers reported on a scheme for a high-pressure water-supply for Hastings. He has chosen for a source the Maraetotara Stream. Chemical and bacteriological examination shows that the supply from this source provides a fair potable water, but somewhat hard. Dr. Makgill discovered *B. coli* in it. It would, therefore, be necessary to filter the water through gravel before permitting it to be used.

The water from the artesian source, of which every householder has an individual supply, has also been submitted to bacteriological and chemical examination, and reported on most favourably. If this could be pumped to a sufficient height to obtain the necessary pressure and brought down by gravitation, it would be superior for all household purposes to the water from the Maraetotara Stream. This scheme, however, does not find much favour with some of the ratepayers, as the Maraetotara water would be brought through Havelock, and it is expected that the residents of that township would take the water, paying Hastings for it, and so lightening the burden of the rate for Hastings. I am of opinion that on account of the superior quality of the water from the artesian source it is worth the extra expense over the Maraetotara scheme, and I am not sure that the expense of the former would exceed that of the latter, even with the price paid by the Havelock residents deducted. The water-rate from either scheme would be very much less than the interest on the cost of sinking a well and establishing a ram or windmill, plus the usual cost of maintenance.

Kaikora North.

This pretty little township is blessed in that it has no sanitary history.

Waipawa.

The scheme for supplying the town with water, alluded to in my last annual report, is going on apace, and in the course of a month or two will be *un fait accompli*. Mr. Metcalfe, who designed the scheme, has been instructed to submit a report on a system of drainage. I hope that it will be within the means of the ratepayers, and that they will adopt it. The fact that it will be designed by Mr. Metcalfe should be a guarantee of its excellence. Waipawa has advanced, the Town Board has ceased to exist, and this day it becomes a borough.

Waipukurau.

This pretty town is ceasing to be a little one. Many buildings have gone up in the course of the year, and others are in course of construction. The completion of the twentieth-century gas—petrolite—that the Town Board contracted for for the purpose of lighting the town is delayed. It was expected that the town would have had the benefit of it long ere this, but delays from various causes, for which the Board is in no way responsible, have occurred, and the gas has not yet materialised. The delay in the installation of the light handicaps the Board in its desire for advanced sanitation. It was hoped that the profit on the light would pay the interest on the loan for water and drainage. Till the gas is in full working-order it is impossible to say what the profits from its sale may be.

The Board is composed of go-ahead gentlemen, who are keenly alive to the interests of the town, and in sympathy with all that makes for its sanitary welfare. Mr. Metcalfe has been instructed to prepare a scheme for providing the town with water and drainage, and has the matter in hand. The plans and specifications may be expected daily, and when they come they will receive careful consideration from the Board. I have been invited by the Chairman to be present at the meeting at which these matters are discussed.

Ormondville.

This is a scattered open township, standing at a high elevation. One case of enteric has been notified this year, the first, I think, that has occurred in the village. A nuisance that was created by one of the Town Board's drains has been abated, and the drainage of the hotel has been improved.

Norsewood.

This town stands at a higher elevation than any other in my district. Three cases of diphtheria have been notified here—all due to defective arrangements in the several houses. These have been reported on, and the nuisance abated. The defective sanitary arrangements that obtained in the two hotels in the town have been reported on and rectified.

Makotuku.

This stands at much the same elevation as Ormondville, and is still more open and scattered. There is very little sickness here, and none reflecting on its sanitary condition. The sanitary defects in connection with the two hotels have been reported on and improved.

Dannevirke.

This is a favourably placed town, and on the whole well ordered. It stands at a high elevation; the soil is porous, and the town enjoys the services of that excellent scavenger, the wind. One case of enteric and two of diphtheria have occurred in Dannevirke during the past year. Both cases of diphtheria died, and both occurred in the same house, as the result of the same causes; otherwise there has been nothing which points to defective sanitation. There have been thirty-one cases of scarlet fever notified—only five less than in Napier, with one-fourth the population. Mild cases are often not seen by a doctor, and therefore are not notified. In this way the cases escape isolation, the premises and things are not disinfected, and it is impossible to take steps to prevent these cases from spreading the disease amongst those who are susceptible. The drainage scheme, which was designed by Mr. Leslie Reynolds, is being taken advantage of. There have been 240 house connections since the scheme was available, 132 having taken place during the present year. Several householders are under notice to connect, and I predict that there will be a still greater advantage taken of the sewer in the near future. The septic tank into which the sewage is received is doing its work well, and the effluent is less than usually offensive. It is further purified by being conducted over cultivated soil, which it in turn fertilises.

I have had some slight difficulty with the Borough Council during the past year. The Mayor seemed to consider that my communications to the Council were to him personally, and treated them as private correspondence, failing to bring them before the Council. I think that there is now a better understanding, and the mistake is not likely to recur.

Woodville.

This borough is advancing deliberately. New houses are going up here and there, and some of the old houses have been condemned, and have either been pulled down or made sanitary by structural alterations.

Eleven deaths from tuberculosis have taken place in Woodville during the past year. With the exception of one case of diphtheria, there have been no cases of acute infectious disease notified from Woodville.

Gisborne.

From its situation this borough should be the healthiest in the Dominion, but from its defective sanitary arrangements, or perhaps want of any sanitary arrangements, it suffers more from preventable disease than any other town in my district. Nineteen cases of enteric and nine of diphtheria have been notified during the past year. This compares very unfavourably with Hastings, with five of each, both towns having nearly the same population, and yet Hastings is not a pattern for sanitary imitation. Both compare very unfavourably with Napier — five of one and four of the other—yet Napier has more than twice the population. Gisborne compares unfavourably with all the other towns in my district.

The scheme for supplying Gisborne with pure water, designed by Mr. Hay, C.E., of Dunedin, was completed last spring, and was available for the town people during the long spell of dry weather which occurred last summer. The boon of enjoying a copious supply of pure water during drought was enjoyed for the first time in the history of Gisborne, and was much appreciated. The water is a good potable one, but has the disadvantage of being hard, most of the hardness being temporary. It should prove a factor in reducing the amount of preventable disease in Gisborne; but, with the increasing congestion in the centre of the town, I fear there will not be so very much amelioration till a thorough system of drainage on a sound design is installed and taken advantage of. The Borough Council have employed Mr. Mestayer, C.E., of Wellington, to draw up such a scheme, which he submitted to them some time back. To carry out the whole scheme at once would involve a larger expenditure than Gisborne is prepared to face; but the design is of such a nature that the work can be carried on in sections where most required at present, and added to as required without interfering with its homogeneity. A portion of the work to drain the most congested portion of the town, where drainage is most urgently needed, could be carried out for £50,000. This should not prove too great a sum to face, and the expenditure would prove a very sound investment. Up to the present the matter has not been laid before the ratepayers, but when it is—if it is properly represented to them—I have little doubt that the poll will favour the raising of the loan. It is risking the health of the residents of the town to attempt to carry on in Gisborne much longer with this condition of affairs, and if the installation of drainage is much delayed reckoning must follow. The Gisborne people should lose no time in proceeding with the work.

I mentioned in my last report that the plans for the much-needed isolation hospital were out. I am now pleased to be able to report that the structure is completed in a manner that

reflects credit on all concerned. Last May, when the two cases of plague were under observation in Auckland, a case occurred in Gisborne which gave rise to some anxiety. A recent arrival in the town—a man of respectable habits, who lived in a nearly new, well-situated house on the Kaiti, and was employed by the Harbour Board as a wharf labourer—in the course of his work, part of which was handling hides, received a wound on his finger from a wood-hook. As this did not heal readily, he consulted a chemist: some four or five days after, the wound being still unhealed, he was taken seriously ill, and Dr. Collins was summoned. Dr. Collins found the patient with a temperature of 106° Fahr., low muttering delirium. There was no redness of the lymphatics nor enlargement of the glands; there were petechiæ on various parts of the body and some oposthotonos. Dr. Coker was called in consultation, but, notwithstanding their united efforts, the patient died. A *post-mortem* was made by Dr. Scott. The spleen was found to be diffluent, there were infarctions in the lungs, and the endocardium was ulcerated and covered with vegetations. Specimens were removed for future examination. An inquest was held, and the only medical evidence that was called was that of Dr. Scott. The evidence of the practitioners who attended the patient during life was dispensed with, notwithstanding that they would have been able to give valuable testimony. I immediately proceeded to Gisborne, and, in company with Drs. Collins and Coker—Dr. Scott was not able to be present—made microscopical examinations of the smears of the spleen and other organs. We found no pestis. The case was suspicious in many ways, and merited the most careful investigation, and this revealed that it was not one of plague.

I desire to record with appreciation the courteous manner in which the Chairman of the Hospital Trustees placed the valuable microscope of the hospital at my disposal to enable me to make the necessary examination.

Prior to my arrival, the Borough Council had acted very judiciously—disinfecting the house, and burning all articles of clothing belonging to the deceased. The body was buried in a kauri coffin, and I recommended that the grave should be completely isolated, and received a guarantee from the Mayor that this should be done.

Tolaga.

This township is growing fast, and promises soon to be a place of importance, which will need attention. The condition of the roads connecting Tolaga with Gisborne will always make visiting the place one of difficulty and a serious tax on the time of the staff of this office. During the year the hotel at Tolaga was burnt down. An up-to-date structure is being built, provided with proper sanitary arrangements, septic tank, &c. I have been consulted by the architect on these matters, and have given him my advice.

Tokomaru, Waipiro, Tuparoa, and Awanui.

The Natives in this locality have shown a very commendable action in subscribing money for a hospital or nursing home in their midst, and this will be erected in the near future. I have had no news from these places during the past year, and that may be considered good news. Their isolated position precludes visits that are not absolutely necessary.

Clyde, Wairoa.

This town is beginning to move ahead, and the population is increasing. Across the river, in what is known as North Clyde, the population has received the larger augmentation. Several new buildings have been erected, including a public hall of ambitious pretensions. The people of North Clyde have rated themselves for the construction of a large storm-water sewer, which, by carrying off the surface water, should prove a factor towards improving the sanitary condition of the locality. Many of the residents in the vicinity of the sewer are anxious to connect their house-drains. This I have refused to permit unless the household sewage is first passed through a septic tank.

Four cases of enteric have been notified in Wairoa during the year, and, though this is less than in former years, it is more than there should be. Wairoa has only one case less than Napier, while Napier has ten times the population; but with neither water nor drainage, we cannot expect much. We must congratulate ourselves that things are not worse. I trust that the time is not far distant when a scheme for the drainage of the front of the town will be considered. The number of cases of tuberculosis that is notified year after year, chiefly amongst the Natives, is a disquieting feature.

Nuhaka.

There have been four notifications of enteric from this small and open township—one less than last year, but I have no hesitation in saying that they are four too many. I am of opinion that the insanitary condition of some of the dairy-sheds is mainly responsible for the cases of enteric.

During the past year Waipawa Licensing Committee obtained my services to inspect the numerous hotels under their jurisdiction. On many of them I reported adversely, most of these being in the outlying places, and the matter will be considered at the annual meeting of the Committee in June. Many of the owners of those hotels that have been reported adversely on have called on me with reference to the recommendations I made, and show a laudable disposition to carry out the necessary reforms. Two of the hotels in this district that required attention—one at Waipukurau and the other at Takapau—have been burnt down, and up-to-date structures are being erected.

In the Gisborne district the old Waerenga-a-Hika Hotel has been pulled down as the result of my representations, and a house conforming to the needs of the district and the requirements of sanitation has been built.

A portion of the Ormond Hotel was defective, and, on my representations, has been pulled down, and that portion rebuilt.

A new hotel is being erected at Pakarae in the place of the old structure, which has served the public for its full time. The new hotel is badly needed.

Prosecutions.

A prosecution was instituted by the Napier Borough Council, at the instigation of the Department, against a resident at the Port for having his premises in an insanitary condition, and another, by the same body at the request of the Department, against a Chinese fruiterer for storing fruit in and near a bedroom.

A prosecution was instituted by the Department, at the expense of the Wairoa Town Board, who refused to act, against a resident for a breach of section 47 of "The Public Health Act, 1900." Convictions were obtained in all cases.

Several prosecutions have been threatened, and in some cases preliminary steps taken against persons responsible for nuisances of various kinds, who, when they found that business was meant, climbed down and abated the nuisances to my satisfaction.

Seizure of Unsound Food.

Eighteen dozen tins of salmon were seized and condemned at a store at the Port. The tins were blown, and the contents were quite unfit for food. They were all destroyed. Seventy 1 lb. boxes of preserved figs, which had been consigned to an auctioneer in Napier by a firm in Wellington, were seized and condemned as unfit for food. These were also destroyed. I communicated with the District Health Officer in Wellington on the subject. He informed me that he had investigated the matter, and that the firm had destroyed the balance on their hands as soon as they became aware that the consignment sent to Napier had been condemned.

Houses Condemned.

Napier, 4; Hastings, 1; Farndon, 1; Waipukurau, 1; Woodville, 2; Gisborne, 2; Cook County, 1.

Medical Inspection of Schools.

During the year, with your permission, I had some correspondence with the Inspector of Schools, in which I offered to give lectures to the teachers in the various centres in this district for the purpose of instructing them in the method of detecting eye-strain and obscure forms of deafness and other matters affecting the health of the pupils. The Education Board found that there were difficulties in the way, and for the present the matter is in abeyance. But I have heard rumours from an unauthoritative source that the question is to be revived, and that I may be approached with reference to the subject. If this is done I shall be happy to respond, and give the matter my serious attention.

The isolated positions of Wairoa, Gisborne, and the settlements north of that town, all of which require attention, are another heavy tax on the staff, and augments my anxiety and responsibility.

I regret that in Napier the milk is still, with the exception of one distributor, baled out of cans at the customers' doors instead of being drawn off by properly constructed taps. I have time and again brought the matter before the Napier Borough Council, but that body remains obdurate, and fails to see the need of reform. The public might do much for themselves in this matter by refusing to take milk that was not clean, or handled in such a manner as to invite pollution.

I have, &c.,

Fred. de Lisle, L.R.C.P., D.P.H.,
District Health Officer.

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

WELLINGTON DISTRICT.

Sir,— Department of Public Health, District Office, Wellington, 30th June, 1908.

I have the honour to present my annual report of the Wellington Health District for the year ending 31st March, 1908. Much time has been unavoidably spent during the year in making a general acquaintance with the towns and conditions of this, to me, new and very extensive district, and the largest in population of the six health districts. In grasping the details of the sanitary work in the various parts of my district, I have been greatly helped by the assiduity of the District Inspectors.

Chief Inspector Schauer being now attached to Head Office, and Inspectors Bennett and Franklin having been transferred to the Auckland Health District, it has been no light task to endeavour with seven Inspectors—one of whom, Mr. Gray, recently appointed, is new to the work—to cope with the duties which last year amply occupied the time and ability of Chief

Inspector Schauer and ten Inspectors, when, at the same time, as will be seen, we have had to cope with a regrettable large increase in the number of notifiable infectious diseases.

Consequent upon these changes, however, the rearrangement of Inspectors' districts has been little altered, with the exception of Wellington and suburbs. Inspector Gardiner, at Stratford, ministers to the wants of the Taranaki District, Inspector Sargeant is stationed at Wanganui, and Inspector Wilson at Marton. Inspector O'Brien, at Feilding, attends to a widened district, extending to Otaki. Inspector Hickes takes, at Pahiatua, the place of Inspector Dorizac, who has been transferred to Nelson, while Inspector Miller, at Greytown, attends to the South Wairarapa District. Notwithstanding the exceptional reduction of inspectorial aid, thanks to the tact and keenness exhibited by these Inspectors in their work, and to their unanimous and unfailing willingness to seek and follow the further advice I could give, I am able to put on record an expression of satisfaction with the general outcome for the year in their respective localities.

To Inspector Gray is unavoidably left the almost impossible task of coping single-handed with the wants of Wellington City and district. The disinfection of premises and things in the city is now being performed by its own officer (Mr. Pasley), who was trained to the work in this office. There is left, nevertheless, a large amount of work which the Department is expected to undertake, and this, I am satisfied, cannot be adequately dealt with by one Inspector, more especially if anything like systematic and sufficient effort is to be made to fairly administer the provisions of "The Sale of Food and Drugs Act, 1907."

The clerical work at this office has greatly increased during the year. You have supported my recommendation that a clerical cadet be appointed; there still remains the need for additional aid in typewriting. Even with Miss Martelli's speed and ability, a certain amount of work often remains for another day. It is to be remembered that there is but one typist for the Bacteriological and District Offices. A rearrangement of the office files has had my attention, and with the adoption of the card-index system, and its efficient control by Mr. Stratford, much convenience and agreeable accuracy have been obtained.

It remains to add that, under Mr. Steward's careful and energetic supervision, the clerical work has been carried out with that customary efficiency which has so well merited the appreciation of my predecessors in this office.

Vital Statistics.

Birth-rate.

The birth-rate for Wellington during the year 1907 was 27·34 per 1,000 of population. This is higher than for the year 1906, which was 27·26, but is lower than that for 1905—viz., 29·72. The average in the four centres for 1907 was 27·61.

Death-rate.

The death-rate for Wellington City, and the city, including suburbs, during 1907, shows a marked increase on that of 1906, and is higher than the percentage recorded during the last four years in the case of the city itself, or during the last three years in the city, including suburbs, as the following table shows:—

Death-rate for the Whole of the Dominion, per 1,000 Population.

	Wellington City.	Wellington and Suburbs.	Average of Four Centres including Suburbs.
1903	11·30	10·93	11·73
1904	10·75	10·43	10·73
1905	10·55	10·21	10·42
1906	9·45	9·19	10·35
1907	11·45	11·28	12·18
Mean for five years ...	10·70	10·40	11·08

The increase in the death-rate this year is chiefly due to the advance of infant-mortality, and is doubtless to be accounted for by the large increase in the zymotic-disease rate. This sudden and marked rise in the death-rate is far from comforting, in view of the steady decline up to this since 1902. Some consolation may be reaped from the fact that in 1902 the figure was 12·58.

The two following tables give the death-rate extending over the last five years:—

Death-rate excluding Children under One Year.

	Wellington and Suburbs.	Average of Four Centres.
1903	8·27	9·14
1904	7·89	8·30
1905	7·38	8·02
1906	7·23	8·35
1907	8·06	9·23
Mean for five years	7·76	8·60

Infant-mortality (to every 100 Births).

	Wellington City.	Wellington and Suburbs.	Average of Four Centres.
1903	9·28	9·27	9·61
1904	9·55	9·53	8·94
1905	10·02	9·62	8·66
1906	7·11	7·19	7·61
1907	11·85	11·78	10·91
Mean for five years	9·56	9·47	9·14

It will be noted that the infant-mortality for Wellington City, and city and suburbs, is higher than the mean of the four centres. This is the usual condition of things. Only once in the past four years has it varied—viz., in 1906, when the infant-mortality for the Wellington City, and city and suburbs, was well below the mean of the four centres, as a glance at the above table shows.

Zymotic Death-rate.

During this year a large increase in the deaths from zymotic disease has occurred in all the four centres, Wellington and Christchurch having 110 each, as compared with 22 and 23 respectively in 1906; Auckland, with 103, against 42; and Dunedin, with 72 in place of 46. Wellington has a percentage of 27 of the total number of deaths in the four centres from this cause. This is higher than last year, when the percentage fell to 17, but is lower than the two preceding years, when it was 32 and 29 respectively.

The increase in the number of deaths has been mainly due to diarrhœa, influenza, measles, and whooping-cough. No deaths were recorded from the two latter diseases in 1906, while this year measles was responsible for 15 deaths and whooping-cough 28.

The mean in Wellington, including suburbs, for the previous five years was 56 deaths.

	Deaths in Wellington and Suburbs.	Total of Four Centres.	Proportion of Deaths in Wellington, per Cent.
1903	52	256	20
1904	65	202	32
1905	34	115	29
1906	22	133	17
1907	110	395	27
Mean for five years	56	220	25

Causes of Death from Zymotic Diseases.

Diarrhœa was responsible for 23 deaths in the city and suburbs this year, compared with 2 in 1906 and 12 the previous year. The wisdom of Dr. Makgill's comment last year may here be noted: "It is perhaps too soon to express a hope that this great decrease is due to the attention lately drawn to the importance of pure milk and proper diet in the upbringing of infants." To the figures for 1907 must be added 51 deaths from gastritis and enteritis—18 more than were registered from these diseases in 1906. The total deaths from diarrhœa in the four centres were 111 this year, as against 29 last year, the increase being due to a fairly uniform rise in each centre.

Our statistics are as yet insufficiently "aged" to be able to draw therefrom conclusions even approaching accuracy. Meteorologically it has to be noted that this year contrasted well with last, when the diarrhœa death-rate was so low, in average temperature and scantiness of rainfall during the summer months.

Measles was the cause of the death of 15 persons in 1907. No deaths from this disease were registered last year.

Diphtheria.—Under this heading are recorded 9 deaths, as compared with 5 last year. Twenty-three deaths occurred within the four centres. Wellington percentage, therefore, is 39·1, which is unduly high. There were 125 cases of this disease notified in this city, giving a case death-rate of 7·2 per cent. One point worthy of note is that, though the number of cases notified under the Act is nearly four times that of last year, the percentage of the case death-rate has fallen from 11 to 7·2 per cent.

Scarlet fever was responsible for 9 deaths. This is an increase of 8 deaths over last year. There were, practically speaking, four times the number of cases notified this year as compared with last, and this fact must be taken into consideration when the increase in the number of deaths is noted. Last year 135 cases were notified, and this year 525.

The other deaths from zymotic diseases are:—

Enteric Fever, nil, as against 4 last year and 3 in 1905.
Influenza, 17, as against 6 last year.
Other Zymotic Diseases, 9, as against 4 last year.
Whooping-cough, 28, as against nil last year.

As regards diseases other than zymotic in Wellington, we find:—

Cancer, 50, as against 53 last year.
Tubercle, 69, as against 60 last year.

Notification of Infectious Disease.

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

—	Scarlet Fever.	Enteric Fever.	Diphtheria.	Tuberculosis.	Blood-poisoning.	Hydatids.	Actinomycosis.	Leprosy.	Totals.
Boroughs,—									
Wellington ..	525	25	125	43	8	1	..	..	727
Palmerston North	11	7	19	11	7	..	..	..	55
Wanganui ..	20	6	15	10	1	..	..	..	52
New Plymouth ..	29	9	3	14	2	..	..	..	57
Pahiatua ..	16	..	8	1	..	1	..	..	26
Petone ..	28	1	14	6	..	..	..	..	49
Masterton ..	30	7	6	3	2	1	..	..	49
Marton ..	9	..	..	2	1	..	..	..	12
Carterton ..	61	..	..	1	1	..	1	..	64
Feilding ..	20	2	5	12	1	..	..	..	40
Lower Hutt ..	20	..	10	3	..	..	..	..	33
Hawera ..	2	3	1	6	..	..	..	..	12
Patea	3	..	1	1	2	1	..	..	8
Eltham ..	1	1	1	2	..	..	..	..	5
Waitara ..	1	..	1	..	..	..	..	..	2
Stratford ..	3	2	..	..	3	..	..	..	8
Inglewood ..	12	..	5	2	..	..	..	..	19
Greytown ..	3	..	2	1	1	..	..	..	7
Karori ..	5	1	2	1	..	..	..	..	9
Miramar ..	7	..	4	1	..	..	..	..	12
Onslow ..	3	1	2	..	..	..	..	..	6
	809	65	224	120	29	4	1	..	1,252
Town districts,—									
Featherston ..	13	..	1	1	..	..	..	..	15
Waverley ..	3	..	2	1	..	..	..	..	6
Opunake ..	..	..	..	..	1	..	..	..	1
Bull's	4	..	2	2	1	..	..	..	9
Halcombe ..	1	..	1	..	..	..	..	..	2
Eketakuna ..	7	..	1	..	..	..	..	..	8
Martinborough ..	..	5	1	2	..	..	..	..	8
	28	5	8	6	2	..	..	..	49
Counties,—									
Kiwitea ..	10	1	13	1	..	..	..	..	25
Rangitikei ..	9	3	14	8	..	..	..	..	34
Taranaki ..	6	9	..	3	..	..	..	..	18
Oroua	6	3	1	3	..	..	..	..	13
South Wairarapa	5	1	..	1	1	..	..	..	8
Pahiatua ..	5	1	4	..	..	..	..	..	10
Horowhenua ..	9	4	5	1	2	..	..	..	21
Hutt	33	2	6	15	..	..	..	..	56
Manawatu ..	10	..	..	4	..	..	..	..	14
Wanganui ..	..	..	1	1	1	..	..	..	3
Masterton ..	1	1	..	1	1	1	..	1	6
Eketahuna ..	3	..	1	..	..	..	..	..	4
Waitotara ..	1	2	..	..	..	..	..	..	3
Stratford ..	2	..	2	2	2	..	..	..	8
Clifton ..	..	..	6	..	..	..	..	..	6
Hawera ..	2	2	1	1	..	..	..	..	6
Castlepoint ..	..	..	2	2	..	..	..	..	4
Patea	6	..	..	..	..	..	..	..	6
Mauriceville ..	1	..	4	1	..	..	..	..	6
Kairanga ..	..	1	..	..	1	..	..	..	2
Egmont ..	1	1	..	..	..	..	..	..	2
Pohangina ..	12	1	4	1	..	..	..	..	18
	122	32	64	45	8	1	..	1	273
Summary.									
Boroughs ..	809	65	224	120	29	4	1	..	1,252
Town districts ..	28	5	8	6	2	..	..	..	49
Counties	122	32	64	45	8	1	..	1	273
Total, 1907 ..	959	102	296	171	39	5	1	1	1,574
„ 1906 ..	526	84	140	123	11	..	..	..	884

It will be noted that there is a large increase in the number of notifiable diseases during 1907, as compared with previous years. Scarlet fever and diphtheria are mainly responsible for the rise, the former having 433 and the latter 156 cases in excess of 1906.

Scarlet Fever.—There has been a general increase in this disease in the boroughs, town districts, and counties, but notably in the former. In Wellington last year 135 cases were notified, while this year the number has risen to 525. An epidemic at Carterton has caused the number of cases notified to rise from 5 to 61. Slight increases in New Plymouth, Lower Hutt, Pahiatua, and Petone Boroughs account for most of the remaining increase.

The most notable diminution occurred in the Masterton Borough, where the number of cases dropped from 111 to 30. Palmerston North, Marton, Eltham, and Stratford also show a slight decrease on the previous year.

The outbreak in Wellington started just before the close of last year, and continued for the first few months in this year. Though searching investigations were made, the cause could not be traced to any particular school, street, or milk-supply.

At Carterton the outbreak was traced to some unnotified cases attending school and spreading the infection among the school-children, and by these again carried to their homes. Legal proceedings were instituted in two cases, and the offenders were convicted and fined. These examples, and the resulting educatory effect of publicity, seemed to have a deterrent effect, as the number of notifications gradually declined, there being no epidemic recrudescence. The school was closed during the epidemic and thoroughly fumigated.

During April an outbreak of scarlet fever occurred at Featherston, but no common cause could be discovered. The school was thoroughly disinfected. Here again suspicions, unsupported by sufficient evidence, seemed to point to unnotified or tardy notifications being the cause.

Enteric Fever.—This disease shows a slight increase over the notifications in 1906. This has occurred in the town districts and counties, the boroughs generally remaining in the same position as last year. Wellington's record shows a marked similarity to the number notified last year. The figures are 25 in 1907, 24 in 1906, and 33 in 1905. Amongst other boroughs the most marked variations are—New Plymouth, increase from 3 cases in 1906 to 9 in 1907; Wanganui, increase from 4 to 6 cases; and Feilding and Karori had 2 and 1 cases, where last year the record was nil. Diminutions occurred at Petone, where 1 case was notified, against 3 last year; Lower Hutt, nil as against 4 cases; Patea, nil as against 1 case; Stratford, 2 as against 7; and Greytown, nil as against 2.

It is satisfactory to be able to record that only one town district was stricken by enteric. This was at Martinborough, which had the misfortune to be credited with 5 cases. The pollution of shallow wells in close proximity to cesspools is presumably the cause of the outbreak, and in the absence of any other traceable or suspicious origin a full and systematic analysis of the town water is being undertaken.

Last year Bull's and Johnsonville each had 1 case, but this year they have a clean sheet.

Turning to counties, we find that the number of notifications has exactly doubled that of last year. Taranaki, Rangitikei, Oroua, Horowhenua, Hutt, and Waitotara are mainly responsible for the advance; while Patea, Manawatu, Stratford, Akitio, and Kairanga, though last year credited with 1 or more cases, this year have none.

Diphtheria was notified on 296 occasions this year. This shows a very large increase over the figures for 1906, which were 140. The rise has mainly occurred in the boroughs, while the counties have also contributed 36 more cases than were notified last year. The town districts show a slight decrease.

Wellington was responsible for a large proportion of the total, having an increase of 80 cases. Petone had 11 more cases, and Lower Hutt 9, than last year. Other contributors were Palmerston North with an increase of 3 cases, Wanganui with 3, New Plymouth with 3, Inglewood with 5, Miramar with 4, Greytown, Onslow, and Karori with 2 each, and Hawera, Patea, Eltham, and Waitara with 1 each.

The most notable diminutions were in the Boroughs of Masterton and Marton, both of which had a decrease of 3 cases.

In the town districts the only variations worthy of comment are at Martinborough, which had a decrease of 4 cases, and at Waverley, from whence 2 cases were notified this year, as against nil in 1906.

Generally throughout the counties there was a marked increase in the number of notifications. The worst sufferers were Kiwitea and Rangitikei with an increase of 12 each, Pahiatua and Mauriceville, with 3 each, and Horowhenua and Stratford, with 2 each. In the Clifton County 6 cases were notified, as against nil last year. This was the result of a small outbreak taking place at Ohura. To the Hutt County must be given the pride of place as showing the greatest diminution—viz., 8 cases. South Wairarapa, Masterton, and Kairanga were exempt from any visitation of the disease this year, although they were each credited with 1 case in 1906.

Leprosy.—Only one case of any dangerous infectious disease was recorded within the district during this year. To Dr. Ross's acquaintance with, and knowledge of, tropical diseases is due his early suspicion of the nature of the case, to which he at once drew my attention.

In January last a Chinese market-gardener, living outside Masterton, sought treatment at the Masterton Hospital for symptoms of intestinal obstruction. In company with Dr. Ross a visit was paid by Dr. Makgill and myself. The patient presented a well-defined group of reddish-purple raised blotches or maculæ—about the size of a threepenny-piece to that of a sixpence in

area—on the centre of the forehead, just above and reaching down to the bridge of the nose. The grouping was generally symmetrical, and there was a marked lump of the size of a pea in the angle just under the inner end of each eyebrow. On palpation these maculæ were found to be soft infiltrations, and not tubercular in the sense of being well-defined or hard nodules. The patient said these had appeared within the last three months. At the back of the right elbow and forearm, extending down half of the latter, was a large dark-red area, slightly raised above the general surface, with a central island of apparently normal skin. Tests were not very satisfactory, but it would appear that this area would correspond to that described and pictured by Stelwagon as the "maculo-anæsthetic type." Generally over the trunk there was a localised scaly dermatitis—"flannel rash," or *lichen circumscriptus vel seborrhœa corporis*.

The patient was evidently of cleanly habits, and in general colour that which one associates with the Japanese type of the Eastern.

Smears were made from punctures in the maculo-anæsthetic patch, from the more prominent of the maculæ, and from the nasal discharge. The Bacteriologist reported that he found the characteristic acid-fast bacillus morphologically corresponding to the specific lepra bacillus in the smears from the maculæ, but those from the other sites above mentioned were negative. The evidence that the nasal secretions were free from the specific bacillus supported the symptoms and physical signs in concluding that the patient was in the early macular or pre-tubercular and non-infectious stage of the disease.

Arrangements were duly made for the patient's return to China. After his departure, though admittedly he was in the non-infectious stage, it was deemed advisable that thorough disinfection of his late residence or whare and its contents should be performed. The building was burnt down in the presence of Inspector Cairns.

I learnt from the patient's compatriots that the disease leprosy is known, according to the dialect, as *fat fung* or *sang fung*.

General Sanitary Measures.

The unnotified case or cases of infectious disease, more especially where scarlet fever is concerned, have been found to be responsible for at least one epidemic in the district. It is always difficult to prove deliberate concealment. More often, to unwitting ignorance or not-understandable stupidity must be assigned the excuse of a parent allowing a child or children to go to school whilst suffering from this disease. Legal proceedings for non-notification have been taken in various parts of the district not so much with the desire of having a penalty inflicted, but with the greater object of publishing broadcast the fact that all cases of infectious disease must be brought to the notice of the Department. Much good has resulted, but I fear periodical prosecutions will always be necessary to stimulate the average householder to his responsibilities towards his neighbour.

Often the excuse is made, "We did not know there was scarlet fever about." This egregious statement opens up the very wide question, "Is it desirable or expedient that the addresses of all houses infected with scarlet fever be published weekly in the principal newspaper or newspapers circulating in the district of the local authority concerned?" This step, it seems to me, is very reminiscent of the olden-day method of affixing a notice to every house afflicted with plague, and while other less drastic aids are available the consideration of such a step may for the moment be dismissed. The education of the public is the first great aim, with—or preferably without—the adjunct of legal proceedings. The visits of our Inspectors to notified cases, and the instructions given as to the proper precautions and subsequent attention to disinfection, are gradually accustoming the public to the necessary procedure where infectious disease exists or is suspected.

Another means towards the early investigation of suspected or existing infectious disease, which I am satisfied only wants developing and systematizing to be readily available, is a more intimate co-operation between school-teachers and this Department. The first step in this direction has come from the Education Department in the form of the gazetted regulation:—

". . . . For the average attendance of any two quarters a similar substitution, on the application of this Board, may, *mutatis mutandis*, be made in the case of any school in regard to which it is shown to the satisfaction of the Minister, on the certificate of the District Health Officer, that an infectious disease of an epidemic character has during the period or periods concerned been locally prevalent to the extent of affecting 10 per cent., or more, of the children of school age."

The regulation did and does not seem to me to be workable unless machinery be provided by which the District Health Officer is acquainted with the existence of illnesses amongst the school-children. This means that the teachers should keep special rolls, showing the length of absence of any child from school through illness, the character of the illness, supported by a note from the person in charge of the child with or without a medical certificate. Accordingly certificates with tabulated data under the headings (1) Name, (2) Age, (3) Duration of absence, (4) Illness causing absence, (5) If supported in writing, and by whom, have been issued by me in terms of the above regulation for the Marton High School, the Toko, Mount Cook Infants', Mount Cook Girls', Petone, Newtown, Clareville, and Kaiwarra Side Schools.

This system, however, only brings the District Health Officer in touch with the school *after* the epidemic, and only because of the desirability of removing the unfairness of a teacher's salary, dependent as it is on average attendance, being reduced by causes over which he has, it may in almost all cases be said, little or no control. To attain both ends—communication with this Department in the early stages of an epidemic, and the prevention of the teacher's salary being affected by the occurrence of infectious diseases—development along the following lines is all that

appears to me to be necessary: (1.) That the school-teacher be required to notify the District Health Officer, direct or through the District Inspector, of the existence or suspected existence amongst his scholars of specified infectious diseases—*e.g.*, scarlet fever. (2.) That the District Health Officer shall certify to the length of time any such child has been required to be absent from school, either on account of itself suffering from such infectious disease, or on account of infectious disease existing in the household. (3.) That children for whom such certificates are issued shall be regarded as "legally absent"; the teacher shall mark the roll in a special manner, to correspond to the absences certified to, and all such marks shall be counted as attendances for the purpose of calculating the average attendance for any quarter.

Burials in relation to Infectious Diseases.

If the infectivity of the corpses of persons succumbing to infectious diseases were even recognised at that early date, it is at least certain that the fact was quite masked by the medico-legal aspects of deaths and burials at the time of the passing of the Registration of Births and Deaths Act in 1875—already thirty-three years ago.

In 1905 the Registrar-General circularised all Registrars of Deaths, *inter alia*, as follows:—

"The Hon. Colonial Secretary has directed me to make arrangements whereby the Health Officer of any district is to receive immediate notice of every death occurring in his district from infectious disease, with the view of taking precautions by way of disinfecting the house, and other methods.

"In order to carry out the Ministerial instruction, a form has been drawn up which meets the requirements of the Health Department. A supply of these forms is now forwarded. The diseases to be reported as infectious are specified at the foot of the form. . . ."

The notification of cases of infectious diseases had been provided for in "The Public Health Act, 1900," but until this circular was issued at the instance of this Department, there was nothing but haphazard means of information by which the District Health Officer might institute precautionary steps in the event of a death from a notifiable infectious disease. A Registrar, however, only becomes cognisant of a death from any of these specified diseases when the death is registered, and the existing—and shall I at once say—antiquated law permits the registration being made up to thirty-one days after the death. Of what use to learn of a death from consumption thirty-one days after burial, and after the household goods had been sent, undisinfected, to be sold and distributed broadcast by auction? Such an instance actually occurred in August last in the Taranaki end of my district. I have reminded the Registrars of the instruction of 1905. Many have replied that the tardiness of registration prevents their doing as they would wish—to give immediate information of such deaths.

On the official form headed "'Registration of Births and Deaths Act, 1875': Guide to Persons registering a Death," the first words are, "Deaths should, if possible, be registered before burial. Nevertheless, the law allows thirty-one days for the registration of a death." Section 44 of "The Public Health Act, 1900," gives definite powers, but the flaw is that there is no mandate to any one to immediately notify deaths from infectious disease. And, again, strange as it may seem, there is nothing in the Burial Act to prevent the body of a person dying from consumption being kept for, say, eight days in an undertaker's establishment awaiting burial—if the deed be cautiously concealed.

Summed up, I may state the case categorically, thus: (1.) *Tangis* or wakes in whares or houses where a body lies dead of an infectious disease must be prevented. (2.) Disinfection of such premises and the things used, or lately in contact with the deceased, must be performed as soon as possible—that is, immediately after the body has left the house for burial. (3.) Neither of these steps is possible unless there be a mandate to some one to notify the local authority and the District Health Officer of the death. The remedy is, the limit for the cremation or burial of such corpses, or for placing them in a hermetically sealed, metal-lined coffin, must be within three days; the words quoted above, "Deaths should, if possible, be registered before burial," must be made obligatory, and not voluntary; and, as the undertaker may be said to be the person in charge of the body, he, or failing him, the "informant" of the death, must be required to send notice of a death from any of the scheduled diseases simultaneously to the Registrar of Deaths and the District Health Officer.

Auctions in Relation to Infectious Diseases.

I have above referred to the disquieting fact that the furnishings of a house lately occupied by a consumptive were distributed broadcast and undisinfected, until one of our Inspectors had traced their path. Section 35 of the Public Health Act reads:—

"Every person shall be liable to a penalty not exceeding twenty pounds who knowingly lends, sells, transmits, or exposes any things which have been exposed to infection from any infectious disease, unless they have first been effectively disinfected, or proper precautions have been taken against spreading the infection."

It is therefore provided that punishment may be inflicted upon the person for whom an auctioneer sells such infected goods; but such proceedings would be futile in preventing the perhaps already accomplished spread of the infection of, say, scarlet fever to which the goods might have been intimately exposed. The New Plymouth Borough Council has therefore resolved that the Municipal Association "be recommended to consider the advisability of so amending the Public Health Act as to make it compulsory for auctioneers to require a declaration to be signed, before

receiving bedding or clothing, that such bedding, &c., has not been exposed to infection, or has been properly disinfected."

I regard this suggestion as a valuable one, and an extension, as it were, of section 35, subsection (11), of "The Public Health Act, 1900."

Infectious-diseases Hospitals and Ambulances.

At *Masterton* an up-to-date infectious-diseases hospital, containing six beds, has been built on a site convenient to the General Hospital. This building will fill a want that the district has felt for many years.

At *Pahiatua* also has been erected a modern infectious-diseases hospital, and it should go far towards ensuring the isolation and checking the spread of scarlet fever or diphtheria should any epidemic of either disease occur. This hospital contains four beds.

At *Wellington*, as before mentioned, the accommodation for infectious diseases is far from satisfactory. Owing to the number of infectious cases notified and requiring hospital treatment, the wards have been taxed to overflowing throughout a greater portion of the year, and in a number of instances patients have been unable to gain prompt admission.

Two cases of measles—one from a crowded boardinghouse, the other a traveller just arrived in Wellington—required isolation. The Hospital Trustees agreed to their treatment in a suitable private house.

Fortunately, since the end of the period under review, Cabinet has authorsied the acquiring of about 5 acres of the Mount View Mental Hospital grounds for the purpose of erecting a new infectious-diseases hospital. The Trustees are to be congratulated on securing such an eminently suitable site, which is, though really isolated, in close proximity to the Hospital. Before long Wellington should be the proud possessor of a thoroughly modern infectious-diseases-hospital equipment.

At *Wanganui* I represented the need for an ambulance for the conveyance of cases of infectious disease to the available hospital, and addressed the Borough Council thereon, advising that the local authorities of the Wanganui Hospital area contribute, in shares to be agreed upon by them, to the cost of such ambulance. The matter was very quickly brought to a satisfactory conclusion by, especially, the efforts of the Mayor of Wanganui and the Chairman of the Waitotara County Council. Plans were prepared, a tender accepted, and an ambulance is being built. The cost is to be divided as follows: Wanganui Borough Council, four-tenths; Wanganui County Council, two-tenths; Gonville Town Board, one-tenth; Waitotara County Council, two-tenths; East Wanganui Borough Council, one-tenth.

I was unable to gain my point that the maintenance, control, and housing of the vehicle should be placed in the hands of the Wanganui Hospital Board. The Chairman of that body vehemently opposed such, to me, reasonable and facilitative idea.

At *New Plymouth* similar initial steps, though unanimously accorded by the local medical practitioners, met with the doom of rejection. The Hospital Board and Borough Council arrived —though on what grounds they do not state—at the emphatic conclusion that there was no need for such an ambulance. Suggestions were made to the New Plymouth Hospital Board with a view to the existing infectious-diseases wards being used to better advantage. These were availed of.

I have specially reported to you upon the provision and maintenance of infectious-diseases ambulances, and suggested necessary amendments to the Act.

Sanatoria for Consumptives.

During the year twenty-three persons suffering from phthisis in this district applied for admission to Te Waikato and Otaki Sanatoria.

The scheme for an annexe at Palmerston North has now taken definite shape. A site in proximity to the general hospital is under consideration. It is the intention of the Board to provide for four to eight patients, the amount of available funds being the determining factor.

Quarantine Regulations.

It is pleasing to be able to record that no cases of infectious diseases have arrived from oversea, with the exception of a few persons suffering from tuberculosis and of twelve persons suffering from, or contacts with, measles, who arrived by the s.s. "Corinthic" on the 1st February, 1908.

In regard to the former, they either entered into suitable bonds and were allowed to land in the Dominion in consequence, or else were returned by the shipping companies to the port of their embarkation. The measles patients and contacts were removed to Somes Island, and quarantined there during the period of infection.

Consultations were held with Dr. Pollen, Port Health Officer, on eight occasions.

The most interesting of these concerned a case of well-marked tuberculated leprosy. I took several photographs of the patient, the best of which are here inserted. The patient was a Greek —a native of one of the Ionian Islands, an A.B. on the s.s. "Manaton" from South America, which put in to Wellington for coal and provisions. He was twenty-seven years old, and in good working-health. It was difficult to obtain any history of the case, mainly for two reasons—the inability of the patient to speak English, and the manifest indifference of the patient and his compatriots amongst the crew to his condition. They told me there were many others like him amongst the islands he came from—in fact, no more notice was apparetnly taken of him than would be paid to a case of syphilis amongst other members of the sailing or general community. And perhaps this is but logical, for assuredly the ravages of widely distributed syphilis should receive much more attention from Europeans than infrequent and easily controllable leprosy.

HABITATIONS.

During the year twenty-two condemnation certificates were issued, distributed as follows:—

Locality.	Houses.	Stables.	Outbuildings.	Bakeries.	Totals.
Inglewood	...	1	1	...	2
Stratford	...	1	...	...	1
Wellington	5	2	1	1	9
Petone	3	...	...	..	3
Carterton	2	...	...	...	2
Otaki	2	...	...	...	2
Martinborough	1	...	...	...	1
Marton	1	...	...	...	1
Turakina	1	...	...	...	1
Total	15	4	2	1	22

In last year's report was pointed out the unsatisfactory state of the law, which did not give District Health Officers power to condemn timber, however rotten and insanitary, about to be used for building purposes until it was actually part of an erected house, and then only by condemning the house itself. Cases were constantly cropping up of old and dilapidated buildings being pulled down in the city and removed to the suburbs for re-erection. By section 7 of "The Public Health Act Amendment Act, 1907," the local authority, in whose district the building is about to be re-erected with the removed timber, is given power to withhold its consent. By this means the person responsible for moving the timber commits a breach of the Act, and incurs a heavy penalty. The new section will be a boon to local authorities and District Health Officers alike.

SUPPLY OF POTABLE WATER.

It is to be noted that in our Public Health Act there is nothing to correspond with the provision as to water-supply contained in the Home Public Health Act of 1875. Section 70 thereof reads,—

"On the representation of *any person* to any local authority that within their district the water in any well, tank, or cistern, public or private, or supplied from any public pump, and used or likely to be used by man for drinking or domestic purposes, or for manufacturing drinks for the use of man, is so polluted as to be injurious to health, such authority may apply to a Court of summary jurisdiction for an order to remedy the same; and thereupon such Court shall summon the *owner* or *occupier* of the premises to which the well, tank, or cistern belongs if it be private, and, in the case of a public well, tank, cistern, or pump, any person alleged in the application to be interested in the same, and may either dismiss the application, or may make an order directing the well, tank, cistern, or pump to be permanently or temporarily closed, or the water to be used for certain purposes only, or such other order as may appear to them to be requisite to prevent injury to the health of persons drinking the water. . . ."

Again, the Public Health (Water) Act of 1878—an amendment of the above Act—gives extended powers in this important direction. Section 3 reads,—

"It shall be the duty of every rural sanitary authority, regard being had to the provisions in this Act contained, to see that every occupied dwellinghouse within their district has within a reasonable distance an available supply of wholesome water sufficient for the consumption and use for domestic purposes of the inmates of the house."

In Shannon complaint was made of much undefined illness in a certain area. The water-supply was suspected. Three samples were taken:—No. 1: Well about 20 ft. deep; washhouse and box drain 3 ft. from well. No. 2: Well about 20 ft. deep; 18 ft. from pan closet. No. 3: Well 17 ft. deep; 20 ft. from pan closet.

The Colonial Analyst (Dr. Maclaurin) concluded the details of the separate analyses with this report: "The very high results for chlorine, nitrates, and solids in No. 1 show that it is a contaminated water, and while the comparatively small amount of albuminoid ammonia proves that this contamination is not of the most dangerous kind, the water may at any time become unsafe for human consumption, and should therefore not be used for such purposes. No serious objection can be taken to No. 2 water, although the chlorine appears to be high for the locality. No. 3 is bad water, unfit for potable purposes."

In Martinborough an epidemic of enteric fever is apparently associated with polluted well-waters.

Under the Sale of Food and Drugs Act of last session water is included in the definition of "food," but, as it could not be said that it was "sold" in the instances above referred to, no action under this Act was possible. Briefly, then, the position is this: There is no power to require a dwellinghouse to be supplied with pure water; there is no definition of "pure water" in any Act; there is no power to prevent any water-supply being used, even though it may be found to contain typhoid bacilli, or be reasonably suspected of causing enteric fever; there is no provision requiring a local authority to have a certificate of purity of any supply it intends adopting for its ratepayers; there is no power to require a local authority to enter upon remedial measures to prevent even obvious and serious contamination of its water-supply. All these factors need immediate attention, and, as directed by you, I have in preparation suggestions for the amendment of the Public Health Act which will, I trust, suitably meet each particular phase.

SANITATION OF HOTELS.

The outcome of the co-operation of our Inspectors with the police in reporting to the Licensing Committees, where the Licensing Benches have required recommendations made to be carried out, may be summed up in one word, "excellent." The encomium of the results I have had opportunity of hearing from many persons—commercial travellers amongst the number—encourages sustained persistence in our efforts where the Licensing Committee is lukewarm or merely "receives" the reports and advice of this Department pertaining to the better sanitation of hotels under its jurisdiction.

The following table shows the number of inspections made by each Inspector and the total number of hotels reported upon:—

Hotels inspected during the Period ended 31st March, 1908.

Licensing Committee.	Chief Inspector Schauer.	Inspector Gardiner.	Inspector Wilson.	Inspector O'Brien.	Inspector Perry.	Inspector Dorizac.	Inspector Miller.	Total.
Egmont	1	7	..	..	..	..	..	8
Taranaki	7	3	..	..	..	..	..	10
Patea	6	13	..	..	..	..	..	19
Hawera	7	9	..	..	..	..	..	16
Wanganui	15	..	..	..	..	..	..	15
Rangitikei	9	..	3	..	..	..	..	12
Oroua	7	..	2	3	..	..	..	12
Manawatu	10	..	6	..	..	..	..	16
Palmerston North ..	9	..	..	1	6	..	..	16
Otaki	5	..	..	3	..	..	..	8
Pahiatua	..	..	..	..	..	8	..	8
Masterton	..	..	..	..	..	14	..	14
South Wairarapa ..	..	..	..	..	..	2	14	16
Totals	76	32	11	7	6	24	14	170

Each separate report has been supervised by myself, and a general report, with recommendations approved, accompanied these when sent to the Committee. In many instances personal inspections were made by me.

It has been a pleasure to assist the Committees of South Wairarapa, Masterton, Pahiatua, Manawatu, Oroua, Rangitikei, Patea, Hawera, and Egmont. Generally our efforts met with the unstinted commendation of these licensing authorities. In Palmerston North our action was, in a sense, regarded as an innovation, and perhaps received the inevitable faint praise—that welcome of the "something new." Good results have, however, been obtained in this district, and already the number of "no recommendations to make" for future hotel reports is quickly increasing.

The Taranaki and Wanganui Committees were especially weak. The former seemed quite dismayed by a little opposition and some legal flourishings at the annual meeting, and ultimately sought safety by not asking that the Department's recommendations be required to be carried out in their entirety. Nevertheless the licensees have evidenced a desire to have Departmental "tags" removed, and I hope eventually to see these hotels in such sanitary condition that it will not be necessary to worry this Committee with any reports.

The lack of earnest of the Wanganui Committee is unaccountable. In the report to the annual meeting on the 10th June, as requested by this Committee, I commented upon Chief Inspector Schauer's report on a prominent hotel in Wanganui as follows: "The revelations as to the plumbing and sanitary fittings on these premises are astounding. Nothing more than one week should be allowed in which to enter upon the work of recommendation No. 1." Yet as far as the published accounts go—obviously, however, carefully curtailed by the local press—the license in this case was granted without comment. To my surprise, on arriving in Wanganui more than a month after the licensing meeting, I found the following state of affairs, which had existed at the time of the annual meeting: A water-closet compartment opening direct off a corridor amongst bedrooms had a notice, "Please keep this door shut." Reason obvious: the stench of the interior was abominable. Under the closet-seat was an accumulation of rats' excrement. A hole had been eaten into the seamed-lead soilpipe, and consequently the sewer-gas of the Wanganui sewerage system had free vent into the hotel. This closet, too, was just above the kitchen and dining-room.

I gave instructions that the door should be locked and the closet dismantled immediately. This was done. Nevertheless, a published report of the licensing meeting glibly made mention of the Department's reports as being "also satisfactory, containing a few recommendations for minor sanitary improvements," and the Committee weakly complied with an appeal that "It was time enough at the next quarterly meeting, after the licensees had been given an opportunity to make alterations, and had disregarded the same, for the Chairman to comment upon the same."

The amount of sanitary improvement in hotels recommended and already accomplished in the first year of this Department's systematic attention thereto is a sufficient justification for our efforts, and adds greatly to the comfort and health of the traveller and to the satisfaction of the genuine licensee, who is only too glad to be able to say his place "has passed the Health Department."

Drainage-work and Disposal of Refuse.

Year by year sees the boroughs and townships in this district advancing along the broad road to modern sanitation by means of drainage-work and proper refuse-disposal. In this regard special mention must be made of Palmerston North, Feilding, Masterton, Eketahuna, Pahiatua, and Petone, all of which are extending their drainage schemes. The outlying parts of these boroughs, which formerly were unsewered, and contrasted strongly and unfavourably with the other and sewered portions of the town, are now receiving or are about to receive that greatest of all blessings from a householder's point of view, a water-carriage drainage system. Under the old order of things one saw houses perhaps placed on small allotments with no means of disposing of their waste waters, &c., except in an unsavoury (to say the least of it) cesspool. If no cesspool were in existence, the slops, &c., had to be thrown over the small back yard, which was probably too small to boast a worked garden, where the polluted soil could be turned over and thus allow nature to step in and thus eradicate the contamination.

At Kaponga a proposal is being put before the ratepayers to borrow sufficient money to establish a high-pressure water-supply and drainage scheme. If this is carried out it should prove very beneficial, as the business portion of this town is extremely crowded. Small epidemics of typhoid have occurred here, and if the proposal is accepted and the work completed it should go far towards preventing a recurrence.

Having due regard to the limitations of the septic-tank system of sewage-treatment, it may be said that at all the boroughs in this district, with one exception, where the sewer-connection is obviously faultily constructed, the installations are working satisfactorily. Mechanical difficulties at Feilding gave some trouble. At Palmerston North much difference of opinion existed as to effectivity. Special investigations were made by me on three occasions, and I was enabled to come to the conclusion that there is no need to be disquieted. The especial trouble is the amount of secondary black deposit which passes from the tank to the filter-beds. I have, however, pointed out that secondary black deposit is a concomitant of a normally working septic tank, and cannot, as far as I can learn, be avoided in this method of sewage-treatment.

Inspection of Food.

The following list shows the amount of foodstuffs condemned by the Department during the year:—

31 bundles of fish,
113 kerosene-tins whitebait,
2 pieces meat,
2 crates fowls,
1 crate rabbits,
58 boxes dates,
11 cases chocolate (damaged by water),
3 crates crayfish,
21 hapuka,
1 ham,
2 crates turkeys,
12 hares,
149 sacks potatoes.

Owing to the number of infectious diseases notified, and to the fact that for more than half the year we have had the services of only one Inspector in Wellington in place of three, we have not been able to give as much attention to foodstuffs as they demand. Now that the Foods and Drugs Act has become law, it will, as I have already pointed out, require one Inspector for Wellington City to properly administer it, and he will, if as energetic as I would wish, have very little spare time to attend to any other duties. I have found it impossible, owing to our curtailed staff, to carry on that important branch of our work which was alluded to in last year's report as receiving special attention—viz., the material sold in the auction-marts. As a rule, it is to the auction-mart that any blemished foodstuff is sent, because it cannot be disposed of in the ordinary manner; consequently, it is at these places that constant supervision is needed.

In three cases, as will be seen in the table of prosecutions, it was necessary to take proceedings in connection with unsound food, and in every case a very substantial penalty was imposed.

By-laws.

The model by-laws framed by the Department last year have been in great demand, and have been supplied on request to various boroughs and townships, including Drainage and Plumbing By-laws to Nelson; Nightsoil By-laws to Johnsonville Town Board, Greytown Borough Council, Horowhenua County Council, and Rongotea Town Board. An Offensive Trade By-law was drawn up and submitted to the Petone Borough Council. It was approved by the local authority and adopted, after slight emendations.

Legal Actions.

The following is a list of the legal proceedings undertaken by the Department this year:—

No.	Date.	Particulars.	Fine and Costs.
	1907.		£ s. d.
1.	May 31 ..	Not notifying case of scarlet fever	0 1 0
2.	July 15 ..	Scarlet-fever patient exposing herself in shop..	7 16 0
3.	,, 15 ..	Shop let for hire without disinfection or informing incoming tenant scarlet fever had been in house within previous six weeks	5 4 0
4.	Aug. 28 ..	Offering unsound butter for sale	7 15 0
5.	Sept. 23 ..	Cabman taking infectious case, and only having disinfection performed on compulsion	Dismissed
6.	Oct. 22 ..	Preservative (formalin) in milk	6 10 0
7.	,, 23 ..	Failing to notify case of infectious disease	1 15 0
8.	,, 23 ..	,, ,, ...	2 8 0
9.	Dec. 10 ..	,, ,, ...	3 3 0
10.	,, 10 ..	,, ,, ...	6 9 2
	1908.		
11.	Feb. 29 ..	Offering unsound hams for sale	12 19 0

The following was undertaken at the instance of the Department:—

No.	Date.	Particulars.	Result.
1.	1907. Dec. 11 ..	By Corporation (failing to demolish condemned building). (Judgment was arrived at by agreement between parties concerned)	Order from Court to pull down within three years, and meanwhile extensive alterations to be made, to the Department's and Council's satisfaction.

Sanitary Inspection.

As I anticipated, after a short experience in my former district of the adoption by the Hamilton and Cambridge Boroughs of the powers given by section 16 of "The Public Health Amendment Act, 1903"—by which, in lieu of appointing their own Inspector of Nuisances, they are enabled to contribute to the salary of an Inspector appointed under "The Public Health Act, 1900"—I cannot speak too highly of the advantages reaped by the contributing local authorities, the public generally, and this Department by the wider adoption of this system in this district in the past years. With increased experience day by day, I feel sure it would be a retrograde step to in any way discourage, or, indeed, not to encourage, the contributing system.

A special report on the general administration of sanitary inspection was put before you.

The table below sets out the amount of contribution agreed upon towards the services of the various district Inspectors:—

Local Authorities Annual Contributions to Salaries of Inspectors (Section 16, "Public Health Amendment Act, 1903").

	£ s. d.	£ s. d.
Inspector Gardiner,—		
Inglewood Borough Council	15 0 0	
Waitara Borough Council	10 0 0	
Stratford Borough Council	30 8 0	
Eltham County Council	20 0 0	
Eltham Borough Council	15 5 0	
		90 13 0
Inspector Sargeant,—		
Waitotara County Council	30 0 0	
Wanganui Borough Council	90 0 0	
Purua Road Board	7 0 0	
		127 0 0
Inspector Wilson,—		
Rangitikei County Council	100 0 0	
Marton Borough Council	30 0 0	
Kiwitea County Council	42 13 0	
		172 13 0
Inspector O'Brien,—		
Feilding Borough Council	34 9 5	
Pohangina County Council	23 0 9	
Levin Borough Council	25 0 0	
		82 10 2
Inspector Hickes,—		
Pahiatua Borough Council	30 0 0	
Eketahuna Borough Council	10 0 0	
Mauriceville County Council	11 5 5	
Masterton County Council	31 4 7	
Eketahuna County Council	12 10 0	
		95 0 0
Inspector Miller,—		
South Wairarapa County Council	25 0 0	
Carterton Borough Council	18 1 6	
Featherston County Council	22 13 5	
Greytown Borough Council	16 16 2	
		82 11 1
Total		650 7 3

The Taranaki County Council has expressed a desire to take advantage of the system, and the question is about to be considered by the Pahiatua County Council and the Waverley Town Board.

Inspector Hickes is the latest of the Inspectors to be intrusted with charge of a district, and already his unremitting energy and extensive knowledge have gained him much praise.

Under the subsidising system individual small sums have been paid towards the salary of the Sanitary Inspectors of the Palmerston North, Masterton, and Hawera Borough Councils.

The following list shows the very large amount of work done by the Inspectors this year. Accurate figures are possible since the introduction of the monthly-report forms by Dr. Makgill. Inspections *re* complaints, 641; infectious diseases, 1,313; food-shops, 2,832; houses, 5,700; miscellaneous, 4,860: total, 15,346.

A Leper on a passing Ship.

[*To face p. 98.*

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

Foodstuffs	6	Townships	4
Houses	28	Infectious-diseases hospitals	3
Buildings	39	Nuisances	1
Hotels	21	Piggeries	1
Septic tanks	12	Creameries	1
Saleyards	1	Abattoirs	2
Drainage	4	Offensive trades	3
Sewage schemes	6	Shops	1
Meat-works	5	Stables	1
Factories	4	Rubbish-depots	1
Schools	9	Post-offices (drainage)	2
Water-supplies	6	Consumptive annexes	1

Physical Examinations,—

Applicants for sanatorium treatment	17
Cases of infectious disease	27
Others	26
	70

Special Reports have been made on the following subjects:—

Administration of sanitary inspection.
Septic-tank theory.
Contingencies of sale of furniture after death from consumption (New Plymouth Borough Council).
Providing, equipping, and maintaining ambulances for the removal of cases of infectious diseases.
Investigation of the borough septic-tank, Palmerston North Borough Council.
Suggestions concerning the 10-per-cent. certificate of infectious diseases occurring amongst school-children.
Circular 237.

Summary of Office-work.

Each year the work of the office increases greatly, and a glance at the following summary will show the very heavy work devolving on the District Office:—

Letters written (District Office)	2,533
,, (Laboratory)	1,356
	3,889
Circulars sent	224
Requisitions served on—	
Local authorities	186
Individuals	19
Via Factory Inspector	4
,, Licensing Bench	208
On other Departments	10
	427
Applications for admission to sanatorium	23
Condemnation certificates issued	22
By-laws dealt with	5
Prosecutions	12
	62

Sanitation of the Various Districts.

Apart from, or in addition to, incidental references in the foregoing portion of the report, the following is collated:—

Wellington City.

Population, 59,230. Infectious diseases reported: Scarlet fever, 525; enteric fever, 25; diphtheria, 125; tuberculosis, 43; blood-poisoning, 8; hydatids, 1.

Wellington is every year extending the benefits of its excellent drainage scheme and water-supply further afield. At the present time the preliminaries of connecting up Island Bay, Kilbirnie, Brooklyn, Wadestown, and Kelburne are in hand. In all these places in the past matters of sanitation have not been of the best, and it has been difficult to advise a means of betterment. It is simple enough to point out what should be done to an insanitary house situated in an unsewered boundary, so far as the house itself is concerned, but an owner cannot be asked to put in proper drains and sanitary fittings on the property itself when there is no drain or sewer to connect to when he reaches his boundary. Consequently, it has been found necessary to pursue a somewhat temporarily remedial policy in those parts lately joined to the city. Undrained and

insanitary places are the breeding-ground for typhoid fever and diphtheria. A comparison with last year's report shows that the former disease has been notified on one more occasion than last year, while diphtheria has risen from 45 to 125 cases.

The progressive tendency of the City Council is by no means diminished. It is not argument or wrangling that ever delays here, but want of time.

Scarlet fever has been very prevalent in the city, and has increased the notifications by 390 cases over the preceding years. The figures are: 135 cases in 1906, and 525 in 1907.

The new destructor is now an accomplished fact, and from the reports received it is quite competent to deal with all the present refuse, or any increase that is likely to occur for many years.

The water-supply has been augmented by a new reservoir at Karori, which I have visited. This is being used more especially for the supply to the higher altitudes. The new storage-reservoir at Wainuiomata is about to be commenced.

The work of disinfecting premises and things after infectious diseases has been undertaken by the City Corporation, instead of being done by one of the Department's Inspectors. Towards this end, Mr. Pasley has been appointed as Disinfecting Officer, and he was placed under this Department for some months so as to become thoroughly acquainted with this important duty, and his work is giving entire satisfaction.

Necessarily frequent absences from Wellington and the general short-handedness have prevented my giving the full amount of personal supervision that I believe due to the city; more especially has it been almost impracticable to keep up to the great and welcome activity of the Corporation's officers in the matter of attention to dilapidated houses. I hope in the near future to be able to devote more time to Wellington *per se*.

I have, from some inspections made, come to the conclusion that as soon as possible systematic investigation must be made from the sanitary standpoint of all premises—*e.g.*, afternoon-tea rooms, cheap dining-rooms, general restaurants, &c.—in which food is prepared and sold for consumption on the premises. I am encouraged in this course by a recognition of the great benefits obtained by the departmental supervision of hotels. After all, it must be acknowledged that the larger proportion of people do not partake of the principal day's meals in licensed premises; all the more reason, then, for the investigation outlined.

I can fully accord, and with very great pleasure, my predecessor's appreciation of the genuine courtesy and valuable co-operation of the Town Clerk and the City Engineer and their respective staffs.

Wellington Suburbs.

Karori.—In matters of sanitation this borough has not demonstrated any progressive movement, and is in practically the same condition as last year. Until the settlement as to whether it or Miramar is to be included in the Greater Wellington scheme, much, I fear, cannot be expected. A water scheme and sewerage or improved nightsoil system have been mooted.

Miramar suffered this year from an undue proportion of scarlet-fever and diphtheria cases, the numbers notified being 7 and 4 respectively.

Lower Hutt.—The drainage scheme for this borough has been installed, but is going to be extended. The number of scarlet-fever cases (20) is just double that notified last year. The diphtheria cases have also risen from 1 to 10.

Petone is also extending its drainage scheme. Here again scarlet fever and diphtheria show a large increase over the figures for 1906. The cases notified number 28 and 14 respectively.

Kaiwarra has always been greatly overcrowded, and has suffered from the want of proper sanitary services. Plans have been submitted for a drainage scheme to a septic-tank installation near the foreshore, with discharge of the effluent into, and purification by dilution and oxidation with, sea-water. These plans have been recommended to and approved by the Hon. the Minister, in pursuance of section 66.

District Boroughs.

Masterton.—Early in the year I addressed the Borough Council on the necessity of entering upon the work of extending the main sewerage system. A progressive and emphatic movement is likely in the near future.

Carterton.—As noted elsewhere, this borough had the misfortune to suffer from an epidemic of scarlet fever this year.

The water-supply of this borough has been a subject for adverse comment by the Bacteriologist. The remedy is comparatively simple.

Greytown.—This borough does not evidence much to show any "life" in its desires for sanitary reforms. Inspector Miller's earnest and constant supervision alone prevents retrograde movements.

Eketahuna.—A high-pressure water-supply is much desired. A visit of inspection, with Borough Councillors, was paid to the really fine proposed intake for this supply.

Pahiatua.—The relationship of the sewer-connection to the septic tank is here apparently defective. Steps to remedy this are being taken.

The water-supply intake of this borough was visited and found in proper order.

Levin decided to join the Inspector scheme, and is being regularly visited by Inspector O'Brien. This should go far towards putting the town on a better sanitary basis. It manifestly desires to vie with others in progression. A high-pressure water-supply is in course of installation; the sewerage system will inevitably come.

Palmerston North.—A partal analysis of the town water showed it to be not very satisfactory. Allusion has already been made to the fears of the septic tank's inoperativeness. The abattoir drainage was blamed. I am not, however, in any way convinced of this. Unfortunately, the

improper allowing of large quantities of blood-residues to flow into the borough sewers—as I noted on one surprise visit—may, if care be again relaxed, give rise to a general opinion that "there is something in it."

Feilding.—A visit to the sewage-treatment works was disappointing. The mechanical filter-bed distributors were working inefficiently through want of proper attention.

Inspector O'Brien continues untiring efforts to obtain a better nightsoil service.

Marton.—I do, I hope, emphasize by a repetition of last year's remarks: "Marton remains *in statu quo*. It is perhaps the least progressive of all the towns in the Wellington District. Drainage is required, and better supervision of back yards, and so forth." I feel sure that but for the personal and intimate supervision and incessant watchfulness of Inspector Wilson this town would be an even more dangerous breeding-ground for illnesses of infectious and other characters.

The railway-station sewage-tank installation has been an excellent demonstration of what can be done, even in a stiff and sodden clay subsoil, with the subsoil-irrigation system for purification of the effluent.

Taihape.—The question of obtaining a high-pressure water-supply for the town has been advanced to the stage of the taking of samples. It seems impossible to get any more practicable intake than in the Hautapu River, somewhere between Mataroa and Taihape. Unfortunately, a valuable reserve which could have been obtained a few years ago is now quite beyond consideration.

Wanganui.—With the "Greater Wanganui" and the electric-tram schemes much before the inhabitants, it is only perhaps reasonable to anticipate a temporary lull in the progress towards some needed sanitary improvements. Inspector Sargeant's untiring and detailed attention generally leaves nothing to be solved, if the remedy be within his power.

Hawera.—Under Inspector Macpherson's supervision, the objectionable conditions noted with regard to the two borough septic tanks have received attention and remedying.

The plumbing in this borough does not compare favourably with that of the younger towns.

Stratford.—I have visited the sewerage-treatment works. A little more attention is necessary to fully reap the amount of purification of the effluent I believe it to be capable of giving.

Extension of the sewerage system is particularly necessary in the direction of the river bridge.

Eltham.—I have not been able to give time for a personal inspection of this place. Inspector Gardiner's skill has supplied the deficiency.

Inglewood.—With a few exceptions Inglewood is satisfactory.

Waitara.—More definite steps are being taken to insure a high-pressure water-supply for the town.

New Plymouth.—An outbreak of enteric fever has directed attention to the need for sewerage-extensions here.

In counties and town districts nothing of special note needs mention here, except at Martinborough, where the Town Board has decided to put in a high-pressure water-supply.

Nelson, *Marlborough*, and *Westland* have been administered from Head Office since the beginning of 1907.

With experience of the District Health Officerships of Nelson, Marlborough, and Westland, and subsequently Auckland, it is pleasant to be able to put on record a note of the markedly progressive tendencies in sanitary matters in this health district. Here generally the assistance of the Inspectors and the advice and executive powers of the District Health Officer are sought by local authorities, and are looked upon as something to be made use of, rather than to be regarded as tentative interference.

I have, &c.,

JOS. P. FRENGLEY, M.D., F.R.C.S.I., D.P.H.,
District Health Officer.

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

MARLBOROUGH DISTRICT.

SIR,— Department of Public Health, Picton, 31st March, 1908.

I have the honour to submit my report as to the conditions of public health in the Province of Marlborough for the year ending the 31st March, 1908.

The district has been very free from infectious disease, only 41 cases having been recorded, the total being made up as follows: Diphtheria, 15 cases, 1 death; enteric fever, 8 cases, 1 death; scarlet fever, 6 cases, no deaths; tuberculosis, 11 cases, 5 deaths; puerperal septicæmia, 1 case, no deaths. It will be noted that the deaths from tuberculosis exceed in number those from all other reported infectious diseases.

DIPHTHERIA.

Fifteen cases were notified during the year. The cases were invariably of a mild type, in many instances the diagnosis being somewhat doubtful; there was only one death. All infected premises and surroundings were carefully examined by Inspector Johnson, and his suggestions for sanitary improvements were in every case carried out. The cases were scattered over a considerable area, but the place of origin and apparent centre was at Grove Town, from which district no less than eleven out of the fifteen cases were notified.

Typhoid or Enteric Fever.

Eight cases of this disease were notified, and there was one death. Of these, one case was imported from the North Island, one was a case contracted by a nurse while attending to an enteric patient, while the rest all originated in scattered country places.

Scarlet Fever.

Six cases were reported. No deaths. Careful isolation and disinfection prevented the spread of the disease.

Tuberculosis.

There is an increase in the number of cases reported, due not so much to an actual increase in cases of this nature, but rather to increased vigilance in notifying the disease by the medical practitioners of the district.

Accommodation for phthisical patients is now being provided by the Wairau and Picton Hospital Boards, the former having four shelter-sheds each containing one bed in connection with the Blenheim Hospital, while the Picton Board has recently erected a shelter with two beds in connection with the Picton Hospital. In both districts the annexes have been utilised and appreciated.

Private Tents.

Several consumptives have been, and are still being, treated at their own homes in many parts of the district, but I have no statistics relating to these private cases. In many of the recorded cases, notifications were only received when the patient was *in extremis*.

Puerperal Septicæmia.

Only one case was reported, which recovered.

Water-supply.

Marlborough is a well-watered district, streams, creeks, and artesian wells providing a plentiful supply of good drinking water. Picton and Havelock each possess a good high-pressure gravity service, while the inhabitants of Blenheim obtain their supplies from private artesian wells yielding a fine supply of good water. The recent drought scarcely affected the water-supply of the towns, but in some of the country districts the supply of water became very limited.

Hotels.

A very large amount of work has been done during the year in connection with the hotels of the province. All have been thoroughly overhauled, defects of buildings and sanitation pointed out, and in every case the recommendations of the Department have been cheerfully carried out.

Drainage.

At Picton a loan has been carried for the purpose of draining the central area of the town in accordance with plans prepared by Mr. Leslie Reynolds; there is every reason for thinking that these works will be completed within a few months.

At Blenheim there is an urgent need for improvements in the drainage of the town; this is a matter which should claim the immediate attention of the municipal authorities there.

In country districts the sanitary appliances are still too often of the most primitive description. In connection with this I may remark that far more cases of infectious disease are reported from country districts than from the towns.

A septic tank with aerating-beds has been installed at the Picton Hospital, and is working most satisfactorily.

Maoris.

Two pas exist in Marlborough, neither of which is very thickly inhabited, while a small number of Maoris are also scattered through the district, principally in the Sounds. Chest-troubles, due to bad hygiene, improper clothing, and crowding into badly ventilated dwellings, are common, so also are contagious skin-diseases accelerated by the same causes.

Dilapidated and Insanitary Houses.

Several houses which had become uninhabitable from old age have been destroyed; others have been put into repair in accordance with the recommendations of the Department.

Inspection of Dairies.

A considerable amount of work in this matter has been carried out in conjunction with the Agricultural Department. I am especially indebted to Inspector Moore, of the Stock Department, for assistance rendered.

In conclusion, I have to express my entire satisfaction with the manner in which Inspector Johnston has carried out his duties.

I have, &c.,

W. E. Redman, M.R.C.S., Eng., &c.,

Acting District Health Officer for Marlborough.

WEST COAST—SOUTH ISLAND.

Department of Public Health, Greymouth, March, 1908.

Memorandum for the Chief Health Officer, Wellington.

Annual Report.

As you are aware, my duties here commenced on the 16th October, 1907, having previously been located in Hamilton.

On first arriving here much of my time was occupied in preliminarily investigating my localities. So far, I may say that, owing to the climatic conditions, country work cannot be attended to as I should like, and further, I have to say that there are some infectious-diseases cases reported here that are really too far away, and would incur a large amount of expense owing to the difficulty in reaching the localities. Most of these are pulmonary tuberculosis, and where I cannot visit I send full instructions to the householder of how to prevent the spread of the disease, &c.

Preliminary investigations show that a large amount of work requires to be done right throughout the whole district—namely, Buller, Westland, Inangahua, and Grey Counties. However, I hope to see matters greatly improved upon in my next report to you, by persuading these local authorities to bring about better sanitary conditions of their various localities. It is my intention to attend some of their meetings, and to point out to them the need for adding to their present by-laws, for, although some of the clauses are modern, there are many items missing that should have been inserted. Apparently these by-laws have been taken from copies of those of the Wellington City Council, with the idea that "these are good enough for what we want." Here lies the danger of copying a few sections from by-laws of a large city, instead of having a complete set which will suffice for the present and future requirements of the existing town for which they are intended. I here mention a few of the sanitary improvements required, and which ought to have been noticed when the last by-laws for these towns were made in 1900, as the by-laws (from which I presume these were copied) contained all the necessary clauses.

(*a.*) There is no provision for drain-ventilation except where there is a W.C., and then only by the 2 in. anti-siphon pipe.
(*b.*) No fresh-air inlets to drains.
(*c.*) No inspection pipes or chambers.
(*d.*) Disconnecting-traps (and only in some house-drains) are the ordinary bent siphon.
(*e.*) Gully-traps are of the large type, and hold too much sewage.
(*f.*) Drains are never tested.
(*g.*) Urinal supply-pipes are directly connected to the drinking-water mains.
(*h.*) Sinks, &c., are not trapped in a large majority of cases, although the by-laws require it.
(*i.*) Ordinary seamed pipe (galvanised iron sheet) is used for waste-pipes in most cases.
(*j.*) Lavatory wastes are directly connected to soilpipes in new work (prohibited by by-laws). The lavatories, &c., are trapped, but not anti-siphoned.
(*k.*) Stables are not paved, properly drained, or provided in any way with manure-receptacles of a non-absorbent nature.
(*l.*) Pig-feed is collected and carted in wooden tubs without covers.
(*m.*) Plans of drainage are not asked for by the Council.

There are other things which might be quoted, but this is sufficient to show cause for a revolution in sanitary work throughout.

Disinfection.

Throughout the district the representatives of the various local authorities have been consulted *re* purchasing appliances and material. Reefton readily complied with my request. Westport has done so recently, also Buller County. Kumara and Hokitika are holding matters over. Ross is doing the same. I have had no replies from the Westland or Grey Counties in the matter.

Infectious Diseases.

Very few of these have been reported, most of them coming from the Inangahua County, and all places which have been in contact with same have been disinfected.

Visits of Inspection.

The following townships have been visited: Ross, Ruatapu, Lake Mahinapua, Hokitika, Karoro, Nelson Creek, Kumara, Kaiata, Dobson, Wallsend, Brunner, Ngahere, Blackball, Totara Flat, Ikamatua, Hukarere, Waimaunga, Taipoiti, Reefton, Globe Hill, Crushington, Black's Point, Capleston, Dillman's, Kanieri, Rimu, Westport, Granity, Millerton, Ngakawau, Nikau, St. Helens, Cobden, Camp, Runanga, and Progress Junction.

Dilapidated Buildings.

These have been reported on in Westport, Greymouth, Hokitika, and Ross. Two of the worst buildings in Greymouth have been removed, the owners having done this on their own account after a report had been sent in to the Borough Council on a number of the most dilapidated places.

A return of work for the past five months is herewith attached, but it does not give minor details, as many places have been revisited for the same purpose.

The press letter-book records 270 pages of memo.s, letters, and reports throughout the district.

E. Middleton, M.R.S.I. Sc. Lond.,
Inspector.

CANTERBURY DISTRICT.

SIR,— Department of Public Health, Christchurch, 25th May, 1908.

I have the honour to submit to you the annual report of the Canterbury Health District for the year ending the 31st March, 1908.

INFECTIOUS DISEASE.

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

Table No. 1.—Infectious Disease.

—	Population.	Enteric Fever.	Scarlet Fever.	Diphtheria.	Tuberculosis.	Erisipelas.	Septicæmia.	Hydatids.
Amuri County	1,406	...	...	...	...	...	...	...
Akaroa County	3,712	...	...	1	...	2	...	...
Little River	...	...	1	1	3	...	1	...
Ashburton County	14,104	...	...	...	...	...	...	...
Ashburton and suburbs	...	5	1	4	4	...	1	...
Rakaia	...	2	...	...	...	...	...	...
Methven	...	1	...	...	1	...	...	...
Lauriston	...	3	...	...	...	...	...	...
Tinwald	...	4	...	...	...	...	...	...
Ashley County	14,833	...	...	...	...	...	...	...
Rangiora	...	...	7	5	...	...	...	...
Kaiapoi	...	...	1	2	1	1	1	...
Amberley	...	...	1	...	...	...	...	...
Leithfield	...	...	...	...	2	...	...	...
Oxford	...	...	1	..	...	...	...	1
Cust	...	...	...	1	...	1	1	2
Sefton	...	1	...	3	...	...	...	...
Fernside	...	...	...	...	...	...	...	1
Springston	...	...	1	...	...	...	...	...
Woodend	...	...	...	2	...	...	...	...
Swannanoa	...	2	...	...	...	...	...	...
Ohoka	...	1	...	...	...	...	...	1
Loburn	...	...	...	4	...	...	...	...
Waikuku	...	1	...	...	...	1	...	...
Clarkville	...	...	...	2	...	...	...	...
Ashley Bank	...	...	...	1	...	1	...	...
Eyreton	...	...	...	1	...	...	...	...
Cheviot County	1,605	...	...	...	1	1	2	...
Domett	...	...	...	..	...	...	1	...
Geraldine County	7,630	...	...	...	...	...	...	...
Geraldine	...	...	4	...	...	1	...	...
Temuka	...	...	10	4	2	...	...	1
Milford	...	...	2	...	...	...	...	...
Kaikoura County	1,747	...	...	...	...	...	...	...
Kaikoura	...	...	1	1	1	...	...	1
Levels County	14,199	...	1	...	...	...	...	...
Timaru	...	15	27	3	2	1	...	8
Pleasant Point	...	2	1	...	...	...	1	...
Waimataitai	...	...	1	...	...	...	...	...
Mackenzie County	1,939	...	...	...	...	...	...	...
Fairlie	...	...	...	...	2	...	...	...
Selwyn County	93,460	1	...	...	1	...	...	...
Christchurch	...	27	45	40	33	11	5	1
Woolston	...	..	2	5	...	1	1	...
Riccarton	...	1	5	1	3	...	2	...
Avon	...	...	...	...	1	...	...	...
Spreydon	...	1	4	1	...	...	...	1
Heathcote	...	...	1	...	3	...	1	...
Lyttelton	...	4	4	9	12	4	2	2
New Brighton	...	1	...	...	..	...	...	...
Sumner	...	...	...	...	1	1	...	...
Belfast	...	...	1	...	...	...	..	...
Prebbleton	...	...	3	...	...	...	...	...
Islington	...	...	3	...	...	...	...	...
Yaldhurst	...	2	...	...	...	...	...	...
Hornby	...	...	1	...	...	...	...	...
Doyleston	...	2	1	...	...	...	...	...
Darfield	...	...	...	...	...	...	1	...
Ellesmere	...	...	2	...	...	...	...	...
Greenpark	...	...	...	1	...	...	...	...
West Melton	...	1	...	2	6	2	3	1

Table No. 1—Infectious Disease—continued.

—	Population.	Enteric Fever.	Scarlet Fever.	Diphtheria.	Tuberculosis.	Erysipelas.	Septicæmia.	Hydatids.
Waimate County...	8,147	...	...	...	...	...	...	...
Waimate	...	3	64	...	...	...	...	...
Morven	...	1	...	1	...	...	...	...
Studholme Junction	...	...	1	...	..	...	...	...
Waitaki County	14,684	..	...	...	1	...	...	...
Oamaru	...	1	...	...	2	...	...	...
Enfield	...	1	...	..	...	...	...	...
Mulgrove	...	...	...	...	1	...	...	...
Totara	...	...	2	...	...	...	...	...
Incholm	...	...	1	...	...	...	...	...
Duntroon	...	...	2	...	...	...	...	...
Totals	177,466	80	205	95	83	29	23	21
Totals in Christchurch and district	...	29	57	47	40	12	9	2

Table No. 2.—Scarlet Fever.

—	Apl.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Totals.
Christchurch	3	3	4	5	4	5	4	2	0	6	1	2	39
Woolston	...	...	...	...	...	...	...	...	...	2	...	...	2
Riccarton	1	...	...	...	1	...	1	1	1	...	...	...	5
Spreydon	...	1	1	1	...	...	1	...	...	...	1	...	5
Lyttelton	1	...	...	...	...	...	...	...	...	...	2	1	4
Hornby	...	...	...	...	...	...	1	...	...	...	...	...	1
Prebbleton...	1	...	...	1	...	..	...	1	...	...	...	...	3
Islington	...	...	3	...	...	...	...	...	...	...	...	...	3
Ellesmere	...	2	...	...	...	...	...	...	...	...	...	...	2
Doyleston	...	...	...	...	...	...	...	...	...	...	...	1	1
Little River	...	...	...	...	1	...	...	...	...	...	...	...	1
Kaikoura	...	...	...	...	...	...	...	...	1	...	...	...	1
Amberley	...	...	...	...	...	...	...	1	...	...	...	...	1
Rangiora	1	...	...	3	...	3	...	...	...	...	...	...	7
Springston...	1	...	...	...	...	...	...	...	...	...	...	...	1
Oxford	...	...	...	1	...	...	...	...	...	...	...	...	1
Swannanoa	1	...	...	...	...	1	...	...	...	...	...	...	2
Ohoka	...	...	...	1	...	...	...	...	...	...	...	...	1
Kaiapoi	...	1	...	...	...	...	...	...	...	...	...	...	1
Belfast	...	...	...	1	...	...	...	...	...	...	...	...	1
Ashburton...	...	...	...	...	...	...	...	...	...	...	...	1	1
Temuka	1	...	...	...	...	...	1	2	...	...	1	4	9
Milford	1	...	...	...	...	...	...	...	...	...	...	...	1
Geraldine	...	...	1	...	...	...	1	...	...	...	2	...	4
Waimataitai	...	...	...	1	...	...	...	...	...	...	...	...	1
Timaru	...	...	2	...	3	5	4	4	3	1	2	1	25
Pleasant Point	1	...	...	...	...	...	...	...	1	...	...	...	2
Studholme Junction... ...	...	...	...	...	...	...	...	...	1	...	...	...	1
Waimate	...	4	4	5	7	2	6	5	2	2	3	10	50
Duntroon	...	...	...	...	...	...	1	...	...	...	...	...	1
Totara	1	...	1	...	...	...	...	...	...	...	...	...	2
Incholme	...	...	...	...	...	...	...	...	...	...	...	1	1
Totals	13	11	16	19	16	16	20	16	9	11	12	21	180
Totals in Christchurch and district	4	4	5	6	5	5	6	3	1	8	2	2	51

There were 204 cases of scarlet fever in 180 houses, as compared with 174 cases in 139 houses in 1906. In Christchurch and district there were 57 cases in 51 houses, as compared with 81 cases in 69 houses in 1906. For the increase in the total number, the South Canterbury District is chiefly responsible, especially as this district has had comparatively few cases during the last few years. In 42 cases out of 57 in Christchurch and district in which the age was known, the following is the age and sex distribution:—

Under 5 Years.		5–10.		10–15.		15–20.		20–30.		30–40.		Over 40.	
M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
1	7	9	12	1	5	2	0	1	2	1	1	0	1

In 197 cases, out of 204 notifications 79 were males and 118 females.

Table No. 3.—Enteric Fever.

—	Apl.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Totals.
Christchurch	1	...	1	1	1	2	1	1	2	2	12	2	26
Spreydon	...	...	...	...	...	...	...	...	...	1	...	...	1
Riccarton	...	...	...	...	...	...	...	...	1	..	...	...	1
Selwyn County	...	1	...	...	...	...	...	...	...	...	...	..	1
New Brighton	...	1	...	...	...	...	...	...	...	...	...	...	1
Lyttelton	...	...	1	...	1	...	...	...	...	...	...	2	4
Sefton	...	...	...	...	...	...	...	...	...	...	...	1	1
Waikuku	...	...	...	...	...	...	...	...	1	...	...	...	1
Yaldhurst	...	...	...	...	...	...	...	...	1	...	...	1	2
West Melton	...	...	...	1	...	...	...	...	...	...	...	...	1
Doyleston	..	1	...	...	...	...	...	...	...	...	..	1	2
Lauriston	2	...	1	...	...	...	...	...	...	...	...	...	3
Methven	...	...	...	1	...	...	...	...	...	...	...	...	1
Rakaia	...	...	...	...	...	...	...	...	...	1	1	...	2
Ashburton and suburbs ...	...	...	...	1	...	...	...	...	1	...	1	2	5
Tinwald	...	...	...	...	...	...	...	...	...	...	2	2	4
Timaru	2	2	1	...	...	...	2	...	...	4	2	2	15
Pleasant Point	1	...	...	1	...	...	...	...	...	...	...	...	2
Waimate	...	...	1	...	...	1	...	...	...	...	1	...	3
Morven	...	...	...	...	...	...	...	1	...	...	...	...	1
Oamaru	...	1	...	...	...	...	...	...	...	...	...	...	1
Enfield	...	1	...	...	...	...	...	...	...	...	...	...	1
Totals	6	7	5	5	2	3	3	2	6	8	19	13	79
Totals in Christchurch and district	1	...	1	1	1	2	1	1	3	3	12	2	28

The total number of cases, 79, is a considerable increase on the totals of the last two years, which were 32 and 31 respectively. For the increase in number, Christchurch and Timaru are chiefly responsible. In February the cases in Christchurch began to considerably increase, and there seemed indications that an epidemic might occur. The summer was exceptionally dry, and if it had not been for a similar drought last summer when there were only 6 cases in Christchurch, the increased number would probably have been put down to the drought. Inquiries that were made into these cases did not give any indication of any common source of infection.

Of 23 cases in the City of Christchurch, 16 had pan closets and only 7 were connected with the sewer. At my request the City Council made special arrangements for dealing with the nightsoil from infected houses.

Table No. 4.—Diphtheria.

—	Apl.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Totals.
Christchurch	3	4	9	5	4	...	5	5	1	1	1	1	39
Woolston	...	...	1	2	...	...	...	2	...	...	...	...	5
Heathcote	...	...	...	...	...	...	...	...	...	...	1	...	1
Riccarton	...	...	...	...	...	...	1	...	...	...	...	...	1
Spreydon	...	...	...	1	...	...	...	...	...	...	...	...	1
Lyttelton	...	...	3	...	3	3	...	...	...	...	...	...	9
Akaroa and district ...	...	...	...	...	1	...	...	...	...	...	...	...	1
Little River	...	...	...	1	...	...	...	...	...	...	...	...	1
Greenpark	...	...	...	...	...	...	...	...	...	...	1	...	1
Kaikoura	1	...	...	...	...	...	...	...	...	...	...	...	1
Rangiora	...	...	...	...	...	1	...	1	...	...	1	2	5
Ashley	...	...	...	...	...	...	...	...	...	...	1	...	1
Eyreton	...	...	...	...	...	...	...	...	...	...	...	1	1
Sefton	1	1	...	...	...	...	...	1	...	...	...	...	3
Cust	...	...	...	1	...	...	...	...	...	...	...	...	1
Loburn	...	...	1	3	...	...	...	...	...	...	...	...	4
Kaiapoi	...	...	...	...	...	...	...	...	1	...	1	...	2
Clarkville	...	...	...	...	...	...	...	...	...	...	2	...	2
Woodend	...	...	...	...	...	...	1	1	...	...	...	...	2
Ashburton	...	...	...	...	...	...	1	...	...	3	...	...	4
Temuka	...	...	1	...	...	...	...	...	1	...	...	1	3
Timaru	1	...	...	...	...	1	...	1	...	...	...	...	3
Waimate	...	...	...	...	1	...	...	...	...	...	...	1	2
Morven	...	...	1	...	...	...	...	...	...	...	...	...	1
Totals	5	6	16	13	9	5	8	11	3	4	8	6	94
Totals in Christchurch and district	3	4	10	8	4	...	6	7	1	1	2	1	47

There were 95 cases in 94 houses, as compared with 59 cases in 53 houses in 1906. There was a considerable increase in the number of cases in Christchurch and district, which was responsible for 47 cases.

Measles.

The epidemic, which began in the summer of last year, continued to spread in Christchurch and in various other parts of the district, but before the summer came it had died out in most places.

Epidemics in Schools.

Thirty-five applications were received for the certificate of the District Health Officer under the Regulations gazetted on the 29th November, 1906, under "The Education Act, 1904," which provides that on the District Health Officer certifying that 10 per cent. of children were affected by an infectious disease, the average attendance of another period may be substituted for that of the quarters affected. Of these applications, 33 were granted and 2 were for certain reasons refused. Owing to the wording of the regulation being somewhat vague, it was difficult to give it any exact interpretation. Corroborative evidence in support of the applications was generally available, and, as in most cases it was the first year that applications for certificates had been made, a liberal interpretation was allowable.

Mortality.

The following notifications of deaths were received at this office: Enteric fever, 5 (4 in Christchurch); diphtheria, 4 (all in Christchurch); scarlet fever, 2 (none in Christchurch); measles, 3 (all in Christchurch). It is somewhat remarkable that there were only three deaths from measles, as, considering how widespread the epidemic was and the high mortality that generally occurs, a higher number of deaths might have been expected. There was, however, a slight increase in the number of deaths from bronchitis and pneumonia in children under five years, which possibly may have been due to measles. If the notifications received at this office from the Registrars is a correct indication of the number of deaths in the district, the mortality from this disease is certainly low. Judging, however, from the returns received from Registrars in respect to deaths from tuberculosis, it would appear that only a few of the Registrars send in notifications of deaths to this office.

DANGEROUS INFECTIOUS DISEASES.

Plague.

In April a suspicious case occurred on H.M.S. "Powerful" on her arrival at Lyttelton. The patient, who was in charge of the canteen, had left Sydney, where he had been living for about three weeks, about eight days before. As he might have been exposed to infection in Sydney, and the symptoms were distinctly suspicious, the ship was put in quarantine. After a couple of days had elapsed it was practically certain the case was not one of plague, so the quarantine regulations were removed, and the patient was sent to Quail Island.

In September a doctor in Timaru notified me that he was attending a case which he had reason to suspect might be a case of plague. The patient was a male adult, but there was nothing in his occupation or his recent movements which would have rendered him liable to infection. The symptoms were, however, very suspicious, and at the request of this Department, the Mayor of Timaru, acting for the South Canterbury Hospital Board, made prompt arrangements for the erection of tents for the patient and a nurse on a reserve close to Timaru Hospital. After a few days all suspicious symptoms disappeared, and there was no necessity to continue the precautions which had been adopted of isolating the patient and the occupiers of the house where he had been living.

Leprosy.

In November a second case of leprosy was sent to Quail Island. The patient was a Maori, a male adult from the North Island. A separate small building was erected for his accommodation at the cost of about £100, on a very suitable site adjoining the building in which the other leper had been accommodated. Both patients appear to be as well contented with their surroundings as can be expected.

INFECTIOUS-DISEASE HOSPITALS.

Bottle Lake Hospital.

Of the 57 cases of scarlet fever in Christchurch and district, 33 were treated at Bottle Lake. Three cases of measles and 2 of diphtheria were also treated there.

Ashburton.

The following cases were treated in the infectious-disease annexe: Measles, 5; diphtheria, 3; scarlet fever, 1; enteric fever, 8; phthisis, 2.

Timaru.

Twenty cases of scarlet fever and 2 of measles were treated at the Talbot Hospital during the year.

Oamaru.

Three cases of enteric fever and 1 case of measles were treated at the infectious-disease annexe.

Tuberculosis.

Eighty-three notifications of tuberculosis were received during the year, against 120 last year. Notices of 105 deaths were received from the Registrars, against 89 last year. For the year ending

the 31st December, 1907, there were 52 deaths from phthisis in Christchurch, as compared with 28 in 1906. It is evident that the notification of tuberculosis by medical practitioners is very incomplete. In many cases the case is only notified in the last stages of the disease, although the patient has often been attended by several doctors previously.

Canterbury Sanatorium for Consumptives.

As "The Public Health Amendment Act, 1906," which was intended to provide for the combination of Hospital Boards for the purpose of the erection and maintenance of a sanatorium for consumptives, did not apparently fulfil the purpose for which it was intended, the matter was further dealt with in section 2 of "The Public Health Amendment Act, 1907." Unfortunately, the South Canterbury Hospital Board, after having passed many resolutions to the general effect that the Board wished to join with the North Canterbury and Ashburton Hospital Boards for the purpose, decided at the last moment, when the legal machinery was complete, not to join in the scheme. It was to be hoped that local government had so far advanced that a scheme which depended for its success on the amalgamation of local bodies and the sinking of local interests could have been brought to a successful issue. In taking this step the South Canterbury Hospital Board has gone dead against the opinions of the large majority, if not all, of the medical men in the district, and I have no doubt if the curable consumptives for whose benefit the institution was designed could make their voices heard, they would also regret that the scheme had fallen through.

Owing to this action of the South Canterbury Hospital Board the General Committee decided, in preference to going to the public for further subscriptions, which could, no doubt, have been readily collected at the time when subscriptions were first started, but which were not then required owing to the promise of the South Canterbury Board to join in the scheme, to ask the North Canterbury Hospital Board to complete the buildings at an estimated cost of about £4,000, and raise the money out of rates.

The buildings, which were to have been completed according to contract in December, are still far from completion.

INFANTILE DIARRHŒA.

In January, February, and March, 1907, there were 68 deaths from infantile diarrhœa and gastro-enteritis in Christchurch City and Woolston Borough. In January, February, and March, 1908, there were only 14 deaths from the same causes. In this year the drought was more severe and the temperature was quite as high as in the corresponding period last year. It would have been natural to expect that the number of deaths would have approximated the number of last year. The comparatively low death-rate cannot readily be explained. It is true that during this summer the Infant Life Preservation Society had been brought into active existence through the energy of Dr. Truby King and some enthusiasts in Christchurch. It would be a matter of great satisfaction to those concerned if the diminished death-rate could be attributed directly to their efforts. I have no doubt that lives have already been saved by the action of the society, and that some of the diminution of the death-rate is certainly due to their efforts, but, unfortunately, experience shows that one can only draw reliable inferences from statistics extending over a fairly long period. Perhaps in a short time the society may have largely extended its functions, and have a much larger influence over the proper feeding of infants, and if, during other hot and dry summers the death-rate from that disease continues to be small, this society may fairly be given the credit for being mainly responsible for the decrease in the number of deaths.

MEDICAL EXAMINATIONS.

Two persons were examined for other Government Departments and three for Cambridge Sanatorium.

PROSECUTIONS.

The contractors for removal of nightsoil in the district of the Riccarton Road Board were fined £1 10s. and costs for allowing accumulation of nightsoil on the section where it was deposited.

A person was fined 5s. and costs for obstructing an Inspector of the Department.

The Christchurch City Council and the Woolston Borough Council respectively obtained orders from the Magistrate against owners of property for failing to pull down houses certified by the District Health Officer as being in a condition unfit for occupation.

An order was obtained from the Magistrate by this Department for the destruction of 113 cases of poultry stored in the Lyttelton Harbour Board's cool-chambers at Lyttelton, as being unfit for human consumption. No penalty was asked for.

The offensive trade of offal-treating carried on by Clegg, the contractor for the removal of offal from the Christchurch City Abattoirs, having been reported by the District Health Officer as a nuisance under section 72, and the requisition served on Clegg by the Templeton Road Board, the local authority for the district in which the works are situated, not having been complied with, an order was obtained from the Magistrate by the Templeton Road Board requiring the abatement of the nuisance, and specifying works to be done.

BUILDINGS UNFIT FOR OCCUPATION.

Under the Municipal Corporations Act 11 buildings in Christchurch, 2 in Kaiapoi, 1 in Oamaru, and 1 in Lyttelton were certified as unfit for occupation.

OFFENSIVE TRADES.

In May, 1907, I drew the attention of the freezing companies in this district to the provisions of the Public Health Act in respect to offensive trades. Very little attempt had been made so far

to minimise the offensiveness of the gases from the digesters and driers. During the last year improvements have been made in this direction in some of the works. In the case of Clegg, who treats the offal from the Christchurch Abattoirs, the works were badly constructed and the whole business badly managed, and, apart from the fact that there were no special appliances for minimising the offensiveness of the gases from the digesters and drier, the trade was carried on so as to be unnecessarily offensive. The Templeton Road Board was recommended under section 74 to take action in the matter, and, after considerable delay arising from legal technicalities, an order was obtained from the Magistrate for improvements to be effected.

General Sanitation of the District.

Christchurch.

Water-supply.—On the 26th June a separate poll was taken in connection with the high-pressure water-supply proposal in the three wards—Central, Linwood, and St. Albans—and was carried by a fair majority in each ward. The expenditure authorised is £114,900. The carrying of the poll in spite of the opposition of those who were straight-out opponents of any water-supply scheme and the more dangerous opposition of those who approved of the principle of a high-pressure water-supply but did not approve of the particular scheme, marks a great step in advance in the sanitation of Christchurch. The carrying-out of this scheme has been well pushed on, and an abundant supply of good water obtained at the site selected for sinking the wells. A complete water-carriage system of all sewage is now practicable in the sewerage area in the near future.

Drainage.—The Christchurch Drainage Board's Engineer's report for the year ending 31st December, 1907, shows that a large amount of work in connection with the drainage system has been accomplished, and is in process of completion: At the pumping-station new buildings and plant are being erected; at the drainage farm 45 acres have been formed for the reception of the drainage; the laying of the sewers has been completed in St. Albans Ward; and within the next year it is probable that the sewers in the sewerage area will be complete. The number of house connections has greatly increased: 922 houses were connected with the sewer, as compared with 341 in the previous year; and 448 water-closets were connected with the sewer, as compared with 353 in the previous year. Until the high-pressure water-supply is available the Council are naturally not enforcing the installation of water-closets where no water-supply is available. The drainage of the suburbs outside the sewerage area, which cannot be connected by gravitation with the present scheme, is yearly becoming a more pressing problem for solution.

Sanitary Conveniences.—This matter has been under the consideration of the City Council for some years. The difficulty in the way has been naturally the question of expense. In order to facilitate the carrying-out of this work the Council asked for the formal recommendation of the District Health Officer, and the approval of the Minister, under section 66, so that money could be borrowed by special order without taking a poll of the ratepayers. The recommendation of the District Health Officer and the approval of the Minister were duly given, and a contract has now been let to erect three underground sanitary conveniences at the cost of about £4,000.

Woolston.

The concrete channelling has been largely extended during the year, to the great benefit of the borough. The Borough Council has under consideration a proposal to treat the nightsoil by a septic tank, as it is expected that a considerable saving in the cost of nightsoil-removal will be made if this scheme can be successfully carried out, owing to the large cost of cartage to the depot at Chaney's. If a satisfactory guarantee can be obtained from the Septic Tank Company, it is probable this work will be installed during the coming year.

Lyttelton.

A poll in connection with the drainage scheme was carried by the large majority of 240 votes to 10. By-laws have been drafted by Inspector Kershaw for the plumbing and drainage work, and good progress should be made in laying the sewers during the year.

Sumner.

Owing to the action of the sea the main sewer on the beach was broken, and the sewerage was unavoidably discharged on the foreshore for some time. A new sewer was laid as promptly as possible by the Borough Council further inland, and it is not probable that this accident will again occur.

Ashburton.

Owing to the failure of the wells in a dry season, and the failure of windmills in still weather, and the general expense of an individual water-supply, a proposal was put before the ratepayers for a high-pressure water-supply at the cost of about £20,000. The engineer for the scheme was Mr. Cyrus Williams. The poll, however, was lost. Another scheme has, subsequent to the period with which this report deals, been put before the ratepayers and carried.

Temuka.

Temuka is considering the advisability of joining the majority of towns in having a water-supply. There are two sources of supply being considered. One is to obtain the water by gravitation from a source about six miles away; the other is to sink a well and raise the water by pumps into a tank, and thus distribute it by gravitation.

Timaru.

Good progress is being made with the drainage scheme in this town, and, after considerable trouble, the by-laws with regard to the drainage and plumbing work are being more rigidly enforced.

The question of improving the water-supply is now being considered by the Council. The water is a good one from the point of view of chemical purity, except that it is very often a very dirty one, owing to the presence of clay and other solid matters. As the same main is used for domestic supply and power purposes, there is, owing to the large quantity of water used, more difficulty in effectively filtering the water than in a scheme which provides only a domestic supply; but until some means are devised for effectively removing the solid matters the Timaru water-supply cannot be considered a first-class one.

As is the case in most other towns, a large part of the population lives outside the borough boundary, where there is practically no local government or facilities as far as sanitation is concerned. The borough has no power to extend its boundaries, and the County Council has no very great facilities for making improvements. In one small district, known as Buchanan's Paddock, which is as densely populated as parts of the borough, the ratepayers took steps under section 269 of "The Counties Act, 1886," to have a drainage district constituted, so that improvements could be made in connection with drainage matters. The district only contains about fifty ratepayers, and this seems a very cumbersome and roundabout way to have to take before such small improvements as the construction of side channels can be made.

Waimate.

The water-supply in Waimate was completed during the year, and, in spite of a dry summer, the quantity of the supply never gave cause for any anxiety. This town is favourably situated for a deep-drainage scheme, and, as the population is increasing and local opinion is becoming more progressive, I expect that this will be a subject that will be brought before the ratepayers shortly.

Oamaru.

In my last report I stated, "It is to be hoped that a complete drainage scheme will soon be undertaken. It would at all events be good policy for the Council to get a report on a complete scheme from a competent engineer, so that all future extensions of the sewers will be done on a recognised plan, instead of on the somewhat haphazard system that prevails at present," and this course of action had been previously recommended to the Borough Council. I am glad to be able to report that the Council has since obtained a report from Mr. Marchant on a complete system of sewerage for the Town of Oamaru. The cost is estimated at £26,779, excluding house connections. One short sewer has already been laid in accordance with the scheme, and any new sewers that are put in from time to time will similarly form part of the scheme, and will not be money thrown away if at any future time it is decided to complete the scheme.

INSPECTORS' WORK.

The appended reports show the nature of the routine work that has been carried out during the year.

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

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

Dr. Finch, D.H.O.

I HAVE the honour to report as follows regarding work done during the year:—

CHRISTCHURCH AND DISTRICT.

In addition to the ordinary work in connection with the investigation of infectious cases and complaints received, special inspections were made as follows:—

(*a.*) Butchers' shops, with particular reference to the manufacture of small goods.
(*b.*) Jam, pickle, and sauce factories.
(*c.*) Cordial-factories; also inquiries regarding essences and preservatives used.
(*d.*) Milk-shops, as to methods of storage and general conditions.
(*e.*) Stables, regarding provision or non-provision of suitable manure-receptacles.

A revised set of Drainage and Plumbing By-laws was prepared for the Lyttelton Borough in connection with the proposed drainage scheme.

The drainage arrangements in connection with the Sanatorium for Consumptives, Cashmere, have been supervised, tested, and passed.

Akaroa has been visited, and inspections made of several drainage and plumbing installations.

TIMARU AND DISTRICT.

Various notified cases of infectious disease from this district were investigated, and other matters arising have been attended to. During the year the Borough Council appointed Mr. Smith Sanitary Inspector, and as a sequence the Drainage By-laws are now strictly enforced, resulting in a marked improvement in the character and efficiency of the work being done.

OAMARU AND DISTRICT.

The work done in this district has consisted largely in arranging and supervising drainage and plumbing work, and attention to various complains received.

PLUMBING AND DRAINAGE CLASSES.

Classes were held in these subjects at Timaru and Oamaru during the year, and the attendance was satisfactory. Both class and local examinations were conducted, and for the latter a large number of candidates entered in Timaru to enable them to qualify for licenses.

The following is a summary of work done during the year:—

Infectious diseases investigated	75	Fish-preserving works inspected	1
Ptomaine-poisoning outbreak investigated	1	Confectionery-works inspected	1
Dwellings disinfected	29	Offensive trades inspections	12
Schools disinfected	1	Stables inspected	46
Parcels disinfected for Postal Department	35	Poultry-farms inspected	2
Dwellings and premises inspected	16	Rubbish-depots inspected	1
Butchers' shops inspected	24	Drainage and plumbing inspections	152
Milk-shops inspected	20	Complaints investigated	39
Dining-rooms inspected	9	Requisitions served	3
Fruit-auction-room inspections	4	Requisitions complied with	2
Cordial and aerated-water factories inspected	14	Sewage-samples taken	7
Jam, pickle, and sauce factories inspected	7	Water-samples taken	4

MARK KERSHAW,
Sanitary Inspector.

Dr. Finch, D.H.O. Department of Public Health, Conterbury District.

I BEG to report as follows on work done during the year ending 31st March, 1908:—

The usual country inspections have been made, and information gathered *re* the removal of rubbish and nightsoil, and disposal of same, also cost in each case.

A set of Sanitation By-laws was prepared and sent to the newly formed Cheviot Town Board, and also to the Mount Hutt Road Board.

A number of infantile-diarrhœa cases have been inquired into *re* feeding, &c., and the premises inspected.

A number of milk-shops were also inspected under the Sale of Food and Drugs Act.

The usual complaints have been investigated, and action taken where necessary.

The following is a summary of work done during the year:—

Infectious diseases investigated	115	Slaughter-yards inspected	4
Dwellings disinfected	67	Nightsoil-depots inspected	2
Dwellings and premises inspected	312	Country districts inspected	42
Boardinghouses inspected	49	Complaints investigated	71
Bakehouses inspected	50	Overcrowding cases investigated	1
Butchers' shops inspected	52	Water-samples taken	20
Milk-shops inspected	14	Requisitions served	6
Fruit-shops inspected	11	Requisitions complied with	5
Fish-shops inspected	9	Creameries inspected	5
Hotels inspected	58	Cheese-factories inspected	1
Schools inspected	40	Infantile-diarrhœa deaths investigated	15
Offensive trades inspected	18	Rubbish-depots inspected	3
Jam-factories inspected	3	Prosecutions	1

R. J. MCKENZIE,
Sanitary Inspector.

OTAGO AND SOUTHLAND DISTRICT.

SIR,— Department of Public Health, Dunedin, 8th June, 1908.

I have the honour to send you my annual report on the work done and chief occurrences in the Otago-Southland Health District, along with summaries of the most important matters which engaged my attention.

This work, you will see, has been almost entirely of a routine character, nothing of a notable nature having turned up during the year, but the district in general has been pretty well submitted to supervision, as my summary of localities visited and inspected by myself and Inspectors will show you. And, besides general inspection, many localities, including the city and suburbs of Dunedin, some of the suburbs of Invercargill, and some thirteen of the smaller towns, have been submitted this year, in continuance of that work commenced last year, to a thorough house-to-house inspection. On the reports of these minute inspections being handed to me by the Inspector I have made duplicate copies of them, sending these to the local authorities, with comments, requesting attention to be paid to the defects thus revealed, to which, on the whole, regard has been paid, so that I have reason to believe some progress has been made in the general sanitation of the places looked into.

A glance at the summary of these inspections shows that so far as they have been completed, speaking generally, the larger towns compare unfavourably with the smaller ones; Dunedin City and suburbs being found to have sanitary imperfections in their premises to the amount of over 53 per cent.; the Invercargill suburbs inspected, 70 per cent.; and the country towns, over 34 per cent. only. Dunedin varies from 33·56 per cent. in Roslyn, to 75·66 per cent. in South Dunedin. The two suburbs of Invercargill gave 75·82 per cent. in East Invercargill, and 64·34 per cent. in Avenal. The variation in the country towns was from 9·52 per cent. in Miller's Flat, to 76·53 per cent. in Clinton.

The chief defects were those of drainage, defective trapping, and suchlike faults, which had been accentuated with the rise of the towns, due to carelessness, ignorance, or want of system, and also in part to the fact that many of these towns had no, or an inadequate, water-supply.

I have now these house-to-house inspections recorded in a special book, to which I can at any time refer when a question regarding the sanitary condition of any special premises comes before me, and this I design to make in time a permanent record of the condition of my district, to be brought up to date from time to time as defects are remedied.

I may state that the reports I have presented to local authorities have in most cases been attended with good results, and that most of the local authorities have begun to put my recommendations into effect so far as they can be done.

This work has kept Inspector Craighead very fully employed during the year in and about Dunedin, while Inspector Gladstone has been attending to the same visitation in the country towns, not only in what I have assigned to him as his subdistrict—practically Otago—but also in the towns in the Southland Subdistrict, generally the province of Inspector Cameron, but which the latter was unable systematically to overtake, his duties, as being in practically the sole charge of the Town of Invercargill except from a visit by me four or five times a year, preventing him from being absent from his headquarters for the three or four days necessary for a thorough examination of a town without interrupting his work of the town and district.

The close inspection thus being carried out I hope to have pretty well finished before the end of our next official year.

From what we have thus seen I have reason to believe that the farms, &c., throughout the country are not without the need of similar inspection, a difficult matter, and one which would involve much time and travel, but I am in hopes that some day this also may be undertaken.

Apart from the special work above referred to, you will see by my summary of "Matters looked into during the Year" that we have had plenty of small matters to occupy fully our time, on which I need make no special comment.

These routine matters have involved the writing of numerous letters to local authorities and others, the numbers of which I have set forth in a separate summary. And besides these letters, I have sent circulars to various public bodies, referring to such matters as the position of dry closets in relation to dwellings, the water-supplies to towns in my district, the necessity of more systematic vaccination, the provision for infectious-diseases hopitals, &c.

I, or my Inspectors, have had numerous interviews with local authorities and other public and private persons on sanitary concerns generally, which are bearing fruit in bringing us to a mutual understanding and in tending to promote the sanitation of the district.

Infectious Diseases.

The incidence of infectious diseases is shown in the subjoined table. It may be noted, however, that, taking them generally, there is a considerable increase this year all round. Thus,—

	1906–7.	1907–8.	Increase.
Scarlet fever	181	246	65
Enteric fever	23	36	13
Diphtheria	22	58	36
Tuberculosis	94	152	58
Blood-poisoning (erysipelas)	10	33	23

Scarlet Fever.

In Dunedin this disease occurred in households with no apparent connection one with another, and at irregular intervals, some of the cases having been traced to the country places in which the disease was raging more or less. In the latter half of the year it spread into some of the neighbouring counties having intercourse with Dunedin.

In Invercargill itself the disease seemed to have come to an end, but in June it began again to appear, as well as in the counties connected with it, reaching to considerable numbers.

In Vincent County, principally in the Town of Cromwell, where it raged last year, it continued, in spite of the precautions taken, till September, dropped to almost nil for a time, and again increased slightly, and from that it appears to have spread into the Tuapeka County.

Curiously enough, it would seem that the places which took the most care, by prompt isolation of the cases—namely Cromwell and Invercargill—were those which suffered most. But in every case in Invercargill removal to the hospital prevented the infection spreading to any other person in the same household. Conversely, in several instances, where no removal took place, the diseases did spread in the same home: in one case to five persons. The cases have been so mild, with such good recoveries that people treated the disease as being hardly worth taking precautions against.

Diphtheria.—In Dunedin the cases were of the mildest description, mostly, perhaps mainly, ulcerated or aphthous sore throats, and were frequently due, apparently or evidently, to disturbance of old drains in connection with the laying of new ones by the operations of the Drainage Board.

In Invercargill the disease appears to be endemic in certain parts of the town, low-lying and without drainage, pointing to the necessity of a proper system of drainage and water-supply for that growing city, while at Riverton a considerable number of cases occurred in the months of August, September, October, and November, which there was reason to conclude had been brought originally from Invercargill.

Enteric Fever.—Several of these cases returned were of a doubtful character, turning out not to be true cases of fever, some of them at any rate being, in Dunedin, due to disturbance of old drains in laying new ones.

Blood-poisoning, which was nearly always simply erysipelas, was the means of revealing sanitary defects in and around dwellings.

Hydatid Disease was notified to the number of eleven cases.

Tuberculosis.—There is reason to conclude that this increase is partly due to better notification, partly to cases coming to the district from other districts for treatment at the Whare Flat or the Rock and Pillar sanatorium.

Endemic Disease.—About the middle of December the local medical man at Papatoitoi, in Wallace County, sent in notification of several cases of disease which he stated to be suspected enteric fever, but which by another medical man called in consultation were diagnosed as gastro-enteritis.

On investigation these were found to be due apparently to the bad quality of the water, the season having been unusually dry and the available water of very inferior quality. And the fact that several amateur doctors had had a hand in treating the patients with purgatives, &c., did not improve matters, leading to three deaths out of the eleven persons attacked in one household, mostly members of a family. The symptoms of the disease were sudden fever, rise of temperature to 103° Fahr., diarrhœa, then whitish mucous discharges, none of the most characteristic typhoid symptoms being present. One child, aged fifteen months, began with convulsions suddenly, followed after a few hours by severe diarrhœa, dying on the ninth day.

As there was a good deal of influenza about at the time the disease may have been a variety of this disease, which in many cases began with diarrhœa, but it was undoubtedly influenced by the treatment adopted by the amateurs of this remote bush settlement. One man, said to be a local quack, gave them some of his nostrums; another man treated them with a decoction of green raspberry-leaves; and a third purged them with castor-oil. No wonder, perhaps, some of the invalids died. Those who were treated sensibly recovered in a few days.

Besides the above infectious diseases we have, I am aware, had a considerable amount of measles in my district, and for some time, in January and February especially, I think, we had numerous cases of a rather severe type of influenza, and I believe we have had a good amount of whooping-cough present.

I send you a summary of the cases of tuberculous diseases which proved fatal during the year, as furnished by reports from Registrars of Deaths in my district, with other reported cases of death from infectious diseases as a contrast.

Those from tuberculous diseases, principally of the lungs, were 120 in number, an average of 10 per month.

Those from pneumonia were 95 in number, or an average of 8 per month.

Diphtheria, though fairly prevalent in a mild form, accounted for 6 deaths.

Scarlet fever, also prevalent, only gave 3 deaths.

Enteric fever accounted for 4 deaths.

Diarrhœa, which was unusually much in evidence, especially during the months of January to March, caused 14 deaths.

Provision for Treatment and Isolation of Infectious Diseases.

In my report for last year I stated that Southland was providing a hospital at Kew, near Invercargill, for the reception of these cases, and I have now to report that the building, so far as at present provided, is now completed and practically ready for use, though meantime, till the nursing arrangements and suchlike are settled, infectious diseases are being accommodated in an isolated ward in the General Hospital.

After much worry and discussion the infectious-diseases hospital for the Dunedin district has been put under way and is making good progress—likely to be ready for use about July. This progress, which I am glad to report, has been mostly due to the new Hospital Board, and especially to the energetic action of the Chairman, Mr. Stevenson, assisted ably by Dr. Batchelor. The necessity for such provision was shown at an opportune time by an outbreak of scarlet fever arising within the General Hospital, which required to be temporarily provided for in tents erected near the hospital-site, at Pelichet Bay.

Provision for Consumption.

In all the country hospitals these cases are adequately provided for in their buildings, in isolated rooms. In the Southland District it is proposed, when the actual necessity arises, to erect a building in an isolated portion of the ground at Kew at a sufficient distance from the epidemic hospital.

In Dunedin the private sanatorium at Rock and Pillar is being made use of, serving quite well the cases requiring isolation and treatment in a climate and locality very well suited for these requirements. But the Hospital Board are taking steps to provide a permanent sanatorium for their own necessities. And I should also mention that, thanks to the assistance of Dr. Valintine, Inspector-General of Hospitals, provision, temporary or permanent, has been made at the Benevolent Institution for incurable cases, which, being unsuitable for sanatorium treatment, are as well and more cheaply accommodated in Dunedin.

Supervision of Food-supplies.

We have been keeping a pretty strict supervision on the food-supplies coming into the two chief towns in my district—namely, Dunedin and Invercargill—my Inspectors, aided in Dunedin by City Inspector Donaldson, having paid many visits to stores and places into which food-articles come for sale or consumption.

In the course of such visits we have come across and caused to be destroyed:—

At Dunedin,—

11	pieces of bacon.
32	pigs' carcases.
270	cases of bananas.
9	cases of grapes.
16	cases of prunes.
449	cases of oranges.
20	cases of walnuts.
13	boxes of rotten eggs.
10	boxes of butter.
28	boxes of fish.

At Invercargill,—

3	rolls bacon.
22½	cases bananas.
9	cases pears.
2	cases pineapples.
4	cases apples.
22	boxes figs.
12	sacks potatoes.
2	crates rabbits.
81	dozen eggs.
1	hogshead mutton-birds.
80	cases fish.

Without resorting to prosecutions we have now come to an understanding with the vendors of food-articles, who readily fall in with our requisitions to destroy such as I consider unfit for human consumption, and in many instances they have intimated that such articles have come into their possession, requesting me to examine them and, if necessary, to order their destruction.

Bacterial Examinations.

I have made 24 microscopic examinations for medical men, finding that—

9 specimens of sputa were tuberculous;

14 specimens of sputa were pneumonic or broncho-pneumonic;

1 specimen of membrane was diphtheritic.

Besides these I understand some morbid specimens have been sent direct by medical men to Dr. Makgill for examination; but of these, if there have been any, I have no record.

Drainage of Towns.

In Dunedin the drainage system, begun some years ago, is progressing well, and, as it is carried out in streets, the houses are being gradually made to connect with the sewers by up-to-date apparatus and connections, in accordance with by-laws made by the Drainage Board, so that in time we may hope that the health of the community will be much improved.

In Invercargill the Puni Creek, an open sewer frequently causing a nuisance, has now been piped in, and the house-drains connected with it, to the manifest improvement of that part of the town; but the town in general is much in need of a good system of drainage, which it cannot in the meantime have until a more abundant water-supply is acquired.

In Gore the drainage system is completed, and houses are being gradually connected with the sewers.

In several of the smaller towns little improvements in the drainage are being carried out as far as possible.

Water-supplies to Towns.

In Dunedin the water-supply has been very much augmented by taking into it several creeks and by the taking-over of the whole gathering-ground on Mount Cargill as a water reserve, and buying out the proprietors of several farms lying in the watershed. The importance of this was shown by the fact that, although we had an unusually dry summer, there never was any question of a short supply.

In the course of these operations it was found necessary to make a minute inspection of the reservoir in the Leith Valley, which had been leaking for many years. The leak—in the retaining-wall—was found to be serious. This is now made secure, and all danger from bursting of the reservoir is now past.

At Invercargill the water-supply has, with the increase of the town, been gradually becoming insufficient, and a greater supply is contemplated, either by sinking another deep bore to augment the present one from which the water to the town is now derived, or by bringing in the water from the New River at a distance of some forty-five miles. The latter, though more expensive, would be the more satisfactory. The water thus obtained from the river, at a site which I made a special journey to inspect, along with the Town Council and their Engineer, and which I had tested by Professor Black, is of excellent quality, and not liable to pollution in any way.

At Alexandra the water-supply, undertaken some years ago, failed this year during the dry weather, and, as it was never quite satisfactory, it has been resolved to derive water from another source, likely to prove better and more abundant.

Throughout the district, except in some parts of Southland, the unusual dry weather affected the water-supplies for some time, especially in the Central Otago district, always tending to be dry in summer.

Inspection of School-children.

I am glad to have to report some little progress in this matter within my district.

Following up the issue among our school-teachers of the pamphlet, which you did me the honour to have printed by the Government, I had several conferences with the Education Boards regarding further steps to be taken, and arranged with those of Otago and Southland that I should meet the school-teachers of these districts at their annual congresses and confer with them regarding the methods and proceedings they might adopt to bring the scheme into actual operation. In accordance with this, I attended the congresses both at Invercargill on the 28th June, and at Dunedin on the 11th July, making short addresses to the teachers and School Inspectors, and, at the former, members of the Education Board. The addresses were followed by interesting discussions, and terminated by resolutions to fall into line with any proposed method which might be workably arranged.

Meantime the pamphlet, which was well received by teachers, has been made use of by them to weed out scholars manifestly unwell, leading them in many cases to consult me in suspected cases of illness, or where they found infectious diseases prevailing in their school districts.

Thus, if nothing farther were to come of the movement, it has done this good: that it has strengthened the hands of teachers in excluding sick children from schools in some degree, and, by that means, impressing on parents the necessity of keeping children suffering from infectious diseases away from school till the danger of infection had passed. And the movement, having now begun, is certain to progress.

In the Girls' High School of Dunedin the pupils are more or less frequently systematically examined and the examinations recorded; and in the Mornington Public School a regular scheme of monthly measurement of height, weight, and chest-measurement is undertaken and recorded on a card, a specimen of which I send herewith.

Probably in more schools than these some such schemes are being worked out, though these are all I have come across so far; but I am also aware that teachers in many schools have undertaken regular methods of physical exercises for the pupils under their direct supervision.

There is a desire, too, that some scheme of measurements, &c., should be furnished of a uniform kind for their common use, so that observations may be made and recorded according to a fixed method throughout the Dominion.

The above report, though it shows nothing sensational, reveals steady and diligent work by my Inspectors, to all of whom, I think, praise is due for intelligence and diligence and for the interest they have shown in the performance of their sometimes delicate duties.

And I have also to record that local authorities are showing greater and increasing appreciation of their functions and of the assistance our Department is able to give them in carrying out these functions. I may mention, too, that with other Departments of the public service our relations have always been of the most harmonious nature mutually working together for the public benefit.

I must not omit to mention the tact displayed by my Clerk, Mr. Birch, in meeting people coming to the office with complaints or seeking for information. He takes a real and lively interest in the details of his work, and smooths many an angry complainant who imagines he is being unduly pressed upon by the sanitary authorities.

Visits and Inspections of Places made throughout the District.

The following towns, villages, &c., were visited and inspected:—

By Dr. Ogston: Arrowtown, Balclutha, Bannockburn, Bluff, Catlin's, Cromwell, Dunkeld, Dipton, Gibbston, Gore, Invercargill, Josephville, Kawarau, Kew, Lawrence, Lumsden, Middlemarch, Nightcaps, Nuggets, Owaka, Palmerston South, Port Molyneux, Pounawea, Queenstown, Riverton, Rock and Pillar, Roxburgh, Rough Ridge, Sutton, St. Bathan's, Tapanui, Winton, Whare Flat, Waikaka, Waikaka Valley, and parts of Flagstaff district—or 36 places in all. And to these places 51 visits were paid.

By Inspector Cameron: Aparima, Balfour, Bluff, Clifton, Colac, Dipton, Drummond's Ferry, Edendale, Fortrose, Gore, Gummie's Bush, Kew, Josephville, Lorne, Lumsden, Makarewa, Mataura, Menzie's Ferry, Niagara, Nightcaps, Ocean Beach, Orepuki, Otautau, Papatotara, Quarry Hills, Richmond Grove, Riversdale, Riverton, Round Hill, Seaward Bush, Stewart Island, Te Tua, Tokonui, Waianiwa, Waihoaka, Waikaka, Waikaka Valley, Waikawa, Waikawa Valley, Waikiwi, Waimahaka, Waimatuku, Winton, Wallacetown, Wallacetown Junction, West Plains, Woodlands, Wyndham—or 48 places in all. And to these, 162 visits were paid.

By Inspector Gladstone: Alexandra South, Arrowtown, Balclutha, Burnside, Cambrian, Clarksville, Clinton, Clyde, Cromwell, Ettrick, Evans Flat, Gabriel's Gully, Green Island, Hawea Flat, Helensbrook, Houipapa, Kaitangata, Lauder, Lawrence, Linburn, Lowburn, Lumsden, Matakanui, Middlemarch, Miller's Flat, Milton, Mosgiel, Mussel Bay, Ophir, Outram, Owaka, Palmerston South, Pembroke, Port Chalmers, Quartz Reef Point, Queenstown, Ravensbourne, Rough Ridge, Roxburgh, St. Bathan's, Sawyer's Bay, Sutton, Tapanui, Tuapeka Flat, Waipiata, Wetherstone's, Waikouaiti—or 48 in all. And to these, 95 visits were paid.

By Inspector Craighead: The scheme of house-to-house inspection, begun last year by Inspector Gladstone, was completed in the suburbs of Dunedin, and that of the City of Dunedin begun by Inspector Craighead. Details of this inspection are given below. This released Inspector Gladstone and enabled him to commence similar inspections in the country towns of my district, some of which are now also detailed below. Besides this work outside the City of Dunedin and in country districts, I and Inspectors Gladstone and Craighead were fully engaged making inspections and performing other duties within the city and suburbs.

It will be seen that we have, either alone or in company, visited 105 places within my district, paying 306 visits to these, during the year.

House-to-house Inspections of Towns on which Reports were sent to Town Councils, with Comments and Requests to make Improvements.

	Premises inspected.	Defects found.	Percentage.
Dunedin City (part of)	1,714	929	54·20
Roslyn	1,150	386	33·56
St. Kilda	620	340	54·84
Caversham (ward)	1,126	552	48·13
South Dunedin (ward)	1,126	825	75·66
Country towns—			
Owaka	62	18	29·03
Queenstown	260	89	34·23
Tapanui	142	37	26·15
St. Bathan's	68	25	36·76
Cambrian	11	3	27·27
Clyde	53	16	30·18
Alexandra South	226	92	41·50
Ettrick	19	4	21·05
Miller's Flat	42	4	9·52
Clinton	98	75	76·53
Middlemarch	55	18	32·72
Lumsden	92	55	59·78
Matakanui	9	2	22·22
East Invercargill	244	185	75·82
Avenal	115	74	64·34
Totals and percentage	7,232	3,729	51·56

Matters looked into during the Year.

Nuisances, various	479	Milk-shops inspected	37
Drainage-defects	2,446	Butchers' carts and baskets inspected	48
Privies, urinals, &c., defective	2,803	Bakers' carts and baskets inspected	61
Gutters, ditches, &c., dirty	66	Fishing-vessels inspected	5
Nightsoil-removal neglected, complaints of	14	Milk-cans inspected	72
Cowsheds, stables, inspected	178	Railway meat-trucks inspected	13
Fowl-runs, &c., inspected	157	Sheep-stations inspected (specially)	3
Piggeries inspected	41	Houses, yards, tanks, &c., inspected (specially)	321
Slaughteryards, &c., inspected	26	Hotels inspected	101
Refuse-tips and nightsoil-depots inspected	30	Boardinghouses and restaurants inspected	66
Bakers' shops inspected	76	Schools inspected	49
Butchers' shops inspected	105	Chinese dwellings and camps inspected	57
Fish-shops inspected	46	Public buildings inspected	21
Fruit-shops inspected	86	Public and private wells inspected	51
Factories, shops, and stores inspected	478	Parks and recreation-grounds inspected	7
Dairy factories inspected	15	Houses, schools, &c., in bad repair, overcrowded, &c., inspected	209
Laundries inspected	6	Dwellings systematically inspected	8,464
Soap, manure, &c., works inspected	18		
Auction-rooms inspected	19		

Interviews.

With Mayors and Chairmen of Town Boards	60	With Railway Engineers and Inspectors	20
,, Chairmen of County Councils	8	,, District and Town Engineers	54
,, Town Clerks	86	,, Drainage Board Engineers	14
,, County Clerks	24	,, Secretaries of Education Boards	7
,, County Councils (special)	5	,, Inspectors of Factories	29
,, Harbour Boards	2	,, Stock Department	25
,, Hospitals Boards	9	,, Resident Magistrates	5
,, Town Councils and Town Boards	13	,, Oyster-fishermen (Bluff)	3

Special Reports to Chief Health Officer.

Re cases of diphtheria in Athol Place (two reports).
,, Wallacetown Slaughteryards.
,, my condemnation of Oliver's butcher's shop at Bluff.
,, epidemic hospital at Kew, Invercargill, with plan.
,, the result of a prosecution for selling light bread.
,, water-supplies to towns in my district.
,, ditch sewers at Musselburgh.
,, storage of oysters at Bluff.
,, dirty bottles returned to cordial-factories.
,, an epidemic (influenza) at Papatotara.
,, insanitary post-office at St. Bathan's.
,, reported cases of hydatids in my district.
,, Inspector Cameron's report on the drainage of Bluff.
,, housing of the Garrick family at Dunedin.

Letters written.

To Town Councils, Mayors, &c.	236	To Veterinary Department	3
,, County Councils, Road Boards, &c.	51	,, Registrars of Births, &c.	26
,, Drainage Boards	40	,, Stock Department	3
,, Harbour Boards	5	,, Resident Magistrates and Coroners	2
,, Education Boards	26	,, Port Health Officers	6
,, Hospital Boards	45	,, Medical practitioners	116
,, Charitable Aid Boards	1	,, School Committees	12
,, Railway Department	4	,, Schoolmasters and schoolmistresses	41
,, Public Works Department	11	,, General, to various people	491
,, Inspectors of Factories	11		

Circulars sent.

To Mayors and Town Clerks *re* the position of dry closets too close to houses and within washhouses or outhouses, near food-storage.
To Secretary, Dunedin Architects' Association, *re* same.
To County and Town Clerks *re* taxation for an epidemic hospital for Dunedin (two notices).
To Town and County Clerks for information *re* water-supplies (two notices).
Notice to Registrars of Vaccination in Otago and Southland (excluding the Dunedin district, which had been notified by our local Registrar) urging them to press defaulters by posting them special notices as supplied by me.
Chief Health Officer's circular to Hospital Boards *re* the solicitor's opinion with regard to their relation to the District Health Officers.

Table No. I.—Return showing Number of Notified Cases of Infectious Diseases from 1st April, 1907, to 31st March, 1908.

Disease.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Total.
DUNEDIN.													
Scarlet fever	1	1	3	1	..	1	..	..	2	..	..	5	14
Tuberculosis	..	4	5	3	3	5	2	2	1	1	1	1	28
Enteric fever	2	..	3	1	..	1	..	1	..	..	..	1	9
Diphtheria	..	..	..	3	..	..	..	1	1	..	1	2	8
Blood-poisoning	1	1	3	2	2	1	1	1	..	..	..	..	12
Hydatids	..	..	..	1	..	..	..	..	..	..	..	..	1
SOUTH DUNEDIN.													
Scarlet fever	1	..	1	..	..	..	..	1	..	..	1	..	4
Tuberculosis	..	..	1	1	..	1	..	2	..	1	..	1	7
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	2	1	..	..	..	1	2	1	..	..	..	7
Blood-poisoning	1	..	..	..	..	..	..	..	..	..	..	..	1
Hydatids	..	..	..	1	1	..	..	..	..	..	..	..	2
CAVERSHAM.													
Scarlet fever	..	1	..	..	1	..	..	..	..	..	1	..	3
Tuberculosis	2	..	..	2	..	..	..	..	..	..	..	..	4
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	1	..	1	..	..	..	2
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
Hydatids	..	..	..	..	..	..	..	..	..	..	..	..	..
MORNINGTON.													
Scarlet fever	2	1	..	..	..	1	..	..	..	..	1	1	6
Tuberculosis	..	..	..	..	..	..	..	..	..	..	..	..	..
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	1	..	..	1
Blood-poisoning	..	..	..	..	..	1	..	..	..	..	..	..	1
Hydatids	..	..	..	..	..	..	..	..	..	..	..	..	..
ROSLYN.													
Scarlet fever	..	..	..	1	..	1	..	..	..	..	1	..	3
Tuberculosis	..	1	..	..	..	..	1	1	..	..	..	..	3
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	1	1
Hydatids	..	..	..	..	..	..	..	..	..	..	..	..	..
ST. KILDA.													
Scarlet fever	..	..	1	..	..	..	..	..	..	..	..	..	1
Tuberculosis	..	..	..	..	1	..	..	..	..	..	..	..	1
Enteric fever	..	..	..	1	..	1	..	..	..	1	..	..	3
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	1	1
Blood-poisoning	..	..	1	1	..	..	..	..	..	..	..	..	2
Hydatids	..	..	..	1	..	..	..	..	..	..	..	..	1
NORTH-EAST VALLEY.													
Scarlet fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Tuberculosis	..	1	..	..	..	..	1	..	..	..	1	..	3
Enteric fever	..	..	..	..	..	..	1	..	..	..	1	..	2
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	1	..	..	1	2
Hydatids	..	..	..	..	..	..	..	..	..	..	..	..	..
MAORI HILL.													
Scarlet fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Tuberculosis	..	..	..	..	..	1	..	..	..	..	..	..	1
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
Hydatids	..	..	..	..	..	..	..	..	..	..	..	..	..
WEST HARBOUR.													
Scarlet fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Tuberculosis	..	..	..	..	..	..	..	..	..	..	..	..	..
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
Hydatids	..	..	..	..	..	..	..	..	..	..	..	..	..
PORT CHALMERS.													
Scarlet fever	..	..	1	1	..	..	1	1	..	..	1	1	6
Tuberculosis	..	..	..	..	..	..	..	..	..	..	..	..	..
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
Hydatids	..	..	..	..	..	..	..	..	..	..	..	..	..
INVERCARGILL.													
Scarlet fever	..	..	1	3	5	2	..	5	16	2	7	7	48
Tuberculosis	1	3	..	2	1	..	3	3	3	1	..	1	18
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	1	6	2	3	3	2	..	..	..	1	..	..	18
Blood-poisoning	..	..	..	..	1	..	..	..	1	..	..	..	2
Hydatids	..	..	..	..	1	..	..	..	..	..	..	..	1
TAIERI COUNTY.													
Scarlet fever	2	2	1	..	1	..	..	..	..	..	..	..	6
Tuberculosis	..	4	..	4	1	2	2	2	8	4	..	..	27
Enteric fever	..	..	1	..	..	..	1	..	..	..	4	4	10
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	1	1
Blood-poisoning	..	..	..	1	..	..	..	..	..	..	..	..	1
Hydatids	..	..	..	..	..	2	..	..	..	..	..	..	2
TUAPEKA COUNTY.													
Scarlet fever	..	..	..	..	2	..	..	..	5	..	4	5	16
Tuberculosis	2	..	..	..	1	..	1	..	..	..	1	..	5
Enteric fever	1	..	..	..	..	..	..	1	..	..	..	1	3
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
Hydatids	..	..	..	..	..	..	..	..	..	..	..	..	..
BRUCE COUNTY.													
Scarlet fever	..	..	..	..	..	6	1	1	2	2	..	4	16
Tuberculosis	..	1	..	..	..	..	..	..	..	..	..	..	1
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
Hydatids	..	..	..	..	..	..	..	..	..	..	..	..	..
LAKE COUNTY.													
Scarlet fever	..	..	..	..	1	1	2	1	9	..	..	3	17
Tuberculosis	..	..	..	..	..	..	..	..	..	1	..	1	2
Enteric fever	..	..	1	..	..	..	..	..	..	..	..	..	1
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	1	..	..	..	..	1	..
Hydatids	..	..	..	..	..	..	..	..	..	..	..	..	..
PENINSULA COUNTY.													
Scarlet fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Tuberculosis	..	..	..	..	..	..	..	..	..	1	..	1	2
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
Hydatids	..	..	..	..	..	..	..	..	..	..	..	..	..
MANIOTOTO COUNTY.													
Scarlet fever	1	..	..	..	..	..	..	..	..	..	..	..	1
Tuberculosis	..	..	1	..	..	2	..	2	..	..	1	..	6
Enteric fever	..	..	1	..	..	..	..	..	..	..	1	..	2
Diphtheria	..	..	..	..	..	..	..	..	..	..	1	..	1
Blood-poisoning	..	..	..	1	..	..	..	..	..	..	1	..	2
Hydatids	..	..	..	..	..	..	..	..	..	..	..	..	..
WALLACE COUNTY.													
Scarlet fever	2	..	..	..	3	2	7	3	..	..	1	2	20
Tuberculosis	..	..	..	..	..	2	2	2	..	2	..	1	9
Enteric fever	..	..	..	..	..	..	..	..	..	1	..	..	1
Diphtheria	..	1	1	5	2	3	1	1	..	..	..	..	14
Blood-poisoning	..	..	..	..	..	..	..	1	..	..	..	..	1
Hydatids	..	..	..	..	..	..	..	..	..	..	..	..	..
WAIKOUAITI COUNTY.													
Scarlet fever	..	..	..	..	..	..	..	..	..	..	1	..	1
Tuberculosis	..	..	..	..	..	..	1	1	2	..	1	..	5
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	2	1	..	..	..	..	..	3
Hydatids	..	..	..	..	..	1	..	..	..	..	1	..	2
SOUTHLAND COUNTY.													
Scarlet fever	3	1	..	1	2	6	..	3	2	6	2	3	29
Tuberculosis	2	1	1	4	2	3	1	2	4	..	1	1	22
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	1	..	2	..	..	..	..	2	..	..	5
Blood-poisoning	..	..	..	1	..	1	..	..	..	..	..	..	2
Hydatids	..	..	..	..	..	..	..	..	..	..	..	1	1
VINCENT COUNTY.													
Scarlet fever	5	13	5	7	5	3	1	1	1	2	1	3	47
Tuberculosis	..	..	..	..	1	..	1	..	..	..	..	..	3
Enteric fever	..	..	..	1	..	..	..	..	..	..	1	1	3
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	1	2	3
Hydatids	..	..	..	..	..	..	..	..	..	..	..	..	..
WAIHEMO COUNTY.													
Scarlet fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Tuberculosis	..	..	..	1	..	..	..	..	..	..	1	..	2
Enteric fever	..	..	..	..	..	..	..	..	..	..	..	..	..
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
Hydatids	..	..	..	..	..	..	..	..	..	..	..	..	..
CLUTHA COUNTY.													
Scarlet fever	..	..	..	..	..	..	..	1	5	..	1	1	8
Tuberculosis	..	..	1	..	..	..	..	..	..	..	1	1	3
Enteric fever	..	..	..	..	..	..	..	..	..	2	..	..	2
Diphtheria	..	..	..	..	..	..	..	..	..	..	..	..	..
Blood-poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..
Hydatids	..	..	..	..	1	..	..	..	..	..	..	..	1

DEATHS FROM TUBERCULOSIS, PNEUMONIA, AND OTHER INFECTIOUS DISEASES, as returned from the Registrars of Deaths in my District, for the Year.

—	Tubercle.	Pneumonia.	Diphtheria.	Scarlet Fever.	Enteric Fever.	Diarrhœa.
April	10	3	..	1	..	..
May	9	11	1	..	..	..
June	9	9	2	1	..	..
July	10	8	1	..	3	..
August	8	10	1	..	..	..
September	12	11	..	..	1	..
October	14	10	..	..	..	..
November	11	7	..	..	..	..
December	10	8	..	..	..	..
January	8	10	..	1	..	2
February	7	5	1	..	..	2
March	12	3	..	..	..	10

VACCINATION, AND DISTRIBUTION OF VACCINE LYMPH.

As a result, in some measure, of the circulars sent out to or by Registrars throughout my district, the number of tubes of lymph I have sent out during this year has increased to 4,502, as against 2,813 for last year — 1906–7. This indicates that the public is better protected now than it was twelve months ago. The monthly distribution was as under:—

April	643	August	361	December	459
May	724	September	360	January	272
June	196	October	240	February	444
July	218	November	306	March	279

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

The Chief Health Officer, Wellington.

REPORTS OF DR. POMARE, HEALTH OFFICER TO THE MAORIS, AND OF THE NATIVE SANITARY INSPECTORS.

Tari Whakahaere ora mo te Katoa (Department of Public Health),
Poneke, 26th May, 1908.

SIR,—

I herewith transmit my report for the year 1907–8.

The following schedule will show you what has been accomplished since the year 1904:—

Year.	New Houses built.	New Maori Whares.	New W.C.s erected.	Houses destroyed.
1904	763	6	73	291
1905	258	30	93	183
1906	207	3	152	160
1907	123	6	175	83
1908	544	254	346	340
Total	1,895	299	839	1,057

The pleasing part of the above is that not a single penny for compensation has been expended. We may now safely say, the Maori is awakening to the advantages of sanitary reforms.

During the past year 4,252 cases have been attended by the subsidised medical men throughout the Dominion. This does not include the work done in the Cook Islands or the 440 cases which I personally attended. Statistics of diseases are attached.

Sixty lectures were delivered on hygiene and allied subjects.

I regret to have to record the deaths of many people this year. On the West Coast alone some fifty old Natives went to the regions of Po, their average age being forty-six years. Influenza and pneumonia were the two most prevalent diseases.

Tohu and Te Whiti have both died. It would now be advisable to encourage the younger people to settle on the land, when the present leases expire. The ranks of the eighty milkers in the Taranaki District would be augmented by at least another eighty if this were done. The compensation that would have to be paid for the unearned increment would be as nothing compared with the industrial results and moral good that would follow. Work will do more for the Maori than all the medicines and beautiful theories that we know. Get the Maori to work; all the other reforms will follow.

The assistance of Dr. Buck in the north has been a great help during the past year. We have been able to give more attention to detailed work in the different districts. We are waiting for the time when we can have our own staff of Maori nurses. The Natives will not go to the hospitals. If we can get at them in their homes I am certain we shall be able to save many lives.

The Maoris of the East Cape have given a site and £200 towards the erection of a Nurses' Home in their midst. It is thought best to have one European nurse with two Maori nurses in charge of these Homes. These will form the centres from which the nurse can go forth to care for the sick, to lecture, and to uplift humanity. The East Coast Maoris have shown a good example in giving land and money towards the project, and it is hoped that the Maoris in the different localities will do likewise. When Homes like these are established throughout the Dominion, the people being taught how to live, the mothers how to bring up infants, the maidens how to care for themselves, then half of the ailments which are now afflicting the race will disappear.

Tohungas.

The Tohunga Suppression Act of last session has had good effect. While, however, it prohibits the Maori charlatan from practising upon the incredulity of his own kind, it does not prevent the pakeha from engaging in the same kind of business. Hence the existence of white tohungas in our midst. These necromancers go from pa to pa armed with familiar spirits, hoodwinking superstitious Maoris. Their harvests are golden. Poor Maori! as soon as the evil spirit is cast out, seven other devils enter in, much worse than the first. The Act should be amended to include pakehas.

Conference of Sanitary Inspectors.

During the year it was deemed necessary to hold a Conference of the Maori Sanitary Inspectors. This proved a great success. The Inspectors were most attentive and diligent in taking copious notes of the lectures and practical demonstrations that were given. I have to acknowledge the kindly services rendered by Drs. Purdy, Buck, and Sharman, together with Messrs. Busck, Dairy Expert; Haynes, Inspector of the City of Auckland; Grieve and Symonds, of the Health Department. The lectures embraced a large number of subjects which in the time at our disposal could not be exhaustively gone into. However, we aimed to get the pith of the subjects, and I am certain that by the end of the next Conference our Sanitary Inspectors will be completely fit to carry out their duties. The total amount of expenditure incurred was only £40. The following subjects were considered:—

Subjects brought before the Native Health Inspectors, July 8–13, 1907.

Settlements—
- Sites—
  - Situation and aspect.
  - Nature of soil.
  - Water-supply—
    - Surface pools.
    - Subsoil water.
- Drainage—
  - Laying out; house-space; roads.
  - General sanitation.
  - Keeping of animals—horses, cows, pigs, fowls, rats.
- Cemeteries—Water; ground-air.

Whares—
- Structure; materials; foundation; chimneys; flooring; roofing; *kautas;* meeting-houses.
- Ventilation; sick-rooms; cleanliness; overcrowding; spitting; sleeping on raised beds; cooking-houses; condemned houses; bad water.

Food-supplies—Kinds—
- Pork (trichina).
- Cooking.
- Storage of milk.
- Tinned meats; jams.

Water-supply—Surface wells; deep wells; streams; rainwater; contamination.

Clothing—Seasonal variation; underclothing; wet and damp; bare legs above socks; changing at night.

General cleanliness—
- Of body—Bathing; skin-diseases; lice.
- Of clothing—Regular washing; changing; disposal of waste water.
- Of house—Scrubbing, &c.

General cleanliness—*continued.*
Of *marae*—Fences; disposal of garbage, &c.
Of village—Excreta; scavenging; nuisances; rats; dogs.
General sickness—
Infants—Care and feeding.
Children—Colds, &c.; *hakihaki;* school dispensary.
Remarks on cuts, bruises, burns.
Minor ailments.
Infectious diseases—
Microbes.
Infection; notification; isolation.
Small-pox and vaccination.
Typhoid.
Measles; scarlet fever, &c.
Mumps (*mamapu*).
Diphtheria.
Whooping-cough.
Dysentery (epidemic diarrhœa).
Contagious ophthalmia.
Influenza.
Pediculosis.
Itch.
Hydatids.
Disinfection and disinfectants; practical demonstration in the uses of lamp and pump, &c.
The dead—Dead bodies; disposal; time; place; tangis; exhumation.
Gatherings—Accommodation; Council by-laws; sanitation.
General remarks—Present evils of communism; individualism; regular habits; regular employment; hospitals; Maori nurses; care of the sick; cooking for invalids.
General duties of Sanitary Inspectors.
Maori Councils Act.
Birth and death registration.
General summary—Duties of Sanitary Inspectors.

The following places were visited by all the members of the staff: Technical school, destructor, pumping-station.

Diseases.

The following will give you an idea of the ailments which are afflicting the Maori. These statistics are compiled from the returns supplied by the medical officers for the Natives throughout the Dominion:—

Diseases.	Number of Cases.				Percentage on Total Cases.
	Males.	Females.	Sex not given.	Total.	
Class I.—Specific febrile or zymotic diseases,—					
Order 1. Miasmatic	315	271	..	586	13·782
„ 2. Diarrhœal	191	164	..	355	8·349
„ 3. Malarial	1	..	..	1	0·024
„ 4. Venereal	21	5	..	26	0·611
„ 5. Septic	2	1	..	3	0·071
Total Class I	530	441	..	971	22·837
Class II.—Parasitic diseases	22	31	..	53	1·246
Class III.—Dietetic diseases	..	..	7	7	0·164
Class IV.—Constitutional diseases	175	113	..	288	6·773
Class V.—Developmental diseases	..	..	2	2	0·047
Class VI.—Local diseases,—					
Order 1. Diseases of nervous system	107	96	..	203	4·774
„ 2. Diseases of organs of special senses	99	78	..	177	4·163
„ 3. Diseases of circulatory system	49	6	..	55	1·294
„ 4. Diseases of respiratory system	549	379	..	928	21·825
„ 5. Diseases of digestive system	329	288	..	617	14·511
„ 6. Diseases of lymphatic system	26	11	..	37	0·870
„ 7. Diseases of urinary system	25	25	..	50	1·176
„ 8. Diseases of reproductive system	14	112		126	2·963
„ 9. Diseases of locomotive system	4	4	..	8	0·188
„ 10. Diseases of integumentary system	203	147	..	350	8·232
Total Class VI	1,405	1,146	..	2,551	59·996
Class VII.—Violence	203	60	..	263	6·185
Class VIII.—Ill-defined and not-specified diseases	80	37	..	117	2·752
Grand totals	2,415	1,828	9	4,252	100·000

Class I.—Specific Febrile or Zymotic Diseases.

Order 1.—Miasmatic Diseases.

Districts and Diseases.	Number of Cases.
Wellington, Hawke's Bay, East Coast, and South Island Districts—	
Chicken-pox	1
Measles	10
Influenza	319
Whooping-cough	61
Mumps	2
Diphtheria	1
Typhoid fever	23
	417
Auckland District	169
Total	586

Miasmatic diseases contributed 13·782 per cent. of the total cases seen. Of the 417 cases seen in all the districts but the Auckland District, 319 were influenza, 61 whooping-cough, 23 typhoid fever, 10 measles, 2 mumps, 1 diphtheria, and 1 chicken-pox. Influenza was by far the most prevalent. In the Taranaki and Wanganui districts it took on a most virulent type, which in many cases ended in pneumonia. It was especially severe amongst the very old. Out of sixty deaths which came under my special notice the average age was forty-six years. Whooping-cough was more prevalent in the Hawera district than anywhere else during the past year. Many more deaths would have occurred if it were not for the appointment of the two medical men for the district. Enteric fever, I am glad to state, is not as prevalent as formerly. This may be attributed to the improved sanitary condition of the Maori kaingas in general. I am also pleased to state that measles is not as fatal a disease as in past years. No doubt the lectures on hygiene and the care of the sick are bearing fruit.

Order 2.—Diarrhœal Diseases.

Districts and Diseases.	Number of Cases.
Wellington, Hawke's Bay, East Coast, and South Island Districts—	
Diarrhœa	219
Dysentery	5
	224
Auckland District	131
Total	355

Diarrhœal diseases formed 8·349 per cent. of the total cases seen. Diarrhœa generally occurs in the early spring, when food is scarce and sometimes at *huis*, owing to polluted water-supplies. The eating of bad fish and rotten corn is also conducive to the outbreaks of diarrhœal diseases. The eating of putrid foods is, however, becoming less and less common. When once lecturing on this subject a Maori laughingly told me of an invitation he once had from his pakeha neighbour to supper. He said he could stand rotten corn and rotten potatoes, but he drew the line at live cheese and rotten pheasants.

Order 3.—Malarial Diseases.

Districts and Diseases.	Number of Cases.
Wellington, Hawke's Bay, East Coast, and South Island Districts—	
Ague(?)	1

One case is reported. This must be a case of a Maori who had been in malarial countries.

Order 4.—Venereal Diseases.

Districts and Diseases.	Number of Cases.
Wellington, Hawke's Bay, East Coast, and South Island Districts—	
Gonorrhœa, stricture of urethra	16
Auckland	10
Total	26

While 0·611 per cent. seems a small percentage, yet I am certain it is more prevalent than we may imagine. Persons suffering from these loathsome diseases are always diffident in consulting a medical practitioner. The Maoris have found several remedies in herbs and tree-bark decoctions, which they use freely, resulting in the small percentage seen. Venereal disease is still a curse in such districts as the gumfields of the north and in some pas near the towns. It has been the cause of stillborn infants, sterility, and other complaints.

Order 5.—Septic Diseases.

Districts and Diseases.	Number of Cases.
Wellington, Hawke's Bay, East Coast, and South Island Districts—	
Erysipelas	2
Puerperal septicæmia	1
Total	3

There was only a total of three under this heading. The marvel is that there are no more cases than there are: the Maori midwife is not a particularly clean individual.

Class II.—Parasitic Diseases.

Districts and Diseases.	Number of Cases.
Wellington, Hawke's Bay, East Coast, and South Island Districts—	
Worms (not differentiated)	3
Hydatids	1
Pediculus capitis	1
Cutaneous psorospermiasis	1
Thrush	4
Auckland District	43
Total	53

Parasitic diseases are not as common as they ought to be, considering the state of some kaingas and the number of dogs owned by the Maoris.

Class III.—Dietetic Diseases.

Districts and Diseases.	Number of Cases.
Wellington, Hawke's Bay, East Coast, and South Island Districts—	
Bad feeding of infants	7

The bad feeding of infants is a great deal worse than the figures may lead us to think. I have seen scores of Maori babies who were starved to death through ignorance. A few lectures were delivered by Miss Rochefort, Matron of Te Waikato Sanatorium, to Maori women. This is a step in the right direction. It would be well if we could get such a lady as Miss Rochefort to deliver lectures to Maori mothers throughout the Dominion. The good that would result therefrom would be incalculable. It is not the deaths of the aged we have to deplore so much as the terrible infantile mortality. I believe if infant-foods were supplied free to all indigent mothers the infantile-death rate would be greatly decreased. I have often been called in to see sick babies, and I have known that all the medicine in the world would not save them. What they needed and what they did not get were proper foods. We spend about £31,000 per annum in doctoring the ailments of Maori lands; we spend about £16,400 per annum for the care of the aged who have outlived their usefulness; we spend £3,897 upon the indigent: but upon the infants, the hope of the Maori's future existence, we spend not one cent. The pakeha quack, the Maori tohunga, the ignorant mother can kill them by overdoses of quack remedies, by immersion in cold rivers, or by feeding them on flour and water—it matters not for there is no death-certificate required, nor coroner's inquest held. I would rather save one baby than keep ten lunatics or useless aged Maoris alive. Spend one-quarter of the amount expended in old-age pensions in instructing the mothers and in buying infant-foods, and I venture to say that half of the infants which die annually will be saved.

There were two cases of senilty.

Class IV.—Constitutional Diseases.

Districts and Diseases.	Number of Cases.
Wellington, Hawke's Bay, East Coast, and South Island Districts—	
Rheumatism	76
Gout	12
Rickets	3
Cancer	2
Tabes mesenterica	...
Tubercular peritonitis	2
Tubercular meningitis	1
Phthisis	102
Scrofulous cervical glands	2
Chlorosis	1
Other constitutional diseases	13
Auckland District	74
Total	288

The constitutional diseases contributed 6·773 per cent. of all the cases seen. Of these, rheumatism formed 3·994 per cent., or 170 cases out of 288 seen. Phthisis formed 2·916 per cent. of the total cases seen. The great white plague has been and is yet very disastrous to the Maori. As I have pointed out to you before, this malady was known to the ancient Maori. He not only designated it by several names, but the god Motiti, the guardian of the chest, was ofttimes supplicated to remove its existence from the lungs of the sufferer. Its spread in modern time is due principally to huddling in stuffy whares, expectorating under mats, and the injudicious wearing of European clothing.

Class VI.—Local Diseases.

Order 1.—Diseases of the Nervous System.

Districts and Diseases.		Number of Cases.
Wellington, Hawke's Bay, East Coast, and South Island Districts—		
General paresis		1
Hemiplegia		2
Paralysis agitans		2
Chorea		1
Epilepsy		2
Eclampsia		1
Gastralgia		4
Herpes zoster		4
Neuralgia		32
Acute anterior poliomyelitis		1
Hemicrania		1
Neuritis		2
Neurasthenia		99
Sciatica		1
Hysteria		1
Shock		1
Hæmatoma of dura mater		1
Insanity—		
Acute mania	5	
Melancholia	5	
Hypochondriasis	1	
Undefined cases	2	
	—	13
		169
Auckland District		34
Total		203

Diseases of the nervous system gave 4·774 per cent. of all the cases seen. The most common are neurasthenia and neuralgia. You will see by the list that the Maori suffers from a fair assortment of nervous complaints. The thirteen cases of insanity were reported by the Sanitary Inspectors for the various districts. A number of these cases have been removed to the different asylums. No doubt as the Maori progresses and becomes more modernised in his every-day pursuits the wear and stress of civilisation will be made more manifest by nervous breakdowns.

Order 2.—Diseases of the Special Senses.

Districts and Diseases.		Number of Cases.
Wellington, Hawke's Bay, East Coast, and South Island Districts—		
Otitis, otorrhœa		28
Deafness		1
Optic neuritis		1
Cataract		2
Corneal ulcer		6
Keratitis		4
Ophthalmia		13
Conjunctivitis		47
		102
Auckland District		75
Total		177

These furnished 4·163 per cent. of the total cases seen. Out of the 177 cases under this heading conjunctivitis headed the list with 81, or a total percentage of 1·875 per cent. of the cases seen. Conjunctivitis is undoubtedly brought about by smoky unventilated whares, prolonged tangis, and exposure, together with other causes. Otorrhœa gave 40, and ophthalmia 13.

Order 3.—Diseases of the Circulatory System.

Diseases.	Number of Cases.		
	Wellington, Hawke's Bay, East Coast, and South Island Districts.	Auckland District.	Total.
Valvular disease—			
Mitral disease	3		
Aortic disease	1		
	4	8	12
Cardiac dropsy	2	0	2
Syncope	1	0	1
Angina pectoris	1	0	1
Piles	3	0	3
Varicose veins	1	3	4
Other diseases of the circulatory system not differentiated	29	3	32
Totals	41	14	55

Diseases of the circulatory system give 1·294 per cent. of all the cases seen. Of 55 cases, valvular diseases supplied 12, varicose veins 4, and 32 cases were not differentiated.

Order 4.—Diseases of the Respiratory System.

Diseases.	Number of Cases. — Wellington, Hawke's Bay, East Coast, and South Island Districts.	Auckland District.	Total.
Nasal catarrh	102	42	144
Epistaxis	6	0	6
Polypus	2	0	2
Laryngitis	7	1	8
Bronchitis	300	193	493
Asthma	36	15	51
Emphysema	3	3	6
Pneumonia	69	17	86
Pleurisy	26	6	32
Colds	82	2(?)	84
Hæmoptysis	16	0	16
Totals	649	279	928

Diseases of the respiratory system formed 21·825 per cent. of the total cases seen. Out of a total of 928 cases, bronchitis furnished 493, or more than a half of the cases, or 11·596 per cent. of the total cases seen. Nasal catarrh came next with 144, pneumonia with 86, simple colds with 84, asthma with 51, pleurisy with 32, and hæmoptysis with 16. The Maori's respiratory system suffers more from disease than any other. This is due to the altered conditions of life which I have already exhaustively gone into in previous reports. Adding consumption to these figures, we have a grand total of 1,052—that is, 124 cases of phthisis out of 1,052, or 11·787 per cent. of the diseases of the respiratory system, or 2·916 per cent. of the total cases seen. A great many cases die unseen by the medical eye. It is quite a common thing to hear the expression "Te mate o ana tupuna" ("the disease of his ancestors"), and there is no hope. The disease has been handed down through generations by a powerful curse.

Order 5.—Diseases of the Digestive System.

Districts and Diseases.	Number of Cases.
Wellington, Hawke's Bay, East Coast, and South Island Districts—	
Stomatitis	11
Glossitis	1
Dentition	44
Caries of teeth	4
Bad teeth extracted	75
Pharyngitis	6
Tonsilitis	21
Dyspepsia	100
Gastric enteritis	40
Gastritis	23
Gastric catarrh	15
Hæmatemesis	1
Vomiting	9
Constipation	37
Colic	31
Appendicitis	7
Hernia	9
Intestinal obstruction	3
Fistula in ano	3
Cancer of liver	1
Tumour of liver (undefined)	1
Liver-complaint (undefined)	1
Peritonitis	5
Enteritis	7
	455
Auckland District	162
Total	617

Diseases of the digestive system furnished 617 cases of the total seen, or 14·511 per cent. Of these, dyspepsia, gastro-enteritis, constipation, colic, and gastritis were the more common, in the order named. There were also 9 cases of hernia, 7 cases of appendicitis, and 5 cases of peritonitis. Irregularities in eating—gorging at times, insufficient food at other times—sameness of diet, indigestible and unsuitable food, are the chief factors in the causation of the diseases of the digestive system. The Maori should be encouraged to grow other vegetables besides the potato and kumara. Generally speaking, it is either a feast or a famine in the Maori kaingas. Whenever there is a tangi or a hui there is a feast, then the unfortunate hosts have to starve for the rest of the year.

Order 6.—Diseases of the Lymphatic System and Ductless Glands.

Districts and Diseases.	Number of Cases.
Wellington, Hawke's Bay, East Coast, and South Island Districts—	
Anæmia	22
Exophthalmic goitre	1
Simple goitre	2
Hodgkins's disease	1
Addison's disease	1
	27
Auckland District	10
Total	37

Diseases of the lymphatic system and ductless glands gave but 37 cases, or 0·870 per cent. of the total seen. Anæmia and goitre were the two most common. I have seen a number of cases of simple and exophthalmic goitre in different parts of the country. Hodgkins's and Addison's diseases both gave 1 each, which shows that the Maori is heir to pretty nearly all the diseases which afflict the pakeha in these realms.

Order 7.—Diseases of the Urinary System.

Districts and Diseases.	Number of Cases.
Wellington, Hawke's Bay, East Coast, and South Island Districts—	
Acute interstitial nephritis	1
Bright's disease	8
Cystitis	23
Renal colic	1
Renal disease (undefined)	5
	38
Auckland District	12
Total	50

There were 50 cases under this heading, forming 1·176 per cent. of the total cases seen. Of these, 23 were cystitis and 8 Bright's disease. Diseases of this system are more common in my experience than the percentage given would indicate.

Order 8.—Diseases of the Reproductive System.

Districts and Diseases.	Number of Cases.
Wellington, Hawke's Bay, East Coast, and South Island Districts—	
Phimosis	3
Dysuria	5
Balanitis	2
Orchitis	3
Hydrocele	1
Vulvitis	3
Ovaritis	2
Uterine congestion	1
Subinvolution of uterus	2
Retroversion of uterus	2
Endometritis	3
Amenorrhœa	6
Dysmenorrhœa	32
Abortion	7
Retained placenta	3
Ovarian tumours (undefined)	3
Menstrual troubles (undefined)	6
Stillbirth	1
	85
Auckland District	41
Total	126

This system totals 126, or 2·963 per cent. of the total cases seen. My experience would lead me to dispute these figures as being too low. Menstrual disorders are by far the most common. This is not to be wondered at seeing that the average life of a Maori woman is a fairly hard one at times. Scanty clothing, exposure, carrying heavy weights, neglect, and ignorance are the principal causes of these complaints.

Order 9.—Diseases of the Locomotive System.

Districts and Diseases.	Number of Cases.
Wellington, Hawke's Bay, East Coast, and South Island Districts—	
Osteitis	2
Periostitis	4
Auckland District	2
Total	8

Diseases of the locomotive system gave but 8 cases. I have come across several cases of necrosis and tubercular disease of the bone.

Order 10.—Diseases of the Integumentary System.

Districts and Diseases.	Number of Cases.
Wellington, Hawke's Bay, East Coast, and South Island Districts—	
Phlegmon, cellulitis	7
Ulcers	23
Eczema	138
Impetigo contagiosa (*hakihaki*)	56
Furunculosis	13
Dermatitis	7
Urticaria	6
Ringworm	4
Acne	2
Chloasma	1
Prurigo	1
Psoariasis	1
Whitlow	2
Warts	1
Sebaceous cysts	1
Seborrhœa of scalp	1
	264
Auckland District	86
Total	350

The diseases of the integumentary system furnished 350 cases, or 8·232 per cent. of the total seen. Of these, eczema, impetigo contagiosa, ulcers, and furunculosis gave the most cases, in the order named. The lack of cleanliness, promiscuous living, and the use of a common towel are the chief causes of these complaints. It would be well if separate towels were used in the different schools.

Class VII.—Violence.

Districts and Diseases.	Number of Cases.
Wellington, Hawke's Bay, East Coast, and South Island Districts—	
Fractures and dislocations	18
Abrasions	10
Burns	7
Poisoning (undefined)	16
Concussion of spine	1
Accidents and injuries (not defined)	110
	162
Auckland District	101
Total	263

This class furnished 263, or 6·185 per cent. of the total cases seen. Most of these cases were not defined.

I have, &c.,
M. Pomare,
Health Officer to the Maoris.

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

Waipawa, 31st March, 1908.

Memorandum for Dr. Pomare, Health Officer to the Maoris, Wellington.

I forward herewith my report for the year ending 31st March, 1908, concerning health matters.

At present there is no call for activity in urging sanitary living, because the people, impelled by the feeling of shame and led by the desire to equal their neighbours in sanitary affairs, are voluntarily taking up the works leading to health.

It is difficult for me to write down figures regarding the progress of those who are working their lands, with the exception of a few young men who started farming some time ago. We heard about the young men who received the sum of £1,000 or more by the sale of the Waimarama and Pukekura Blocks to the Government, and who foolishly threw the money away on betting. During the recent drought a great deal of the stock perished, and a large number was sold as there was no feed to be had.

The craze for tohungaism is speedily sinking. Only those who are despaired of by the doctor take resort to the tohunga now.

The diseases have been mild throughout the district, excepting the common children's complaints, which affected to a marked degree the children of Pakipaki and Waimarama.

Houses, &c.—Inspected: Pas, 35; dwellinghouses, 288; W.C.s, 194; meeting-houses, 30. Houses destroyed, 27.

Births and Deaths (1st April, 1907, to 31st March, 1908).—Births, 49; deaths, 23: excess of births over deaths, 26.

Ihaia Hutana,
Native Sanitary Inspector, Hawke's Bay.

Masterton, 31st March, 1908.

Dr. Pomare, Health Officer to the Maoris, Wellington.

THE following table shows the number of houses built, &c., during the three years of my inspectorship in this district:—

Year.	Pas.	Houses.	Old Houses.	Houses renewed.	Houses painted.	Houses without W.C.s.	Houses passed.	W.C.s built.
1905–6	45	225	9	21	43	75	77	77
1906–7	56	10	11	25	18	32	196	120
1907–8	67	8	..	..	..	1	8	7
Totals ..	67	243	20	46	61	108	281	204

Since the advent of Hikapuhi the old inebriates have recommenced to drink. I made repeated efforts to check this evil, and now that I am also Chairman of the Rongokako Council I am confident that my task will be much lightened. The sanitary work will also be much aided by making use of the Komiti Maraes under my control.

During the year the number of Native farmers in the district has greatly increased, the total at present being twenty-four. The greater part of the land, comprising 108,261 acres, however, is leased. Acres farmed, 32,807; sheep, 21,270; horses, 174; cattle, 617.

I wish to say a word concerning the importation of liquor to the Maori kaingas. I have asked the older and more influential Natives not to order any more liquor, and they have promised not to do so.

Sanitary matters have been progressing more smoothly since my appointment as Chairman of the Council. I have attended five meetings, at each of which I pointed out the wrong and right ways to health, &c.

I have received a petition from the Natives asking that a medical attendant, whom they will name, be appointed for them.

This is all. Good health to you!

T. TE TAU,
Native Sanitary Inspector.

Putiki, 28th April, 1908.

Dr. Pomare, Health Officer to the Maoris, Wellington.

O FRIEND, Dr. Pomare! Greetings to you! I herewith submit some figures regarding the houses of the Natives in the Wanganui Maori Council District and the Waitotara and Kai Iwi pas: Pas visited, 46; houses destroyed, 261; new houses built, 229; new W.C.s built, 82. All the pas are well conducted.

HORI PUKEHIKA,
Native Sanitary Inspector.

Waimatatini, Port Awanui, 1st February, 1908..

To Dr. Maui Pomare, Health Officer to the Maoris, Wellington.

As the Minister of Health has been good enough to appoint me Native Sanitary Inspector for the Horouta Maori Council District, I herewith forward my first report, for the month af January.

You are aware of the boundaries of this district, within which lie the 107 pas which are named in the schedule attached.

The tribes and hapus of this district are as under: (1) Ngatiporou, Waipiro to Wharekahika; (2) Whanau-a-Maru, Whangaparaoa to Wairuru; (3) Whanau-a-te Hutu, Wairuru to Waiorore; (4) Whanau-a-Panui, Waiore to Hawai; (5) Ngaitai, Torere.

I made an enumeration of the population of this district during the month. I have placed separately the number of adults and children from fifteen years downward, so as to make everything clear at the outset. Total number of adults, 1,822; total number of children, 1,173.

I am keeping an account of the houses of each settlement, further particulars of which I give in the schedule: Meeting-houses, 48; churches, 20; weatherboard houses, 275; *kautas* (palings), 159; Maori whares, 254; W.C.s, 26.

I spent the whole of the month in visiting the different settlements of the Horouta District, during which time I explained to the people the nature of the duties conferred upon me, and ascertained the position of their Komiti Maraes. I also endeavoured to fulfil your orders—namely (1) that each householder must have a W.C., and (2) that I should point out that dirty water and other filthy matter must not be thrown about the houses.. I have given these instructions throughout the district.

The Horouta Council has requested me to keep a sharp lookout, because liquor has been taken to the *maraes* and meetings.

The building of houses of the modern type is speedily increasing, and at the present time houses of this description are to be seen at kaingas which a short time ago had not owned such. However, the conducting of pas upon sanitary lines is very backward owing to the negligence of the Komiti Maraes. Some of the kaingas are well kept, but others are very insanitary. I have

instructed the Komitis of kaingas in this state to set aright the wrongs existing—to destroy several old houses and to clean their wells. On my next visit I shall be able to report on the steps taken with regard to my instructions.

It is my intention to visit the different kaingas during the summer months when the roads are in good order. In the winter they are almost impassable. It is at this time the people are negligent concerning the state of their *maraes*.

The collection in aid of the proposed Nursing Home is still in progress. The sum now to hand amounts to £200, and the supporters of this object are confident of raising £350 before the Minister's arrival. They desire to have the building erected before the winter sets in, and also to have a nurse sent in the meanwhile to attend to the sick.

This is all. Good health to you who are ever fighting for the health of our people, the Maori!

HOROMONA TEO PAIPA,
Native Sanitary Inspector, East Coast.

REPORT OF TE RANGIHIROA, ASSISTANT NATIVE HEALTH OFFICER.

SIR,— Auckland, 21st May, 1908.

I have the honour to submit my report on the work done in the Auckland Native Health District since my transference from the West Coast (North Island) District in May, 1907.

POPULATION.

The population of the district according to the last census report of 1906 is made up as follows:—

District north of Auckland	10,706
The Waikato and King-country	5,164
Thames, Coromandel, with Piako and Ohinemuri Counties	3,043
Rotorua and Taupo districts	3,285
Bay of Plenty, with part of Waiapu	6,996
	29,194

This comprises the greater part of the Maori population of the Dominion. It will be seen that one-third of the population of the district resides in the country north of Auckland, whilst the Bay of Plenty, including the Urewera country, has also a large population. When to these are added the Taupo and some parts of the King-country, it will be understood that much difficult travelling has to be done, making it a hard matter to work the whole district from one fixed point. By making temporary headquarters for two or three months in the various outlying districts however, one is enabled to live amongst the people, to keep in close touch with them and assist the Maori Councils, Maori Committees, and Women's Committees in their work.

VITAL STATISTICS AND REGISTRATION.

Owing to the position of Registrar to the various Maori Councils being purely honorary in many cases, and the mass of the people not recognising the importance of registration, much valuable data is lost. The census is given for the European counties, whilst the Native Registrars are appointed for the Maori Council districts. The boundaries do not coincide, so that when one or two Registrars do not furnish complete vital statistics, the vital statistics for the Maori population cannot be made up because they would be incorrect. If the census were taken by the Maori Councils for their own districts, not only would it be more correct, since not a single individual or small hamlet would be missed as might possibly be the case when taken by an absolute stranger to a difficult district; but, even if some of the Maori Councils fail to furnish complete statistics, the vital statistics of those which do, can be made up correctly, and birth, death, and marriage rates be supplied from year to year. But measures must be taken to make registration of births, deaths, and marriages compulsory by inflicting a fine upon those who do not comply within a certain time. As Mr. Elsdon Best remarks, these incomplete returns will be a farce until such measures are taken. I would therefore strongly urge that registration be made compulsory, and that the next census be taken through the Maori Councils in order that we may speedily get rid of our present indefinite knowledge of the increase or decrease of the Maori race.

INCREASE OR DECREASE OF POPULATION.

Owing to the difficulty of obtaining correct figures, one can only generalise on the condition of the district as a whole, and for the present take one or two places that have come under immediate notice. If the present population is contrasted with that of over ten years ago, it is an undoubted fact that the population has materially decreased. There are subtribes sadly diminished

in numbers, and the number of houses in the villages has lessened. But if the present is contrasted with the last few years, then I am confident that, whilst a few villages still show a decrease and others are practically stationary, the majority show a steady if somewhat slow increase in births over deaths. People are apt to think of the fine old chiefs whose deaths cause large tangis, and to forget the children whose numbers are increasing. Though the adult population may possibly be less, this is more than compensated for by the increased number of children.

The Maori Registrar's figures for the Mangonui Council for the years 1904–7 show fifty-nine births and fifty-two deaths. Though this increase is very small, the Registrar complains that the people do not send in the returns. The returns which suffer are the birth returns, for the Maori is now somewhat frightened of concealing deaths. With births he does not bother so much. Until they are made compulsory the returns will be incomplete and erroneous, the number of births being higher than the returns show. In the village of Waima, where a Native-school teacher takes an active interest in the people, and knows the importance of correct figures, we find that for the years 1904–7 (inclusive) there were 51 births to 17 deaths, making a substantial increase in four years of 34 for one village. Mr. Prinn, Native Medical Dispenser at Taupo, informs me that there has been an undoubted increase of late years in the number of children. At Whakarewarewa, in the Rotorua district, there is a large increase. This I attribute to the fathers obtaining regular work in the State Nursery and other occupations. This in turn leads to regular hours, regular meal-times, and the procuring of good food and warm clothing. Mr. Best refers in his report to the good done by the establishment of a cheese-factory in his district. There can be no doubt that the salvation of the Maori lies in regular work—of his own lands in preference—which will procure for him the necessaries and comforts of life, and carry with it better health, an increased birth-rate, and a rise in the social and mental sphere.

Infant Mortality.

The mortality amongst infants is very high. The old-time Maori has excellent laws for nursing-mothers as regards diet and cleanliness. Also, in a country devoid of the larger mammals, infants were fed entirely at the breast. Since the advent of the cow, tinned milk, and feeding-bottles, much trouble has come upon them. Though the Maori mother does not neglect her children to attend social functions, many have forsaken breast feeding for a different reason. They have in very many cases copied the example of the European, because what the learned pakeha does is right. The introduction of the feeding-bottle into the Maori home has caused as many deaths as the guns of Hongi. Flour and warm water placed in the miracle-working feeding-bottle has been given to delicate infants. The cow is a rare animal in many of the Maori villages, so tinned milk is largely used. As to qualities and mixing, the vast majority are wofully ignorant. Any warm liquid of a whitish appearance is milk of the requisite strength. Miss Rochfort in her Rotorua tour, and my addresses in the various villages, have given the people instruction in this important subject. But the practical work lies in a scheme of district nursing. I would place the care of infants as the most important of the duties. The preparation of humanised milk is beyond the reach of the Maori, for we are too scattered to have corporations to prepare it. In our case we should get the maximum results if the mothers were practically instructed in cleanliness and right proportions of cow's milk and water with the other practical rules of infant-feeding and infant-care. A Health Officer speaks and passes on, but a nurse would visit and see that instructions were being carried out, for the Maori is liable to weary of new things and to lapse.

Sanitation.

Throughout the district the type of dwelling is improving, the majority showing a desire to comply with the Council by-laws. In the Mangonui district I was struck by the number of people who had abandoned the low-lying damp sites and shifted their dwellings on to higher ground. At Rotorua prizes were given by the Health Department, Mr. Leo Buller, and the Mayor of Auckland, for the best-kept houses and grounds in Ohinemutu and Whakarewarewa. There are keen competition amongst the Maoris, and great improvement in the condition of the villages resulted. Lady Plunket, who takes a great interest in all matters which tend to the protection of infant-life, graciously gave certificates to the women who kept their homes in good order. These certificates, neatly framed, are amongst the most valued possessions of the fortunate recipients, and I am sure the happiness that this act of thoughtful kindness has given will amply repay Lady Plunket for the interest she has taken.

The local government of these villages has been handed over from the Arawa Maori Council to the Tourist Department, but the latter have not yet assumed authority. The Village Committee are very active in some parts, and do considerable good. In the North I found a very refreshing feature in the existence of Women's Committees. They visit one another's houses on Sundays, and woe betide the householder whose home is not clean, with the beds well made with clean linen, &c. This is advance in the right direction. The erection of privies is rather tardy. On the whole, one can say there is steady improvement all round.

Sanitary Inspectors.

The five Inspectors in the Mangonui, Bay of Islands, Wairoa North, Arawa, and Matatua districts continue to do good work, but there are large districts such as the Waikato and King-country which urgently need Inspectors. The result of the course of instruction given to them at the Auckland Health Office last year by Dr. Pomare, Dr. Purdy and staff, and myself, has benefited them greatly. I append some of their reports.

Incidence of Disease.

From the returns supplied by medical officers and two dispensers in the Auckland District for the year 1907 I have compiled the following, which will serve as a beginning in this district to the statistical study of the ailments which afflict the Maori :—

	Males.	Females.	Total.
Class I.—Specific febrile or zymotic diseases,—			
Order 1. Miasmatic diseases	91	78	169
,, 2. Diarrhœal diseases	70	61	131
,, 3. Venereal diseases	8	2	10
Class II.—Parasitic diseases	18	25	43
Class III.—Constitutional diseases	45	29	74
Class IV.—Local diseases,—			
Order 1. Diseases of nervous system ...	18	16	34
,, 2. ,, organs of special senses	42	33	75
,, 3. ,, circulatory system ...	13	1	14
,, 4. ,, respiratory system ...	165	114	279
,, 5. ,, digestive system ...	86	76	162
,, 6. ,, lymphatic system ...	7	3	10
,, 7. ,, urinary system ...	6	6	12
,, 8. ,, reproductive system ...	2	39	41
,, 9. ,, locomotive system ...	1	1	2
,, 10. ,, integumentary system	50	36	86
Class V.—Violence	78	23	101
Class VI. Ill-defined and not-specified cases ...	22	10	32
	722	553	1,275

Miasmatic Diseases formed 13·25 per cent. of the total cases seen. Of these, influenza, whooping-cough, and measles were the most prevalent, in the order named. Though there are still many deaths when epidemics prevail, I am confident that in many districts the death-rate is considerably lessened owing to the Maoris exercising more care in keeping the children warm. The old system of universal cold bathing as a panacea for all the ills that Maori flesh is heir to, is now, with the spread of education, happily becoming a matter of interest only to the ethonologist who studies the past. In some districts, as Otamatea, the mortality was increased by influenza and whooping-cough, following or being coincident with measles. Enteric fever cropped up in the Whakatane district, and great credit is due to the Native-school teacher at Te Teko for his untiring efforts in conjunction with the Medical Officer to the Maoris at Whakatane. With the improvement in sanitation in the Maori villages enteric is rapidly decreasing. At Rawene a mild outbreak occurred amongst the Europeans and spread to Maoris.

Diarrhœal Diseases contributed 10·274 per cent. of the cases seen, which were largely made up of two outbreaks of diarrhœa in the Whakatane district which Dr. Stapley attributed to dietetic error in eating bad fish. The others were principally in young children through errors in feeding.

Venereal Diseases, which have been such a scourge since their introduction into the country by the pakeha, are on the decline, making only 0·784 per cent. of the cases.

Parasitic Diseases are on the decrease. They form only 3·372 per cent. Scabies and thrush are the more common. Of hydatids, which would be a serious menace once the hosts of Maori dogs became inhabited by *Tænia echinococcus*, I have never seen a case in this district.

Constitutional Diseases form 5·803 per cent. Rheumatism supplies the largest number of cases. The joint-affections were amongst the few ills that the ancient Maori enumerated in his list of ailments. They probably consisted of rheumatism, arthritis deformans, and tubercular trouble.

Phthisis forms 22 cases out of 72, or 1·725 per cent. of the total cases seen. That the Maori had a form of wasting disease in ancient times, which he termed *kohi* in most of the dialects, is as certain as oral tradition can make it. The condition is old and the word for that condition is old, so that when he sees a definite case of consumption in these days he calls it *kohi* without waiting for the doctor's diagnosis. But it may be said that these wasting diseases were due to general debility, asthenia, or starvation. Starvation, however, is not hereditary, and again Maori oral tradition definitely states that the *kohi* disease ran in certain families. Hitiri te Paerata, an old tatooed veteran of Rewi Manga's famous defence of Orakau, when I had diagnosed his grand-daughter's illness as advanced consumption, sadly shook his head and said, "My son, the *mate kohi* has run through our family for generations—aye, from before the advent of the white man. *He momo matou no taua mate* (We inherit that disease)." This induced me to follow up this line of investigation, and the consensus of opinion gathered in the meeting-house and by the sick-bed leads me to believe that phthisis was known to the Maori in ancient times, and he recognised that certain families held a marked tendency towards it. In the North I heard of a *mate Maori* (Maori disease) named *toketoke* which attacked the leg or ankle, causing swelling, suppuration, and finally the discharge of pieces of bone. At a large gathering in the Mangonui County I was shown an actual authentic case in a boy of ten years which had been finally diagnosed by the old men with tohunga proclivities as an undoubted case of *toketoke*. There had been considerable swelling of the right leg, with suppuration and the discharge of particles of bone. The case exhibited all the cardinal signs. I looked and saw a typical case of tubercular disease of the tibia. I asked the old men in the meeting-house to give me a genealogical tree of people who had been attacked by *toketoke*—for the disease again runs in certain families—the tendency to it is hereditary. They complied, and took me beyond the advent of the pakeha canoes. The time at my disposal was too limited to allow of an examination, assisted by the Maori owners, of the bones

in the few remaining burial-caves which have escaped the rifling and desecration of the curio-hunting vandal. Absolute proof, therefore, of the existence of tubercular bone-disease in ancient times is still forthcoming, but I hope to supply the missing link during the coming year.

It has been argued that the Maori would suffer very seriously from consumption, offering as he does virgin soil to the ravages of a disease totally unknown to him, and against which he has developed no immunity which long association with the disease confers. This fate might possibly be that of the North American Indian who is dying out, because consumption is the chief thing that civilisation bestowed upon him. If we can prove that phthisis is not one of the many gifts of the pakeha, we can at all events concentrate our attention upon local conditions without the haunting fear of the "luxuriant growth in new soil" theory. There is no doubt that the lapse in the sanitary regulations and conditions, with the change in clothing, food, and work brought about by the first contact with civilisation, made the conditions more favourable for tuberculosis, which was kept in check by the open-air active life of the old-time Maori. The privations and starvation owing to insufficient food cultivated which followed the Waikato war helped to disseminate the seeds of disease until it became more widespread.

The terraced hilltops, the former home of the fighting Maori, with their trenches and ditches, were practically sanatoria, whilst the constant work in procuring food, and the training in military enterprise, led to the development of a fine physique which, with the fact that very little time was spent indoors, enabled them to withstand the bad effect which the poor ventilation in the houses might have produced. But even in ancient times the meeting-houses had often a *matapihi*, or hole, in the roof near the ridge-pole with a small roof again over it. This was used for the purposes of ventilation, the piece of woven fibre which closed the aperture being removed when the house was too warm. We can therefore understand that, though the disease existed, as the records of several families show, it was held in check by the conditions of life in former times. The dislocation of environment, if I may so term it, together with loss of the old incentive to work and physical exercise, has reacted by deteriorating the racial physique.

The figures I have at my command would show that the weak spot of the Maori is his chest. Such is my own experience, and in this I agree with my colleague Dr. Pomare. I have, however, grouped pulmonary affections, colds, and bronchitis given by him in his last year's report under separate headings under the general heading of "Diseases of the Respiratory System." Excluding phthisis, diseases of the respiratory system form one-fifth of the total cases seen, or 21·822 per cent. Phthisis as quoted above forms 1·725 per cent. of the cases seen, or 7·3 per cent. of the diseases of the respiratory system. Though phthisis is a terrible scourge to the Maori, it is not so prevalent as many think. The high percentage of respiratory affections however must give us cause for alarm, since with the lowering of the vitality of the respiratory tract the way for phthisis is made easier. This brings me to making the following statement:—

Open-air Life.

Nature did not intend the Maori to herd in cities, to shut out fresh air and sunlight and evolve sanitary problems. His place is on the land, both from the commercial and from the equally or more important health point of view. As a case in point, I quote the history of two fellow-students of mine. Both were well endowed with brains. One went to town and entered an office. He died last year of phthisis. The other likewise entered an office, but, his health failing, he sought the healing air of the country. To-day he is a rising farmer on the East Coast, helping his tribe by his advice and by his example. When one of Te Aute's promising students enters a town office with aspirations towards university honours, Mr. Ngata, M.P. for the East Coast, says, "There is another good farmer wasted." I agree with him, and would also add, "There is another useful life in danger." The danger of phthisis amongst the Maori is more serious between the ages of fifteen and twenty-five, just when he is turning his back upon the farm and seeking the employment of the towns. Of the twenty-two cases recorded last year the age-incidence was as follows: Age 1–5, 1 case; 5–15, 1 case; 15–25, 10 cases; 25–35, 6 cases; 35–45, 2 cases; over 45, 2 cases.

Consumptive Camps.—This year Miss Rochefort, Matron of Te Waikato Sanatorium, visited the Rotorua district to give a course of instruction to the Maoris on the treatment of consumption, and the feeding of infants, &c. The treatment at the sanatorium was carefully explained, and in each village a large squad of men, women, and children was mustered and instructed in the breathing-exercises. The lectures were attentively listened to, and the exercises enthusiastically done. I am confident the people derived much benefit from the instruction. But the Maori with a cold or trouble in his chest, like his pakeha brother, has a great prejudice against fresh air. The instruction given in lectures must be followed by actual demonstration. With this end in view the Chief Health Officer has authorised the Native Sanitary Inspectors to visit Te Waikato Sanatorium that they may see with their own eyes, and be the better enabled to educate their people. In addition, if Maori patients could be treated at consumptive camps such as that being established at Whakarewarewa, they could be instructed in their own cases, and complete their treatment at home if necessary. They would in turn disseminate knowledge in the various kaingas, and the result would be for good.

Breathing-exercises.—It is unnecessary for me to dilate upon the good done by breathing-exercises not only upon phthisis, but all troubles of the respiratory system. Especially then would these exercises be useful to the Maori with the weak chest he has developed of late years. Not only do they assist in cure, but they prove of invalauble aid in prevention. They should then be introduced into all the Native schools. Most schools teach physical drill, which, in the majority of cases, becomes a simple mechanical exercise without much contraction of muscle, the mind not being concentrated upon the work. To these exercises the addition of deep inspiration and deep expira-

tion would improve the exercises by demanding the requisite attention and concentration. To the growing Maori children this course would result in strengthened lungs and improved physique, help them to get rid of the recently developed respiratory weakness, and make them better fitted to withstand the attacks of disease.

The school-teacher of the Waima Native School, Mr. Coghlan, has already introduced the exercises into his school upon his own initiative, the work being done in his own time before school commences. As a result some of his children have chest-expansion of over 4 in., but I will refer to this later. In the best interests of the health of the race I would suggest again that these exercises be taught in all the Native schools.

Cancer.—Amongst the constitutional diseases only two cases of cancer are found, one of tumour of the pyloric end of the stomach which the Medical Officer marks as probably cancer, whilst the other is of the uterus. I have been struck by the comparative immunity of the Maori from this disease.

Local Diseases.—*Diseases of the Nervous System* furnish 2·6 per cent. of the cases, but they are mostly of a minor nature. I may say that, though in my own journeyings I have seen cases of paraplegia, hemiplegia, and general paralysis of the insane, with an old history of syphilis in each case, I have never yet seen a case of locomotor ataxia in a Maori. Modern civilisation, whilst affecting the respiratory system of the Maori, has not yet damaged his nervous system to any extent.

Diseases of the Special-sense Organs give 5·882 per cent. Of 75 cases, conjunctivitis furnishes 34, discharge from the ears 12, and mastoid trouble 4. I have already in a previous report drawn attention to the large number of cases of middle-ear disease.

Diseases of the Circulatory System give 1·098 per cent. Of 14 cases, valvular disease supplies 8 cases, and varicose veins 3. In my experience the positions should be reversed.

Diseases of the Respiratory System supply by far the largest number of cases. They are comprised as follows:—

Disease.	Male.	Female.	Total.
Nasal catarrh	28	14	42
Laryngitis	1	...	1
Bronchitis	111	82	193
Pneumonia	8	9	17
Pleurisy	3	3	6
Empyema	3	...	3
Asthma	10	5	15
Others	1	1	2
	165	114	279

Of these, bronchitis is the most common, commencing from infancy upwards. The percentage of 21·882 leads us to plead for the introduction of breathing exercises into the schools.

Diseases of the Digestive System give 12·705 per cent. of cases. Dyspepsia, constipation, gastritis, gastro-enteritis, and enteritis are the more common, in the order named. Appendicitis gives only 1 case, whilst gastric ulcer is absent from the list. There is no doubt that the lack of suitable dietaries in many parts aggravates the condition. The failure of the potato-crop is the cause of much trouble. The Maori is also showing a tendency to depend too much upon tinned foods. The large number of Maoris who work on the northern gumfields do not cultivate vegetables, but subsist upon flour and tinned meats or fish.

Diseases of the Reproductive Organs furnish 3·215 per cent., but owing to the natural timidity of women these figures are too low. Over half the cases consist of trouble with the menses, in the majority of cases due to ignorance or carelessness. Whilst the Maori is not so badly off as the pakeha, since, as Mr. Bird, Inspector of Native Schools, says, "the genius of the Maori language transforms many topics tabooed by the somewhat irrational European, and allows the Maori to speak sensibly and rationally upon them, there is much need for the useful laws of physiology to be taught in the secondary girls' schools and in the parental home."

Diseases of the Lymphatic System furnish fewer cases in the figures than my own experience would lead me to expect. Tubercular disease of the glands of the neck are very common, and the scarring was known as *kaki hura*, and was stated to run in families.

Urinary and Locomotor Diseases furnish few cases, though tubercular bone-disease is more common than the figures indicate.

Diseases of the Integumentary System give 6·745 per cent. Of these, eczema, impetigo, and ulcers furnish the most cases, in the order named. Impetigo, or *hakihaki*, is not so prevalent as formerly. The fact that impetigo, or *hakihaki*, is described in English text-books would go to disprove the idea that the disease is monopolized by the Maori, as so many seem to think when they raise scares of the prevalence of "Maori itch," as they term it. When it finds its way into a newspaper, as happened last year, it tends to convey a false impression. As Dr. Frazer-Hurst says, "Maoris, like Europeans, have a range of skin-affections, and the trouble about a popular 'scare' is that people will not learn to discriminate between individual cases."

Amongst *Cases of Violence* we have two cases of tutu poisoning, both of whom recovered.

Tohungas and "Mate Maori" (Maori Disease).

The passing of the Tohunga Suppression Bill last session should have a salutary effect upon the modern pretender to the once honoured name of tohunga. The tohunga of old was the priest and the learned man of the tribe, who had graduated in the ancient schools of learning. He was versed in medical knowledge necessary for the treatment of the few ailments in those healthy times. He understood the power of suggestion, and used it for life or death as the occasion or the

laws demanded. He was successful in the majority of cases. He has passed away, but his place is occupied by the modern quack or sham article. The Maori idea of disease was that it was due to *atuas* or demons who punished the lawbreakers. The patient had transgressed the law and was possessed. The *atua* had to be exorcised and the patient made clean. Local treatment alone was inadequate. This idea still lurks in the back of the Maori mind to a greater extent than many think. The old-time Maori's ailments were minor ones, but supernatural causes weighed heavy upon him, often producing the fatal melancholia that often characterized the Polynesian. But the treatment by the appropriate incantation, with purification by water, was efficacious. His recovery was speedy. This expectation has been transmitted. He detests long treatment, even though his case be chronic. Before one bottle of medicine is consumed he seeks another medical adviser, if such be available. Unless almost immediate relief follows he thinks he is attacked by a *mate Maori*, for which all the medical schools in Europe can give no relief. It matters not what the disease may be—asthma, bronchitis, or indigestion—if he thinks it is a *mate Maori* then it speedily becomes more serious, and *is* a *mate Maori*. The fear of the supernatural influencing the mind is added to ordinary disease. No matter how Europeans may ridicule the idea, to the Maori it is a real thing, and just so far as we are prepared to believe in the influence of mind in assisting or combating disease according to the patient's outlook, then just so far may we believe in *mate Maori*. To the European there is no such thing; to the Maori there is. Though education is speedily eradicating the idea, it will exist in the shadows of the mind for some time.

It was only in 1846 that there was abolished in England the Law of Deodand, whereby not only a beast that kills a man, but a cart-wheel that runs over him, or a tree that crushes him, were *Deo dandus* or "given to God," being forfeited and sold for the poor. Judged by this it is really astonishing that the Maori has forgotten so much. Upon this idea people of the stamp of Rua and Wereta work. Medicine has always been intimately associated with religion amongst most races, and the Maori is no exception. Hence the influence of these modern shamans who, like the civilised tohunga, Mrs. Eddy, whom there is no Bill to suppress, evolve a system of faith-healing. The only thing in favour of Rua is his sanitary and working ideas, but the harm he does far exceeds the good.

Nursing.

The importance of this work has been emphasized before, and there are now Maori girls in training for this important calling. As before stated, we shall get the maximum good amongst the Maoris by a simple practical knowledge, for the Maori girl has an asset which the most highly trained European nurse has not—a knowledge of the ways and the language of the people. Just as it is unnecessary for a Maori Sanitary Inspector to know about the intricate trapping of drains, so it is not needful for a Maori nurse to know the muscles which are attached to the coracoid process. Yet difficult and, so far as the Maori is concerned, useless questions in physiology and anatomy may lose us invaluable workers. Hence it would be better for the Health Department, which is better acquainted with the Maori requirements, to draw up a syllabus of theoretical work, and set the examinations qualifying for Maori nursing. Those who have the ability to pass the hospital and State examinations could do so, but the need for Maori nurses is too urgent to risk the loss of workers who are failed for not knowing what will be unnecessary to them in their work of raising the condition of their people. Instruction in the St. Helens Homes and the feeding of infants should be amongst the most important of their subjects.

Medical Inspection of Native Schools.

This has existed for some time, the Native Health Officer co-operating whenever possible with the Native-school teacher. The time has come when an official examination of all the children in the schools should be made once a year and records kept. Those children having a bad family history as of phthisis can be thoroughly examined, and treatment or preventive measures impressed upon the parents. Fresh air and ventilation for these cases can be emphasized at school, in the meeting-house, and at the home during the house-to-house inspection. Care of the teeth, which must play an important part in the prevention and elimination of tuberculosis, can be specially insisted upon in these cases. Children with a small chest-expansion can be put in the front row during the breathing exercises to be under the direct supervision of the school-teacher. Of the children I measured at the Waima School, out of 37 boys, only 4 had a chest-expansion of under 2½ in., and 2 of these were under six years of age. One boy, aged 10 years 9 months, had an expansion of 4½ in. I found that the half-caste boys of this school did not have such a good expansion as full Maoris. The difference between the expansion of less than a year ago and that of the present after a course of deep breathing is marked. The taking of these measurements in all schools, with the heights and weights, would furnish data towards setting up anthropometric standards for the Maori and be useful to science.

I have, &c.,

Dr. Mason, Chief Health Officer, Wellington. Te Rangihiroa, M.B., Ch.B.

Ruatoki, 24th April, 1908.

Memorandum for Health Officer to the Maoris, Auckland.

Herewith I forward a few notes, as pertaining to the Matatua district, for the year ending 31st March, 1908: Number of kaingas visited during above period, 33; number of houses inspected, 462; number of houses condemned, 7; number of houses destroyed, 5; number of new houses erected, 22; number of latrines built, nil.

Remarks.

In regard to sanitation in general, it may be described as fair on the whole. The Native does not take much interest in sanitation beyond building a better class of dwelling as the old-time

whare Maori are abandoned. This attitude is especially noticeable in regard to latrines. The Natives are quite apathetic in this respect, and are worthy decendants of their famed ancestor, Awa-tiko-rauraha. They take no notice of advice or suggestions on that head. The state in which one finds the environs of a hamlet when a meeting is toward is often filthy. In many cases this sort of thing must have a truly baleful effect upon the water used for domestic purposes. Natives are not careful in regard to their drinking-water supplies. Those living on delta lands, such as occur in the Ngatiawa territory, and where the water is inferior, have, it appears, a foolish prejudice against water conserved in catchment-tanks.

In regard to the general condition of the people during the past year there are two matters worthy of note—viz., the dairy industry and the effects of "Messiahism." A marked change has taken place in the status of the Natives of the Ruatoki district—*i.e.*, among those who have during the past year turned their attention to milking for the new cheese-factory now operating at Te Rewarewa. These Natives have now the advantage accruing from a steady income, which, albeit small, is yet sufficient to keep them in comparative comfort. They are able to purchase food at the local stores, which enables them to treat lightly any failure of their crops. They also acquire a better standing among storekeepers and Europeans generally. It would be well were the system extended to other parts—*e.g.*, to the alluvial lands of Ngatipukeko and Ngatiawa. In contrast to the above are those Natives who have cast in their lot with the swindling, polygamous shaman, termed "the true Messiah." Many of these have deserted their homes in order to camp at New Jerusalem the Golden, and a number have sold their cottages to Europeans, handing the proceeds over to Rua. Their hamlets, meanwhile, are deserted and decadent. It may be noted that these lunatics present a demeanour less sullen and hostile than of yore, now that they find the pakeha cannot be prophesied or scared from these shores. I have observed several items in praise of the *keka*, but all sane persons know that Messiahs cannot compete with dairy factories as civilising agents. The minor variety of tohungas seem to have been fairly well extinguished by the new light.

No severe epidemics have afflicted this district during the past year.

It is impossible to give the number of births and deaths that have occurred during the year, inasmuch as the Rua-ites decline to register either. Those registered by others amount to—births, 8; deaths, 20. Such incomplete returns must of course continue to be a farce until such time as Natives are compelled by law to register births and deaths. It is an utterly fallacious hope to expect Maoris to administer properly such laws as those pertaining to the above, or registration of dogs, &c.

Nor does the Council take any interest in sanitation generally. Such subjects are never discussed at their meetings.

So far as I can ascertain, there is not much gambling for money, though playing cards for matches is common. Such methods of killing time must obtain so long as the women neglect all domestic work save that of the most primitive nature.

Nor is there a great deal of drinking among these Natives. The local record in that particular seems to be a good one. There are, happily, no hotels at Taneatua, Ruatoki, or Te Waimana, and it is to be hoped that there never will be. The fewer hotels in Native districts, the better.

The Ruatoki Mission, established last year, seems to be doing good work. About ten or twelve Native girls are there being trained in cleanliness and other things which are said to make for righteousness. This practical teaching is excellent; the religious training I have but scant faith in, but I suppose it amuses some folks.

Heoi—ka huri.

ELSDON BEST.

Dargaville, 26th March, 1908.

Dr. Te Rangihiroa, Health Officer to the Maoris, Auckland.

GREETINGS. I send you my report on the Wairoa Council district for the year 1907.

Health.—The health of the district has been good until the spring, when there were many cases of whooping-cough and bronchitis. There were no cases of typhoid. Much good would be done if there were a cottage hospital at Dargaville for Maoris. The Maoris would then be near the doctor for treatment. I would strongly urge the necessity for such a building.

The villages are improving. The houses are entirely built of sawn timber; there are none of the old type remaining. The people are carrying out the Council by-laws, and following the ways of the pakeha.

Milking has been taken up by the Maoris in this district, and I am sure that the industry will be developed to a large extent in the near future.

Farming.—There are several who have taken up farming, who are felling bush and sowing grass-seed. Many of the people here are outsiders who came to the gumfields. Many of them have taken up land from the Crown, from Europeans, or the Maori owners. There are, however, a large number of landless Maoris in the district.

Food-supplies.—The potato and kumara crops have failed, and the people will be poorly off for food. Gum is also getting scarce, and, as this is the chief means of earning a livelihood, the Maoris are now seeking employment in the timber and flax mills and at bushfelling.

Drinking has become considerably less. Many have taken out prohibition orders against themselves, and the Maori Council is very severe upon those who attempt to take liquor to the villages.

Avenues of Work.—There are six timber-mills and five flax-mills in the district.

Improvements, Number of Houses.—Villages, 13; old houses, 88; new houses, 53; condemned houses, 40; cooking-houses, 51; slab houses, 41; latrines, 32; meeting-houses, 14; churches, 7. There is a deal of land being grassed, and the people are taking to breeding cattle.

I remain, &c.,

WAAKA TE HUIA,

Sanitary Inspector.

Dr. Te Rangihiroa, Health Officer to the Maoris, Auckland.

GREETINGS. This is my report for the past year.

Dwelling-sites.—The Maoris are now quite anxious to build on higher ground. Many have already done this, and those who have not are retarded by poverty. This is one of the most promising signs in sanitary progress that I have seen since my appointment. A few years ago all the villages were in the low-lying country, often damp and wet.

Houses and Villages.—Almost all the houses are now made of sawn timber, and the old rush houses are rapidly disappearing. I have condemned all houses of the latter material, for the Maori now no longer knows how to build these houses properly like his ancestors did. The people themselves are abandoning them, so great is their eagerness to possess houses of European build. Those who possess houses of sawn timber have been urged by me to make them comply with all that we were taught at the Inspectors' Conference in Auckland last year, and soon there will be little fault to find. New houses erected, 18; houses condemned, 17; houses destroyed, 34; closets erected, 5. The people are slow to erect privies. They do not oppose such buildings or say they are bad, but they are slow to begin. Several of the Maori houses excel the majority of pakeha houses.

Deaths and Disease.—Mortality has been low in the district for the past year, and sickness has also been light. A European spread a report that there were twenty-six cases of typhoid in a Maori village. The doctor found only one sporadic case, which recovered without the disease spreading to any one else. I wish to condemn the action of such thoughtless people who spread false reports and give a bad name to the Maoris.

Tohungas.—There are still tohungas in my district, but they do not call large *huis* and consume quantities of spirits as the tohungas of other parts do, according to reports we read in the papers. These men have no desire to practise, as they are afraid of the Councils, but the people who have ailments often seek them and persuade them to treat them. They do not seek to obtain followers.

Registration of Births and Deaths.—Deaths, 6; births, 8. These returns for the year 1907 are incomplete, because the people appointed in the various districts ran out of the printed forms.

Condition on the Gumfields.—Many of the houses on the gumfields are very good. In some parts the drinking-water is very bad in summer. There are many people in this district from Hokianga and Bay of Islands Counties, and their children have been brought with them, thus getting no school. This is an evil. The number of billiard-tables in the Maori camps is becoming small, which is a good sign.

Village of Te Kao.—Ten years ago this village was the best in the Mangonui County, having well-built wooden houses, &c. Now it has been practically deserted for the gumfields.

Village of Te Hapua.—This is a large growing village, but it becomes a large swamp in the winter, whilst there is no water-supply in the summer. The Government has allotted it as a village-site. The people also are in trouble in paying off the survey of their land.

Thoughts for the Future.—(1.) There is nothing which will do so much good to the Maori as strong and sustained effort in carrying out the teachings of the Health Department. (2.) The training of some of our educated Maori girls as nurses would do much good in the days which lie before us. (3.) Another important thing is the individualisation of Maori lands. These things I have mentioned over and over again in my reports.

Wishing all prosperity to your kinsman Dr. Pomare and yourself,

I remain, &c.,

R. T. PUHIPI,

Maori Sanitary Inspector,

Mangonui and Hokianga Council Districts.

TE WAIKATO SANATORIUM.

Department of Public Health, Te Waikato Sanatorium,
Cambridge, 30th June, 1908.

Memorandum for the Chief Health Officer, Wellington.

I HAVE the honour to submit the following report of the work accomplished in Te Waikato Sanatorium during the year ending 31st March, 1908:—

The following table shows the number of patients treated at "Te Waikato" for the year ended 31st March, 1908:—

	Males.	Females.	Total.
Number in institution on 1st April, 1907	33	23	56
Admitted during year	48	32	80
Discharged during year	42	26	68
Died during year	12	5	17
Number in institution on 31st March, 1908 ...	27	24	51

Of the patients discharged, 65 left the Sanatorium with more or less marked improvement in the condition of the diseased lungs, together with increased weight and improvement in general condition as compared with their condition on admission. Of this number, 23—12 males and 11 females—showed in their final examination before discharge no sign of active disease, and were for the most part capable of resuming their former occupations. Twenty-five of the remain-

ing patients may be described as being greatly improved both in the condition of the lungs and in general health, while 17 were improved, though not in a marked degree. The remaining 9 cases discharged all gained somewhat in weight and in general condition, but exhibited either no change in lung-condition or some advancement of the disease.

As in former years, a number of unsuitable cases were sent to the Sanatorium, sometimes from a very considerable distance and not in a fit condition to stand the return journey, and consequently we were obliged to retain them in the institution until the end. I am glad, however, to be able to report that there has recently been a marked improvement in this respect, the cases sent forward for treatment having apparently been more carefully selected. I trust this will continue to be the case, as otherwise a quite unnecessary amount of suffering, discomfort, disappointment, and pecuniary loss is inflicted upon the unsuitable patients and their relations and friends.

The system of treatment of the patients has not been materially altered; breathing and other exercises have been used more systematically, and have proved to be useful and beneficial in the great majority of cases. The patients take to them readily and often enthusiastically, the result being generally an increase in chest-expansion, greater vital capacity, less breathlessness on walking or hill-climbing, and often a marked improvement in carriage.

Following on the lines indicated in my last yearly report, the patients have been encouraged to engage in work suitable to their condition of health as a part of their treatment quite irrespective of their position as paying or non-paying patients. The result has been very satisfactory. They have, I think, been happier and more contented, and their work has been of value to the institution as well as beneficial to their health.

In the Plunket Colony the men have kept themselves usefully employed in attending to their shelters, keeping the paths, flower-borders, and grass in good order, and have besides assisted materially in removing the old fowl houses and yards and erecting a new poultry-run on modern lines. Over four hundred birds, chiefly white Leghorns of good stock, were raised, the hatching being by natural means. All the work of raising, feeding, cleaning, &c., has been done by patients, and the excellent condition of the birds and of the run generally has been very favourably commented upon by several poultry experts who have recently visited the Sanatorium. The poultry-run is in charge of Mr. Cooke, who, from a small beginning three years ago, has by his knowledge, industry, and unremitting attention now made, at this institution, the poultry-raising for eggs and table-fowls a paying concern. The expenditure on the poultry-run during the past twelve months amounted to £106 6s., and the receipts amounted to £196 3s. 10½d. The expenditure represents the cost of feed and pullets for fattening for the table, and the receipts are represented by taking the amount received for cockerels sold, and eggs and fowls used at the Sanatorium calculated at current market rates. Besides this work the patients of this colony have considerably enlarged their croquet-lawn, raising, levelling, rolling, resowing, and protecting it by a neat fence. They have also cleared about a quarter of an acre of fern and scrub to form a small kitchen garden. The general surroundings of this colony reflects the greatest credit upon those patients who have worked so hard to bring it to its present state.

The patients in the Ward Colony have also done a considerable amount of work. Two tracks have been cut through the bush by Mr. Somerville; some small streams have been bridged and good paths formed, thereby providing a most useful and pleasant walk for the patients in the summer season. They have also re-formed and relaid their croquet-lawn and made a new flower-border and kept in order those already existing. The women patients have formed two small gardens, and we hope to see them also much more fully employed in outdoor work in the coming year than they have been in the past.

During the year many worn-out mattresses were destroyed and replaced by new ones; shortages of linen, crockery, silver, and furniture were made up to a suitable inventory. The blinds in the Ward and Mason Colonies as also in the doctor's office and the kitchen were renewed, and those in the Plunket Colony were repaired. Twenty wicker chairs and lounges were provided. A new stove has been placed in the emergency shelter and one in the doctor's office, the old one from the latter having been placed in the Plunket Dining-shelter. A new stationery-cupboard was provided for the clerk's office, new baths obtained for the Mason and Plunket Colonies, and a new dray purchased for the farm-work. The exteriors and interiors of the main building and shelters were scoured and cleaned; thirteen shelters were painted; windows of the Mason Colony shelters were frosted instead of the old gelatine papers, which were removed; the doors of each shelter in all the colonies were cramped and in some instances rehung; extension effluent-pipes were added to the septic tanks, and the bush around latter for some distance was cleared; the grease-trap at the Plunket Colony renewed and relaid. Two high-pressure caliphonts were constructed by the engineer, one of which was placed in the Plunket bathroom and the other in the Ward Colony. These cost about £2 less than if purchased in the open market, and are a great improvement, as they provide water for a hot shower. The Plunket bathroom was enlarged, and new box and linen rooms were constructed. In October the new ferro-concrete dairy was ready for use, and at the same time the building of the coal, wood, and vegetable sheds was completed. Two bedrooms were added to the nurses' cottage. In November a new path was made to the top of the hill to take the place of the old road which leads through the Plunket Colony; a small summer-house was erected half-way along this path. The concrete wall of the dam was repaired, and the half-yearly cleaning of the dam was carried out; a flume was also built to carry off the dead leaves in flood-time. In December the model shelter which was shown at the Exhibition was erected at the Plunket Colony as an emergency shelter. The fowlhouses were built, and the new shed to contain the recently acquired multitubular boiler for supplying steam to the dry-shed and for disinfecting was erected. This boiler was put into working-order by the engineer, the brick and concrete work alone being done by outside labour. The boiler serves as a destructor for all sputa and rubbish; it supplies

steampipes to the laundry drying-sheds and boils the water for the copper; gives the necessary hot water for cleaning the dairy utensils and for the scullery, and supplies ample steam for sterilising the sputum-mugs and for the Thresh Disinfector. During the drought the water was laid on to Mr. Magrath's house as a stand-by in case of a recurring drought, and also to the vegetable-garden and fowlhouses; the drainpipes from Mr. Magrath's house and the workmen's cottages were carried further down the gully. The paths at the Ward and Mason Colonies were tarred and sanded twice during the year, and the paths and yards at the nurses' cottage and at Mr. Magrath's house were tarred and sanded once. The tennis-court at the nurses' cottage was treated with breeze coke, rolled, and marked after the old surface had been removed. The path at the nurses' cottage was formed from the gate, and the clay bank was turfed. The road past the Plunket Colony was built up and repaired with heavy metal from the top of the hill; at Plunket Colony the rainwater-pipes were carried to the main drain and into the bush so that the paths are protected.

Early in February fires started on adjoining properties and were for a time a menace to the Sanatorium bush and the institution. Our men did good work watching and keeping the fires in check night and day. On the most threatening night the Fire Brigade from Cambridge was brought up. The "Rex" extinguishers belonging to the Sanatorium were carried to the scene of the outbreak, and proved very effectual in preventing the spread. On the 13th February Captain Hennah visited the institution and made an inspection of all the fire appliances, alarms, and extinguishers; he recommends increasing the capacity of the reservoir, because at the end of each day there is insufficient water remaining in the reservoir to be of any service should a fire break out. It would also economize the engineer's time did he only need to pump two or three times a week instead of daily, as at present obtains.

I desire to place on record the excellent way in which the work of the staff has been carried out.

The Matron, Miss Rochfort, has performed her most arduous duties with the whole-hearted and unselfish devotion which is characteristic of her, and to her happy influence is due the evident contentment and lack of friction which obtains both amongst the patients and staff.

The work of the sisters has been performed well, and the great tact shown by them has been greatly appreciated by those under their charge. Sister Urquhart is specially deserving of mention for her good work; she has been a considerable time connected with the Sanatorium, and has fully shown that she is eminently fitted for the special work of an institution of this kind.

The Matron reports that the increase in the salaries of the nursing staff granted last year, together with the appointment of a home sister and an additional probationer, has resulted in a happier and more satisfactory condition of things than obtained during the previous year. The additions to the staff have made it possible to lessen the hours of duty for the sisters, thereby enabling them to obtain more rest and consequently to take a keener interest in the most important work of directing the exercises, work, and amusements of the patients. The increase in salaries has enabled us to procure permanent sisters, and has done away with the necessity of so frequently having to engage temporary emergency sisters, who, besides being more expensive to engage, are usually quite unacquainted with the special work of a sanatorium. The health of the nursing staff has on the whole been very good. The sisters and nurses are examined on joining the staff and at intervals subsequently; none, however, has shown any sign of tuberculous infection.

There has been some difficulty in obtaining suitable probationers; those, however, at present on the staff give promise of turning out well and appear to be anxious to learn their work.

I am under great obligation to Mr. Magrath for the very great assistance he has been to me in preparing slides for microscopical examination. I think it is highly desirable that a microscopical examination of the sputum of each patient should be made from time to time. During the year 528 such examinations have been made, giving in 364 instances a positive result and in 122 a negative, the remaining 42 being doubtful. The first slide is made soon after the admission of the patient, and is mounted and kept for comparison with subsequent ones. This necessarily entails a good deal of work, which has been undertaken and carried out by Mr. Magrath in addition to his ordinary clerical work.

With reference to the farm foreman's report (attached), which dates from the resignation of Mr. West, who up till then occupied this position, certain economic changes were effected in the work of the farm. For some years back we had rented a portion of the hill at the back of the Plunket Colony for grazing the dairy herd; this consisted of 50 acres cleared land which had been down in grass for many years. Owing to the poor results obtained from the cows on account of insufficient pasture during the winter, I recommended that our dairy herd be dispensed with, and that tenders be called for the supply of milk for the institution, the feed which it was necessary to purchase rendering the cost of the milk too high as well as having to contend with a constant shortage during the winter months, which had to be made up by buying milk locally. Tenders were accordingly called for the supply of milk for one year, and the most desirable tender was then accepted. The dairy herd was subsequently offered for sale at public auction and a portion by private treaty, the amounts realised being £90 11s. 6d. and £58 17s. 6d. respectively. It is to be hoped, however, that in the future when sufficient land is ready for their reception we shall again be able to supply our own milk.

On the 9th January the Hon. George Fowlds, Minister of Public Health, in company with several members of Parliament, members of Hospital Boards, the Chief Health Officer, and some other prominent people in the Auckland District, visited the Sanatorium. The party, under your guidance and that of the Matron and myself, made a tour of inspection of the institution. I am pleased to be able to say that the visitors expressed their gratification at the systematic manner in which the work of the Sanatorium is being carried out.

EDWARD E. ROBERTS,
Medical Superintendent.

Department of Public Health, Te Waikato Sanatorium, Cambridge.

The Medical Superintendent, Te Waikato Sanatorium, Cambridge.

I BEG to submit the following report for the year ended 31st March, 1908:—

The present battery was installed about four years ago, and had a storage-capacity of 100 amperes. This, however, has become very much reduced owing to deterioration, overwork, &c. The consumption of current has increased quite 100 per cent. since the installation. Owing to the decrease of storage-capacity and increased consumption of current, it has become extremely difficult to meet the present requirements. I therefore beg to suggest that the present battery be replaced with a 200-amperes-hour battery. The cost of this would be approximately £95. The old battery, if disposed of, would probably realise about £40. This would reduce the cost of the new battery to about £60 landed in Auckland. By this means a considerable saving would be effected in fuel and time.

When Captain Hennah made his visit of inspection he complained strongly of the small quantity of water available in the event of fire arising, and recommended that the storage be increased to 20,000 gallons, the present capacity being 7,000 gallons.

During the last twelve months a large amount of connections have been added to the water-service, and the present storage is equal to only one and a half days' supply. Thus, in the event of the machinery becoming crippled at a critical moment a very serious accident might happen which a reserve of water would avert.

WORK DONE DURING THE YEAR.

Additions and improvements to water and heating apparatus for the past twelve months.

One 11-horse-power multitubular steam-boiler, destructor, and steam-generator combined, complete with hydraulic and force feed.

Drying-room fitted with 200 ft. 2 in. steampipes, supplied with steam from destructor-boiler.

Laundry copper and sink fitted with steam-coils for boiling.

Kitchen and scullery sinks fitted with steam-jets.

Porters' room fitted with two jets for disinfecting and sterilising.

High-pressure caliphont fitted in Ward Colony bathroom, also high-pressure caliphont fitted in Plunket Colony bathroom.

Water laid to pigsties, 600 ft. ½ in. piping; water to Ward Colony vegetable-garden, 350 ft. ½ in. piping; water to kitchen-garden, 250 ft. ½ in. piping; water to cottages, 1,400 ft. ½ in. piping.

J. FLEMING, Engineer.

Department of Public Health, Te Waikato Sanatorium,
Cambridge, 11th April, 1908.

Memorandum for the Medical Superintendent, Te Waikato Sanatorium, Cambridge.

I HAVE the honour to submit the following report upon the farm and stock:—

Since I took charge on the 1st October, 1907, the following is an outline of the work done: Three acres of potatoes, which up to Christmas promised well, have been planted, but owing to the exceptionally dry season and being planted upon a dry ridge, the result is a light crop. There should, however, be sufficient potatoes to meet the demands all winter. The 3 acres of swede turnips which were sown opposite the nurses' cottage turned out an excellent crop. It was also intended to sow some late turnips, but owing to the rain holding off so long it was considered simply waste of time to manure and sow them. An anxious time was spent during the dry spell and the consequent fire in the bush around, and a deal of labour was expended both in putting out incipient fires in our own bush and taking precautions against any possible risk of fires on the adjoining properties spreading to the Sanatorium. The 50 acres of bush which were cleared last season gave a most satisfactory burn, and are now being sown in grass; I am confident it will carry a good deal of stock next summer. There is no sound reason why we cannot produce our own milk-supply at half the present cost, as we shall have about 60 acres of young grass, well sheltered and watered, and very convenient to the Sanatorium. We shall, I believe, be able to grow plenty of winter feed, which is the main necessity in connection with winter dairying.

Tenders have been invited for the fencing of the newly burned bush and the new pig-run; these will, it is hoped, be ready by the end of April. We have on hand forty-five pigs, some of which are now ready for slaughtering. I have no doubt that in the future we shall be able to supply our own bacon. The horses are looking well, with the exception of the black mare Betty, which the veterinary surgeon has advised being spelled for three months. There are on the farm two draught geldings, one draught mare, one buggy-mare, and two hacks. Of the geldings, one was recently purchased for the sum of £40, after having been passed as sound by the Government Veterinary Surgeon. This horse has given complete satisfaction in every class of work.

The formation of the road from the Plunket Colony to the main building is about completed, but will require to be metalled before the winter to make it a really good job. One hundred and twenty-five sheep for killing purposes were bought, and of these and the lot on hand, 137 were killed including some fat barren ewes; there are now on the farm 25 ewes and 15 lambs. The new slaughterhouse is erected on a good site, with a fall to a gully for drainage purposes. A sheep-dog was purchased for £5 for mustering, and is proving satisfactory.

Sanction was obtained for a man for three months for cleaning out the drains on the flat and fencing-in the killing-paddock, but, owing to bush-fires breaking out in this district and taking precautions against any possible risk to the Sanatorium in the nature of clearing scrub, this labour has been largely diverted to other purposes. I would suggest that a grant of £50 be given

towards cutting drains through the swamp, as it contains undoubtedly the best land on the property. At present there are twenty-seven steers running in this swamp, which were bought at £2 a head; there are also two three-year-old steers and two cows, all looking in first-rate condition. Owing to the exceptionally dry season before mentioned, the results have not been so good all round as anticipated, but under ordinary circumstances I am of opinion that with very little expenditure this property could be made self-supporting in bacon, potatoes, milk, and mutton.

P. KAVANAGH,
Farm Foreman.

REPORTS OF PUBLIC ANALYSTS.

AUCKLAND.

SIR,— 29th June, 1908.

I have the honour to forward herewith a report of analyses made in my laboratory under the Food Adulteration Prevention Acts, during the year ending 31st March, 1908.

The number of analyses made in this period was twenty, the particulars of which are given on the accompanying sheets.

During the year I have received no samples of alcohol and only three samples of milk.

Some of the potable waters submitted were unsatisfactory, and deserve further attention at regular intervals.

I have, &c.,
J. A. POND, F.C.S.,
Government Analyst, Auckland.

The Chief Health Officer, Wellington.

RETURN OF ANALYSES for the Year ended 31st March, 1908. (Analytical Laboratory, Auckland.)

Department or Person from whom Sample is received.	Nature of Sample.	Date received.	Adulteration suspected, or for what analysed.	Result.
		1907.		
District Health Department	One potato ..	April 16 ..	Arsenic or copper ..	As. Cu. negative. Considerable fungoid-development.
Police ..	Assumed opium (liquid)	,, 29 ..	Meconic acid, morphine	Both present. Conviction sustained.
,, ..	Assumed opium (powder)	,, 29 ..	Ditto	Negative.
,, ..	Medicine	May 28 ..	Emmenagogue ..	Present—extract of ergot, ferri perchlor.
Health Department	Mud	June 17 ..	Sewage contamination	Traces of nitrates; nothing denoting sewage.
Ditto ..	Jam	Aug. 1 ..	Salicylic acid ..	Present; equal to 0·617 gr. per pound.
,, ..	Milk	,, 26 ..	Preservatives ..	Negative.
,, ..	,, ...	Sept. 7 ..	,, ..	,,
,, ..	Water	,, 19 ..	For potability ..	Satisfactory.
,, ..	,, ...	Oct. 3 ..	,, ..	Organic pollution.
,, ..	,, ...	,, 5 ..	,, ..	,,
,, ..	,, ...	,, 5 ..	,, ..	Satisfactory.
		1908.		
,, ..	Medicine	Jan. 14 ..	Constituents ..	Fluid extract of ergot.
,, ..	,, ...	,, 14 ..	,, ..	Oils, sp. vin. rect. terpenes, camphor.
,, ..	,, ...	,, 14 ..	,, ..	Solution of cascara sagrada and liquorice.
,, ..	Milk	,, 28 ..	Composition and preservatives	Above standard. No preservatives.
,, ..	Water	Feb. 11 ..	Potability for Volunteer camp	Condemned. Not fit for human consumption.
Police ..	Hop-beer	,, 18 ..	Alcohol	Proof-spirit, per cent., 2·48.
,, ..	,, ...	,, 18 ..	,, ...	Proof-spirit, per cent., 4·52.
,, ..	,, ...	March 10 ..	,, ...	Proof-spirit, per cent., 6·22.

WELLINGTON.

SIR,— Dominion Laboratory (Mines Department), Wellington, 6th July, 1908.

I have the honour to forward herewith returns of analyses made in this laboratory for the Department of Public Health during the year ending 31st March, 1908.

These returns show a total of 154 analyses of a varied character.

I have, &c.,
J. S. MACLAURIN, D.Sc., F.C.S.,
Analyst to the Department of Public Health.

The Chief Health Officer, Department of Public Health.

RETURN OF ANALYSES for the Year ended 31st March, 1908. (Analytical Labo atory, Sydney Street, Wellington.)

[NOTE.—Cl = chlorine; N = nitrogen; NH_3 = ammonia; O = oxygen.]

Number.	Department or Person from whom Sample is received.	Nature of Sample.	Date Received.	Adulteration suspected, or for what analysed.	Result.
			1907.		
1125	Chief Health Officer	Urine	April 5	Albumen and sugar	None found.
1152	Dr. Ogston ..	Septic-tank effluent	,, 15	General analysis	Effluent not satisfactory.
1203	Chief Health Officer	Tea	May 8	To determine purity	Nothing deleterious found.
1204	Dr. Makgill ..	Biscuits ..	,, 8	Arsenic and antimony	None found.
1245 (1)	Inspector of Police	Whisky ..	,, 31	General analysis	Alcohol by weight, 36·74 per cent.; proof-spirit, 76·70 per cent.; extract, 0·1745 per cent.; volatile acid, 24 grains per 100 liters; ethers, 46 grains per 100 liters.
1245 (2)	,,	,, ..	,, 31	,,	Alcohol by weight, 36·71 per cent.; proof spirit, 76·66 per cent.; extract, 0·2345 per cent.; volatile acid, 57 grains per 100 liters; ethers, 53 grains per 100 liters.
1245 (3)	,,	,, ..	,, 31	,,	Alcohol by weight, 41·54 per cent.; proof-spirit, 85·89 per cent.; extract, 0·1095 per cent.; volatile acid, 84 grains per 100 liters; ethers, 59 grains per 100 liters.
1245 (4)	,,	,, ..	,, 31	,,	Alcohol by weight, 39·54 per cent.; proof-spirit, 82·10 per cent.; extract, 0·068 per cent.; volatile acid, 20 grains per 100 liters; ethers, 40 grains per 100 liters.
1245 (5)	,,	,, ..	,, 31	,,	Alcohol by weight, 39·38 per cent.; proof-spirit, 81·87 per cent.; extract, 0·2435 per cent.; volatile acid, 45 grains per 100 liters; ethers, 62 grains per 100 liters.
1245 (6)	,,	,, ..	,, 31	,,	Alcohol by weight, 36·88 per cent.; proof-spirit, 76·94 per cent.; extract, 0·235 per cent.; volatile acid, 35 grains per 100 liters; ethers, 58 grains per 100 liters.
1245 (7)	,,	,, ..	,, 31	,,	Alcohol by weight, 35·88 per cent.; proof-spirit, 75·02 per cent.; extract, 0·245 per cent.; volatile acid, 45 grains per 100 liters; ethers, 59 grains per 100 liters.
1256	Inspector Watson ..	Milk	June 10	,,	Total solids, 12·3; fat, 4·7; solids not fat, 7·6; ash, 0·7.
1259 (1)	Inspector of Police	Beer	,, 12	,,	Alcohol, 5·90 per cent.; extract, 3·62 per cent.; ash, 0·22 per cent.; acetic acid, 0·07 per cent.; lactic and succinic acids, 0·11 per cent.
1259 (2)	,,	Wine	,, 12	,,	Alcohol, 15·12 per cent.; extract, 11·16 per cent.; ash, 0·22 per cent.; acetic acid, 0·17 per cent.; tartaric acid, 0·24 per cent.
1259 (3)	,,	Brandy ..	,, 12	,,	Alcohol, 32·56 per cent.; proof-spirit, 68·58 per cent.
1259 (4)	,,	Whisky ..	,, 12	,,	Alcohol, 33·70 per cent.; proof-spirit, 70·80 per cent.
1265 (1)	Chief Health Officer	Septic-tank effluent	,, 17	,,	Cl in chlorides, 4·61; N in nitrates, trace; NH_3, free and saline, 3·38; NH_3, albuminoid, 0·70; O absorbed in four hours, 63; suspended matter, 30; solids, 62.
1265 (2)	,,	,,	,, 17	,,	Cl in chlorides, 4·61; N in nitrates, trace. NH_3, free and saline, 3·50; NH_3, albuminoid, 80; O absorbed in four hours, 56; suspended matter, 58; solids, 30.
1271	Inspector Johnson..	Water	,, 20	,,	Water of good quality.
1272 (1)	Chief Health Officer	Milk	,, 20	,,	Total solids, 13·12; fat, 4·4; solids not fat, 8·72.
1272 (2)	,,	,, ...	,, 20	,,	Total solids, 12·08; fat, 3·5; solids not fat, 8·58.
1272 (3)	,,	,, ...	,, 20	,,	Total solids, 13·28; fat, 4·2; solids not fat, 9·08.
1272 (4)	,,	,, ...	,, 20	,,	Total solids, 13·04; fat, 4·1; solids not fat, 8·94.
1272 (5)	,,	,, ...	,, 20	,,	Total solids, 10·69; fat, 3·6; solids not fat, 7·09.
1272 (6)	,,	,, ...	,, 20	,,	Total solids, 13; fat, 4·4; solids not fat, 8·60.
1278	Inspector Gardiner	Water	,, 26	,,	Water of good quality.
1286	,,	,, ...	July 3	,,	Water of very fair quality for domestic use.
1287	Inspector of Police	Wine	,, 3	Alcohol ..	Contains 5·01 per cent. of proof-spirit.
1289	District Health Officer	Milk	,, 4	Dried milk ..	None found.
1295	Dr. Shand ..	,, ...	,, 9	Formalin and boric acid	,,
1302 (1)	Inspector Bennett..	Vinegar (pickle)..	,, 16	Composition ..	Contains 5·9 per cent. solids, 2·5 per cent. sodium-chloride.
1302 (2)	,,	Acetic acid ..	,, 16	Acidity ..	56·8 per cent. of acetic acid.
1307	District Health Officer	Milk	,, 19	General Analysis	Above standard.
1311	Inspector of Police	Wine	,, 22	Alcohol ..	Contains 10·07 per cent. of absolute alcohol.
1317	,,	Ginger-wine ..	,, 25	,, ..	Contains 0·96 per cent. of absolute alcohol.
1318 (1)	District Health Officer	Septic-tank effluent	,, 25	General analysis	Cl in chlorides, 5·15; N in nitrates, nil; NH_3, free and saline, 2·473; NH_3, albuminoid, 0·874; O absorbed in four hours, 4·90; total solids, 100.

RETURN OF ANALYSES (Analytical Laboratory, Sydney Street, Wellington.)—*continued.*

Number.	Department or Person from whom Sample is received.	Nature of Sample.	Date Received.	Adulteration suspected, or for what analysed.	Result.
			1907.		
1318 (2)	District Health Officer	Septic-tank effluent	July 25	General analysis	Cl in chlorides, 4·08; N in nitrates, nil; NH_3, free and saline, 1·618; NH_3, albuminoid, 0·252; O absorbed in four hours, 1·50; total solids, 44.
1318 (3)	,,	,,	,, 25	,,	Cl in chlorides, 4·97; N in nitrates, nil; NH_3, free and saline, 2·080; NH_3, albuminoid, 0·126; O absorbed in four hours, 0·93; total solids, 31.
1318 (4)	,,	,,	,, 25	,,	Cl in chlorides, 4·08; N in nitrates, trace; NH_3, free and saline, 1·68; NH_3, albuminoid, 0·084; O absorbed in four hours, 0·57; total solids, 28.
1318 (5)	,,	,,	,, 25	,,	Cl in chlorides, 1·16; N in nitrates, 0·080; NH_3, free and saline, 0·0020; NH_3, albuminoid, 0·0126; O absorbed in four hours, 0·17; total solids, 18.
1318 (6)	,,	,,	,, 25	,,	Cl in chlorides, 1·22; N in nitrates, 0·080; NH_3, free and saline, 0·0700; NH_3, albuminoid, 0·0157; O absorbed in four hours, 0·18; total solids, 18.
1342 (1)	Chief Health Officer	Margarine ..	Aug. 6	Composition ..	Reichert-Meissel value, 1·21; solidifying point of fatty acids (Tither test) 40·1; salt, 1·1 per cent.; water, 7·8 per cent.
1342 (2)	,,	,, ..	,, 6	,, ..	Reichert-Meissel value, 1·41; solidifying point of fatty acids (Tither test), 40·2; salt, 0·03 per cent.; water, 9·9 per cent.
1345	Dr. Makgill ..	Preservatives ..	,, 8	Nature ..	Sodium-sulphite.
1346	,, ..	Milk	,, 8	Preservatives ..	None found.
1348	District Health Officer	,, ...	,, 12	General analysis	Total solids, 9·95; fat, 2·95; solids not fat, 7.
1352 (1)	Chief Health Officer	Anæsthetics ..	,, 16	Cocaine ..	Cocaine-hydrochlorate, 0·58 per cent.
1352 (2)	,,	,, ..	,, 16	,, ..	,, 1·08 ,,
1352 (3)	,,	,, ..	,, 16	,, ..	,, 0·74 ,,
1352 (4)	,,	,, ..	,, 16	,, ..	,, 1·26 ,,
1352 (5)	,,	,, ..	,, 16	,, ..	,, 0·36 ,,
1352 (6)	,,	,, ..	,, 16	,, ..	,, 1·16 ,,
1352 (7)	,,	,, ..	,, 16	,, ..	,, 0·84 ,,
1355	Dr. Frengley ..	Jujubes ..	,, 19	Morphia ..	None found.
1365 (1)	Dr. Makgill ..	Diabetes food ..	,, 22	Composition ..	Water, 11·2; carbohydrates, 74·34; proteids, 10·03.
1365 (2)	,, ..	,, ..	,, 22	,, ..	Water, 12·6; carbohydrates, 72·05; proteids, 10·03.
1365 (3)	,, ..	,, ..	,, 22	,, ..	Water, 12; carbohydrates, 73·08; proteids, 12·19.
1372	,, ..	Milk	,, 27	Preservatives ..	Boron found.
1374	,, ..	Water	,, 28	General analysis	Water of good quality.
1392 (1)	Inspector Bennett..	,, ...	Sept. 12	,,	Dangerous water.
1392 (2)	,, ..	,, ...	,, 12	,,	Water of fair quality.
1392 (3)	,, ..	,, ...	,, 12	,,	Very bad water.
1394	Dr. Makgill ..	Milk	,, 12	Preservatives ..	Formalin found.
1406	Chief Health Officer	Asthma-papers ..	,, 18	General analysis	A partial analysis showed the presence of nitric and gum benzoin.
1458	District Health Officer	Water	Oct. 15	,,	Water of excellent quality.
1468 (1)	,,	Septic-tank effluent	,, 22	,,	Cl in chlorides, 4·33; N in nitrates, none; NH_3, free and saline, 1·75; NH_3, albuminoid, 0·176; O absorbed in four hours, 1·05; total solids, 20·25.
1468 (2)	,,	,,	,, 22	,,	Cl in chlorides, 4·33; N in nitrates, 0·40; NH_3, free and saline, 0·805; NH_3, albuminoid, 0·151; O absorbed in four hours, 1·11; total solids, 25·0.
1483 (1)	Dr. Frengley ..	Whisky ..	,, 31	For comparison with genuine whisky	Found to be genuine whisky somewhat diluted.
1483 (2)	,, ..	,, ..	,, 31	Ditto	,, ,,
1491	District Health Officer	Water	Nov. 4	General analysis	Fair quality.
1493	Dr. Frengley ..	Milk	,, 7	,,	Above standard. Contains no preservatives.
1494	Chief Health Officer	Chewing-gum ..	,, 7	Injurious ingredients	None found.
1495	Dr. McAdam ..	Liniment ..	,, 7	Nature ..	Commercial nitro-benzine.
1498	Chief Health Officer	"Barataria shrimp"	,, 9	Preservatives ..	Small amount of formalin found.
1502	Dr. Frengley ..	Milk	,, 14	General analysis	Above standard. Contains no preservatives.
1504	,, ..	,, ...	,, 14	,,	,, ,,
1505	District Health Officer	Water	,, 15	,,	Water of good quality.
1506	Chief Health Officer	"Barataria shrimp"	,, 15	Preservatives ..	Small amount of formalin found.
1507	,,	Prawns ..	,, 15	,, ..	,,
1510 (1)	District Health Officer	Water	,, 20	General analysis	Slightly contaminated.
1510 (2)	,,	,, ...	,, 20	,,	Of fair quality.
1513	Chief Health Officer	Pink Pills ..	,, 21	,,	The chief constituents are carbonate of potash and sulphite of iron; the pills also contain a small amount of aloes, manganese, and a trace of strychnine.
1527	District Health Officer	Lithia water ..	,, 27	Lithia	Contains citrate of lithium, 0·245 per cent. = 172 gr. per gallon.
1532	Dr. Frengley ..	Ammoniated tincture of quinine	Dec. 2	General analysis	Contains 3·4 per cent. quinine-sulphate; 1 per cent. ammonia. No salicylic acid present.
1536 (1)	District Health Officer	Water	,, 5	,,	Water of fair quality.
1536 (2)	,,	,, ...	,, 5	,,	,,

RETURN OF ANALYSES. (Analytical Laboratory, Sydney Street, Wellington.)—*continued.*

Number.	Department or Person from whom Sample is received.	Nature of Sample.	Date Received.	Adulteration suspected, or for what analysed.	Result.
			1907.		
1541 (1)	Inspector of Police	Whisky ..	Dec. 6	Alcohol ..	Contains 34·01 per cent. absolute alcohol.
1541 (2)	,,	,, ..	,, 6	,, ..	,, 39·70 ,,
1541 (3)	,,	Sherry ..	,, 6	,, ..	,, 15·48 ,,
1543 (1)	Chief Health Officer	Gluten foods ..	,, 7	General analysis	Contains—Water, 11·13; gluten, 15·64; salts, 1·41; starch, 71·82.
1543 (2)	,,	,, ..	,, 7	,,	Contains—Water, 10·26; gluten, 13·71; salts, 1·19; starch, 74·84.
1544	,,	Tucker's egg-powder	,, 7	,,	Contains—Water, 10·08; sodium-bicarbonate, 12·38; potassium-bitartrate, 25·38; Rochelle salt, 6·45; farina, 45·71; colouring-matter, trace; available carbon-dioxide, 5·94 per cent.
1545	,,	Coffee	,, 7	Chicory ..	Contains not less than 70 per cent. chicory.
1546	,,	Tinned salmon ..	,, 7	Preservatives ..	None found.
1547 (1)	District Health Officer	Water	,, 9	General analysis	A bad water.
1547 (2)	,,	,, ...	,, 9	,,	A water of fair quality.
1548	W. L. Thompson ..	,, ...	,, 9	,,	Water unsafe for use without previous boiling.
			1908		
1574	Inspector Hickes ..	Milk	Jan. 17	,,	Above the standard.
1579	,, ..	Water	,, 20	,,	A bad water, unsuitable for drinking.
1581	Inspector of Police	"Golden Top" lager-beer	,, 22	Alcohol ..	Contains 1·52 per cent. proof-spirit.
1589	Dr. Makgill ..	Water	,, 28	General analysis	Water of fair quality.
1590 (1)	,, ..	Glycerine ..	,, 28	Arsenic, &c. ..	Arsenious acid, 0·0001 per cent.
1590 (2)	,, ..	,, ..	,, 28	,, ,, ..	,, 0·00013 ,,
1590 (3)	,, ..	,, ..	,, 28	,, ,, ..	,, 0·0002 ,,
1590 (4)	,, ..	,, ..	,, 28	,, ,, ..	,, none.
1591	,, ..	Water	,, 30	General analysis	Water of fair quality.
1601	Dr. DeLisle ..	,, ...	Feb. 3	,,	Water of very fair quality.
1604	Inspector Gardiner	,, ...	,, 6	,,	Water dangerous unless boiled.
1605	Town Clerk, Petone	,, ...	,, 6	,,	,,
1612	Dr. Makgill ..	,, ...	,, 13	,,	Water of fair quality.
1613 (1)	Inspector Miller ..	,, ...	,, 13	,,	,,
1613 (2)	,, ..	,, ...	,, 13	,,	A bad water.
1620	Dr. Makgill ..	Milk	,, 17	Preservatives ..	None found.
1621 (1)	Chief Health Officer	Water	,, 18	General analysis	Water of good quality.
1621 (2)	,,	,, ...	,, 18	,,	Contains heavy traces of antimony.
1622	Dr. Makgill ..	Cream ..	,, 18	Preservatives ..	Contained 0·25 per cent. boric acid.
1625	Dr. Frengley ..	Water	,, 19	General analysis	Water of very fair quality.
1632	Dr. S. Skerman ..	French cure for epilepsy	,, 24	,,	The sample consists of potassium-bromide and brown sugar.
1636	Chief Health Officer	Warner's Safe Cure	Feb. 25	Partial analysis	Alcohol, 11·21 per cent.; solids, 10·5 per cent. (Containing glycerine, 7 per cent.; sugar (caramel), 1 per cent.; salts, 1 per cent.; vegetable extract, 1·5 per cent.: the salts are mainly potassium-nitrate).
1638	Dr. Makgill ..	Water	,, 28	,,	Water of excellent quality.
1648	,, ..	,, ...	Mar. 4	,,	Water of good quality.
1661 (1)	Chief Health Officer	,, ...	,, 5	Metals ..	None found.
1661 (2)	,,	,, ...	,, 5	,, ..	,,
1661 (3)	,,	,, ...	,, 5	,, ..	$\frac{1}{5}$ gr. copper per gallon.
1661 (4)	,,	,, ...	,, 5	,, ..	$\frac{1}{20}$ gr. antimony per gallon.
1662(1-2)	,,	Herbal wine ..	,, 9	General analysis	Absolute alcohol, 16·24 and 15·71 per cent.; proof-spirit, 35·11 and 34·07 per cent.; extract, 9·52 and 12·61 per cent.; ash, 0·35 and 0·17 per cent.
1663	,,	Water	,, 9	,,	Contains an excessive amount of lime.
1664	District Health Officer	,, ...	,, 9	,,	Water of good quality.
1667	Dr. Makgill ..	,, ...	,, 11	,,	Water of fair quality, improved by filtering.
1669	,, ..	,, ...	,, 11	,,	Water of very fair quality.
1676 (1)	Inspector of Police	Ginger-wine ..	,, 18	Alcohol ..	Contains 0·64 per cent. proof-spirit.
1676 (2)	,,	,, ..	,, 18	,, ..	,, 11·63 ,,
1676 (3)	,,	Medicated wine	,, 18	,, ..	,, 21·95 ,,
1676 (4)	,,	Hop-beer ..	,, 18	,, ..	Too small for analysis.
1676 (5)	,,	,, ..	,, 18	,, ..	Contains 6·06 per cent. proof spirit.
1676 (6)	,,	,, ..	,, 18	,, ..	,, 3·87 ,,
1676 (7)	,,	,, ..	,, 18	,, ..	,, 5·22 ,,
1676 (8)	,,	,, ..	,, 18	,, ..	,, 5·47 ,,
1676 (9)	,,	,, ..	,, 18	,, ..	,, 4·32 ,,
1676 (10)	,,	,, ..	,, 18	,, ..	,, 4·96 ,,
1676 (11)	,,	,, ..	,, 18	,, ..	,, 1·21 ,,
1676 (12)	,,	,, ..	,, 18	,, ..	,, 5·57 ,,
1676 (13)	,,	,, ..	,, 18	,, ..	,, 1·27 ,,
1676 (14)	,,	,, ..	,, 18	,, ..	,, 4·84 ,,
1676 (15)	,,	,, ..	,, 18	,, ..	,, 4·46 ,,
1688	Dr. Makgill ..	Water	,, 24	General analysis	Water of fair quality.
1689	,, ..	,, ...	,, 24	,,	,,
1690	,, ..	,, ...	,, 24	,,	Analysis not reliable, owing to method in which sample was taken.
1696	Chief Health Officer	Beer	,, 26	Antimony ..	None found.
1699	,,	Hearne's Bronchitis Cure	,, 28	Hereoin, dionin, and morphia	,,
1700	Dr. Makgill ..	Water	,, 31	General analysis	Water of somewhat dangerous character.
1701	,, ..	,, ...	,, 31	,,	Water of fair quality.
1702	,, ..	,, ...	,, 31	,,	,,

6th July, 1908.

J. S. MACLAURIN D.Sc., F.C.S., Analyst.

CANTERBURY.

SIR,— 6 Brittan Street, Linwood, Christchurch, 6th April, 1908.

I have the honour to forward you, under separate cover, the returns of the 109 analyses made by me during the year ending 31st March, 1908.

In reference to the amount of proof-spirit in drinks, I would like to draw your attention to the need of bringing the various Acts into line in regard to the percentage to be allowed. "The Licensing Act, 1881," especially requires to have the amount stated, as many experts hold, in interpreting the word "beer" under section 4, that, unless the drink in question has sufficient proof-spirit present to actually make a person intoxicated, it is not a beer under the Act. They hold that it would require at least about 7 per cent. of proof-spirit to make it intoxicating. On the other hand, the Customs collect duty under the new Beer Duty Act on any beer containing over 3 per cent. of proof-spirit, though some solicitors hold that the fact of its being excisable does not prove it to be a beer under the Licensing Act. "The Sale of Food and Drugs Act, 1907," section 22, states that a person commits an offence if he sells any food which, not having paid Customs or Excise duty, contains more than 2 per cent. of proof-spirit.

I would again respectfully urge the need for an analytical laboratory in Christchurch, especially as the new regulations gazetted under the Sale of Food and Drugs Act will necessitate a lot of standard appliances being obtained to make the prescribed analyses.

I have, &c.,

A. A. BICKERTON,
Government Analyst.

Dr. Mason, Chief Health Officer, Wellington.

RETURN OF ANALYSES for the Year ended 31st March, 1908. (Analytical Laboratory, Christchurch.)

Department or Person from whom Sample received.	Nature of Sample.	Date received.	Adulteration suspected, or for what analysed.	Result.
		1907.		
Customs ..	Acetic acid	Mar. 27 ..	Tariff ..	58 per cent. acetic acid.
Health ..	Water, Geraldine supply—river	„ 28 ..	Purity ..	Total solids, 3·92 gr. per gal.; loss on ignition, 1·68; chlorides, 0·98; lime, 0·42; silicates, 0·84; free ammonia, 0·008; album. ammonia, 0·005 (parts per million).
„ ..	Water, Geraldine supply—service	„ 28 ..	„ ..	Total solids, 3·35 gr.; loss on ignition, 1·68; chlorides, 0·98; lime, 0·13; silicates, 0·56; free ammonia, 0·008; album. ammonia, 0·005. A good water.
Police ..	Contents of stomach of late Miss Hodges	April 3 ..	Poison ..	Found no poison present.
„ ..	Towel containing vomit of late Miss Hodges	„ 5 ..	„ ..	„
Health ..	Water from Heathcote River for the consumptive sanatorium	„ 3 ..	Purity ..	Loss on ignition, 2·24 gr. per gal.; chlorides, 2·18; lime, 1·18; silicates, 0·56; sulphates, iron and nitrates, trace; free ammonia, 0·01; album. ammonia, 0·02. Contained suspended matter which will no doubt settle in time and then the water will be good.
Customs ..	Acetic acid	„ 21 ..	Tariff ..	68·1 acetic acid.
Police ..	Powders (nine) ..	„ 22 ..	Poison ..	Analysed each of the nine separately. Found to be sugar, and free from poision.
„ ..	Human stomach ..	„ 23 ..	„ ..	Contained oxalic acid.
„ ..	Washings from human stomach	„ 22 ..	„ ..	Morphia was found.
„ ..	Amber oval bottle ..	„ 23 ..	„ ..	„
„ ..	Sweepings from floor of "lock-up"	„ 23 ..	„ ..	Found tobacco.
„ ..	White fragments ..	„ 23 ..	„ ..	Was lime, free from poison.
„ ..	Bottle containing tea ..	„ 23 ..	„ ..	Free from poison.
Customs ..	Glacial acetic acid ..	„ 29 ..	Tariff ..	Acetic acid, 97 per cent.; melting-point, 54° Fahr. Not glacial.
Police ..	Strawberry-jam ..	„ 30 ..	Purity ..	Pure genuine strawberry-jam.
„ ..	Peach-jam	„ 30 ..	„ ..	„ peach-jam.
„ ..	Apricot-jam	„ 30 ..	„ ..	„ apricot-jam.
„ ..	Blackberry-jam ..	„ 30 ..	„ ..	„ blackberry-jam.
„ ..	Cape-gooseberry jam ..	„ 30 ..	„ ..	„ Cape gooseberry jam.
„ ..	Raspberry-jam ..	„ 30 ..	„ ..	„ raspberry-jam.
Customs ..	Acetic acid	May 15 ..	Tariff ..	58·7 per cent. acetic acid.
„ ..	Glacial acetic acid ..	„ 23 ..	„ ..	99 per cent. acetic acid; 59° Fahr. melting-point. Not glacial.
Health ..	Water, Mackenzie Township	June 3 ..	Purity ..	Volatile matter, 7·39 gr. per gal.; sodium-chloride, 10·9; sodium-sulphate, 1·16; calcium-sulphate, 2·51; calcium-carb., 8·5; iron and silicates, 1·8; magnesia, trace; free ammonia, 0·12; album. ammonia, 0·06; oxygen absorbed in four hours, 0·05 (parts per 100,000). A bad water, and unfit for drinking.
„ ..	Water, Mackenzie Public School well	„ 3 ..	„ ..	Volatile matter, 11·8; sodium-chloride, 26·2; sodium-sulphate, 11·6; calcium-sulphate, 6·5; calcium-carb., 16; magnesium-sulphate, 7·2; iron and silicates, 0·6; free ammonia, 0·02; album. ammonia, 0·04 (parts per million); oxygen absorbed in four hours, trace (parts per 100,000).

RETURN OF ANALYSES. (Analytical Laboratory, Christchurch.)—*continued.*

Department or Person from whom Sample received.	Nature of Sample.	Date received.	Adulteration suspected, or for what analysed.	Result.
		1907.		
Police ..	Drugged chocolates ..	June 11 ..	Ecbolics ..	Doctored with an herbal extract of the nature of rue.
Health ..	Water at Culverden ..	„ 10 ..	Purity ..	Volatile matter, 1·4 gr.; sodium-chloride, 1·05; sodium-sulphate, 0·09; calcium-carb., 0·84; silicates, 0·26; iron trace; free ammonia, 0·02; album. ammonia, 0·01 (parts per million).
„ ..	Water from spring, Waikari Hotel	„ 10 ..	„ ..	Volatile matter, 8·12; sodium-chloride, 6·32; sodium-sulphate, 1·73; calcium-carb., 17·06; calcium-sulphate, trace; magnesium-carb., 2·6; silicates, 0·64; iron, trace; free ammonia, trace; album. ammonia, trace.
„ ..	Water from well, Amberley School	„ 10 ..	„ ..	Volatile matter, 3·35; sodium-chloride, 6·2; sodium-sulphate, trace; calcium-carb., 3·35; calcium-sulphate, trace; silicates, 1·15; iron, trace; nitrates, trace; free ammonia, 0·02; album. ammonia, trace.
Police ..	Pills	„	For drugs ..	Chiefly aloes and sulphate of iron, and a little of a substance that responded to tests for ergotin.
Health ..	Sewage, Victoria Home, effluent from septic tank	„ 14 ..	For impurities	Total solids, 28; sodium-chloride, 9·57; free ammonia, 2·5; album. ammonia, trace; nitrates, trace. Free from smell.
„ ..	Sewage, Victoria Home, effluent from filter	„ 14 ..	„	Total solids, 28; sodium-chloride, 9·57; free ammonia, 2·5; album. ammonia, trace; nitrates, trace. Free from smell.
„ ..	Sewage, Oamaru Hospital, septic tank	„ 14 ..	„	Total solids, 120; sodium-chloride, 14·5; free ammonia, 5·6; album. ammonia, 0·96; oxygen absorbed, 15·7. Had a bad smell.
„ ..	Sewage, Oamaru Hospital, from filter	„ 14 ..	„ ..	Total solids, 84; sodium-chloride, 14·5; free ammonia, 5·4; album. ammonia, 0·3; oxygen absorbed, 9·8. Bad smell.
„ ..	Water, Christchurch ..	„ 21 ..	Purity ..	Volatile matter, 1·4 gr.; sodium-chloride, 0·8; sodium-carb., 0·32; calcium-carb., 1·54; calcium-sulphate, trace; silicates, 1·6; iron, trace; free ammonia, trace; album. ammonia, nil. The water becomes slightly alkaline when boiled. Very pure water.
Customs ..	Acetic acid	„ 22 ..	Tariff ..	Acetic acid, 58·7 per cent.
Health ..	Christchurch water ..	„ 27 ..	Purity ..	Volatile and organic matter, 1·8 gr.; sodium-chloride, 0·92; lime, 1·92; silicates, 0·96; iron, trace; sulphates, trace; free ammonia, 0·015; album. ammonia, trace.
„ ..	„ ..	„ 27 ..	„ ..	Volatile and organic matter, 1·96; sodium-chloride, 0·92; lime, 1·8; silicates, 0·56; iron, trace; sulphates, trace; free ammonia, 0·015; album. ammonia, trace.
„ ..	„ ..	„ 27 ..	„ ..	Volatile and organic matter, 1·98; sodium-chloride, 0·92; lime, 1·1; silicates, 0·78; iron, trace; sulphates, trace; free ammonia, 0·015; album. ammonia, trace. The waters are very pure.
Police ..	Pills	„ 25 ..	Composition ..	Contained sulphate of iron, aloes, hellebore, ergotin; scented with oil of pennyroyal and tansy.
Health ..	Water, Christchurch ..	„ 29 ..	Purity ..	Volatile matter, 1·4 gr.; sodium-chloride, 1·12; lime, 0·85; silicates, trace; sulphates, trace; iron, trace; free ammonia, 0·015; album. ammonia, trace.
„ ..	„ „ ..	„ 29 ..	„ ..	Volatile matter, 1·19; sodium-chloride, 3·52; lime, 1·96; sodium-sulphate, 1·2; sodium-carb., 1·4; silicates, 1·68; iron, trace; ammonia, trace.
„ ..	Sewage, C. Wilton's septic-tank filter	July 9 ..	Impurities ..	Total solids, 124; sodium-chloride, 10·2; free ammonia, 5·0; album. ammonia, 0·4; oxygen absorbed, 1·37; nitrates, nil. Smell, bad.
Customs ..	Acetic acid	„ 17 ..	Tariff ..	Acetic acid, 98·5 per cent.; melting-point, 56·5° Fahr.
„ ..	„	„ 22 ..	„ ..	„ 58·5 per cent.
„ ..	„	„ 25 ..	„ ..	„ 59·5 „
„ ..	„	„ 25 ..	„ ..	„ 58·5 „
Police ..	Stomach of horse ..	„ 29 ..	Poison ..	Free from poison.
Customs ..	Acetic acid	Aug. 1 ..	Tariff ..	Acetic acid, 60·3 per cent.
Health ..	Sewage, St. Mary's Home	„ 2 ..	Impurities ..	Total solids, 56; sodium-chloride, 23·1; free ammonia, 11; album. ammonia, 0·6; oxygen absorbed, 5·0. Smell, bad.
„ ..	Water, Ashburton, shallow well, Havelock Street	„ 23 ..	Purity ..	Volatile matter, 1·5 gr.; sodium-chloride, 0·81; sulphates, 0·94; lime, 1·5; iron, 0·07; silicates, 0·42; nitrates, bare trace; free ammonia, 0·04; album. ammonia, 0·007.
„ ..	Water, Ashburton, shallow well at Dr. Maude's house	„ 23 ..	„ ..	Volatile matter, 0·84; sodium-chloride, 0·8; sulphates, 0·94; lime, 1·14; iron, trace; silicates, 0·28; free ammonia, 0·03; album. ammonia, trace.
Health, by Engineer, Lyttelton Waterworks	Residue from water-main	„ 29 ..	General ..	Volatile and organic matter, 29·4 per cent.; silicates, 22·5 per cent.; alumina, 3·9 per cent; oxide of iron, 39 per cent.; lime and metals (brass), 0·2 per cent. The above is composed of organic matter, oxides, and carb. of iron, clay, and traces of metal from pumps.
Customs ..	Acetic acid	Sept. 4 ..	Tariff ..	31·5 per cent. acetic acid.
Health ..	Water, Kurow, service-pipe of school	„ 13 ..	Purity ..	Volatile and organic matter, 2·76; sodium-chloride, 1·4; calcium-carb., 8·5; calcium-sulphate, 4·7; iron, trace; free ammonia, 0·005; album. ammonia, trace.
„ ..	Water from Kurow railway well	„ 13 ..	„ ..	Volatile and organic matter, 7; sodium-chloride, 3·88; calcium-carb., 5·8; calcium-sulphate, trace; nitrate of soda, 3·6; silicates, 1·12; iron, trace; phosphates, trace; free ammonia, 0·02; album. ammonia, trace. Contains oxidized sewage-matter.

RETURN OF ANALYSES. (Analytical Laboratory, Christchurch.)—*continued.*

Department or Person from whom Sample received.	Nature of Sample.	Date received.	Adulteration suspected, or for what analysed.	Result.
		1907.		
Health ..	Water from Kurow well	Sept. 13 ..	Purity ..	Volatile and organic matter, 2·24; sodium-chloride, 1·6; calcium-carb., 2·57; sulphates, trace; silicates, 0·56; iron, trace; free ammonia, 0·005; album. ammonia, trace.
Police ..	Empty bottle supposed to have contained ecbolic drugs	„ 21 ..	Identification of contents	Contained only a little growing mould.
„ ..	Pills	„ 21 ..	Ingredients ..	Aloes, sulphate of iron, black hellebore, cotton-root bark, and scented with oils of pennyroyal and tansy. Each pill weighed from 4·5 gr. to 5 gr.
„ ..	Solution	„ 21 ..	„ ..	A strong solution of quinine in acidified water, and a little herbal matter, magnesia, and peppermint.
Customs ..	Acetic acid	„ 23 ..	Tariff ..	58·4 per cent. acetic acid.
„ ..	„	„ 23 ..	„ ..	58·3 „ „
„ ..	Vinegar-extract ..	„ 23 ..	„ ..	79·1 „ „
„ ..	Concentrated vinegar ..	„ 23 ..	„ ..	50·2 „ „
„ ..	„ ..	Oct. 2 ..	„ ..	79·9 „ „
Health ..	Sewage, septic tank at C. Wilson's residence, Cashmere	„	Impurities ..	Total solids, 110; sodium-chloride, 10·2; free ammonia, 2·5; album. ammonia, 0·4; oxygen absorbed, 13·8; nitrates, nil. Smell fairly bad.
Police ..	Beer (temperance) ..	„ 14 ..	Alcohol ..	2·45 per cent. absolute alcohol by weight = 5·39 per cent. proof-spirit.
..	„ „ ..	„ 14 ..	„ ..	2·57 per cent. absolute alcohol by weight=5·65 per cent. proof-spirit.
.. ..	Porter „ ..	„ 14 ..	„ ..	2·74 per cent. absolute alcohol by weight = 6·022 per cent. proof-spirit.
„ ..	Beer „ ..	„ 14 ..	„ ..	2·45 per cent. absolute alcohol by weight = 5·39 per cent. proof-spirit.
„ ..	Porter „ ..	„ 14 ..	„ ..	2·79 per cent. absolute alcohol by weight = 6·13 per cent. proof-spirit.
„ ..	Beer „ ..	„ 14 ..	„ ..	2·62 per cent. absolute alcohol by weight = 5·76 per cent. proof-spirit.
„ ..	Campaign ale (temperance)	„ 14 ..	„ ..	2·74 per cent. absolute alcohol by weight = 6·02 per cent. proof-spirit.
Customs ..	Cone vinegar-essence ..	„ 21 ..	Tariff ..	80·5 per cent. acetic acid.
Health ..	Water, No. 11 London Street, Richmond	„ 21 ..	Purity ..	Organic and volatile matter, 1·4 gr.; sodium-chloride, 0·69; lime, 0·71; silicates, 0·74; iron, trace; nitrates, bare trace; sulphates, trace (parts per million); free ammonia, 0·05; album. ammonia, 0·03. The water was slightly discoloured and stagnant through standing in the well.
Customs ..	Acetic acid	„ 24 ..	Tariff ..	58·9 per cent. acetic acid.
Health ..	Water, Springfield Hotel	„ 25 ..	Purity ..	Volatile and organic matters, 2·24 gr.; sodium-chloride, 0·56; lime, 0·56; sulphates, trace; iron, trace; silicates, 1·12 (parts per million); free ammonia, 0·06; album. ammonia, 0·02.
„ ..	„ Darfield Station	„ 25 ..	„ ..	Volatile and organic matter, 0·7 gr.; sodium-chloride, 0·45; lime, 0·81; silicates, 1·68; sulphates, trace (parts per million); free ammonia, 0·02; album. ammonia, 0·007. Water requires filtering.
Customs ..	Acetic acid	„	Tariff ..	58 per cent. acetic acid.
Police, Kaikoura	Wheat	„ 30 ..	Poison ..	Contained strychnine.
„ „	Wheat from swan ..	„ 30 ..	„ ..	„
Customs ..	Acetic acid	„ 29 ..	Tariff ..	58·6 per cent. acetic acid.
„ ..	„	„ 29 ..	„ ..	59·8 „ „
Health ..	Sewage, Oamaru Hospital septic tanks	Nov.	Purity ..	Total solids, 72; sodium-chloride, 13·1; free ammonia, 0·5; album. ammonia, 0·5; oxygen absorbed in four hours, 3·4. Smell, bad. Colour, cloudy.
„ ..	Sewage, C. Wilson, Esq., septic tank, Cashmere	July 12 ..	„ ..	Total solids, 60; sodium-chloride, 9·2; free ammonia, 3·3; album. ammonia, 0·1; oxygen absorbed, 1·4; nitrates, bare trace. Smell, nil. Appearance, clear.
„ ..	Ditto	Oct. 10 ..	„ ..	Total solids, 66; sodium-chloride, 9·3; free ammonia, 1·2; album. ammonia, trace; oxygen absorbed, 2·7; nitrates, bare trace. Smell, nil. Appearance, clear. Nos. 2 and 3 analysed to show effects of lime.
Customs ..	Acetic acid	Nov. 13 ..	Tariff ..	59 per cent. acetic acid.
„ ..	„	„ 13 ..	„ ..	58·6 „ „
Police ..	Hop-beer	Dec. 11 ..	Alcohol ..	Absolute alcohol (by weight), 3·02 per cent., equal to 6·63 per cent. proof-spirit. Extract, 2·29 per cent. Vendor fined for selling without a license.
Health ..	Water, Cheviot ..	„ 10 ..	Purity ..	Volatile and organic matter, 12·04; sodium-chloride, 17·33; lime and magnesia, 12·16; nitrates, 0·81; sulphates, 0·5; silica, 0·56; iron, trace; phosphates, bare trace; free ammonia, 0·12; album. ammonia, 0·03. Deposit on standing. Water not safe.
„ ..	„ Akaroa ..	„ 6 ..	„ ..	Volatile and organic matter, 1·96; sodium-chloride, 2·99; sodium-sulphates, 0·09; lime, 0·84; silicates, 1·24; iron, trace; nitrates, bare trace; free ammonia, 0·02; album. ammonia, 0·005.
„ ..	„ „ ..	„ 6 ..	„ ..	The same as above.
Customs ..	Acetic acid	„ 13 ..	Tariff ..	58·62 per cent. acetic acid.
„ ..	„	„ 20 ..	„ ..	60·6 „ „

RETURN OF ANALYSES. (Analytical Laboratory, Christchurch.)—*continued.*

Department or Person from whom Sample received.	Nature of Sample.	Date received.	Adulteration suspected, or for what analysed.	Result.
		1907.		
Customs ..	Acetic acid	Dec. 20 ..	Tariff ..	49·8 per cent. acetic acid
" ..	"	" 24 ..	" ..	49·8 " " (Check.)
		1908.		
" ..	"	Jan. 5 ..	" ..	58·2 " "
" ..	"	" 5 ..	" ..	98·5 " " Melting-point, 58·5° Fahr.
" ..	"	" 10 ..	" ..	58·6 " "
Health ..	Water, Kaikoura ..	" 27 ..	Purity ..	Volatile and organic matter, 1·96; sodium-chloride, 0·8; sulphates, 0·6; lime, 0·84; silicates, 0·84; iron, trace; free ammonia, 0·015; album. ammonia, 0·005.
" ..	" " ..	" 27 ..	" ..	Volatile and organic matter, 2·4; sodium-chloride, 10·6; sulphates, 1·57; nitric anhydride, 0·07; lime, 1·48; silicates, 1·57; iron, trace; free ammonia, 0·03; album. ammonia, 0·008. Not very good.
Customs ..	Acetic acid	Feb. 4 ..	Tariff ..	58·3 per cent. acetic acid.
" ..	"	" 22 ..	" ..	58·5 " "
Health ..	Milk	Mar. 5 ..	Purity ..	Specific gravity, 1·032; total solids, 12·09 per cent.; fat, 3·4 per cent.; solids not fat, 8·69 per cent.; ash, 0·68 per cent.
" ..	Water, Doyleston ..	" 11 ..	" ..	Volatile and organic matter, 0·84; sodium-chloride, 1·15; sulphates, 0·35; lime, 0·74; silicates, 1·12; iron, trace; free ammonia, 0·01; album. ammonia, trace.
Police ..	Contents of stomach ..	" 22 ..	Poisons ..	Free from poison.
Customs ..	Acetic acid	" 24 ..	Tariff ..	49·2 per cent. acetic acid.
Health ..	Coal briquette ..	" 23 ..	Irritants ..	Found coal-tar hydrocarbons and phenols soluble in ether.
" ..	Water, Waimate ..	" 28 ..	Purity ..	Volatile and organic matter, 1·68; sodium chloride, 1·04; carb. lime, 0·64; silicates, 0·56. Traces of iron, sulphates, and ammonia.

6th April, 1908. A. A. BICKERTON, Analyst.

OTAGO.

SIR,— University Laboratory, Dunedin, 3rd June, 1908.

I have the honour to forward by this mail my annual report as Government Analyst for the Department of Public Health for the year ending 31st March, 1908.

The work for the year includes analyses and reports on 51 samples of milk, 23 samples of water, 16 samples of whisky, 10 samples of wine, 15 samples of tea, 1 sample of hop-beer, 1 sample of condensed milk—117 samples in all.

My report shows the composition and quality of the *individual* samples of milk submitted for analysis, but there are a few points I wish to draw attention to in connection with them that deserve a little more attention. I am therefore tabulating the milk results in groups 11, 13, 13, 5, 3, 6 samples respectively, as received by me for analysis.

TABULATED SUMMARY of 51 SAMPLES OF MILK for Year ending 31st March, 1908, shown in groups as taken by different officers—Constable McIntyre, Messrs. Fountain and Donaldson, and Oamaru Police.

From whom received.	Number of Samples.	Date when received.	Average Percentage of Total Solids.	Average Percentage of Fat.
Constable McIntyre, Dunedin	11	May 18 ..	13·9	4·35
" "	13	" 22 ..	13·5	3·69
Mr. Fountain, Dairy Industries	13	June 8 ..	12·5	3·1
" "	5	" 13 ..	12·46	3·21
Mr. Donaldson, Inspector of Foods	3	" 26 ..	12·82	3·21
Police, Oamaru	6	" 29 ..	13·34	3·85

(*a.*) The police in all three of their batches got a much higher quality of milk than Mr. Fountain, of the Dairy Industries Department, or Mr. Donaldson, of the Foods Department.

(*b.*) The sudden falling-off in quality between the 18th May and the 22nd May is accounted for by the fact that the police (McIntyre) raided the road leading to Dunedin from the north on one of these dates and the road leading from the south on the other.

(*c.*) The samples submitted by Mr. Fountain for the Dairy Industries Department included, I believe, several samples from the retail shops, and this probably accounts for the low average quality of the batch taken by him.

(*d.*) The high average quality of the Oamaru samples is very satisfactory. These were taken later, and further into the winter season than Mr. Fountain's Dunedin samples. The Oamaru

samples (six) and the Dunedin samples taken by the police (twenty-four) probably represent the quality with which the public ought to be supplied.

(*e.*) Taking the whole of the fifty-one samples analysed here for the year, the average composition comes out very satisfactorily—namely, 13·17 per cent. of total solids, 3·62 per cent. of butter-fat, 9·55 per cent. of solids other than fat.

I think 3·25 per cent. of butter-fat ought to be the minimum insisted on from sound healthy cows and proper feed, and let all milk-vendors work up to this standard.

I have, &c.,

JAMES G. BLACK,
Government Analyst.

The Chief Health Officer, Wellington.

RETURN OF ANALYSES for the Year ended 31st March, 1908. (Analytical Laboratory, Dunedin.)

Department or Person from whom Sample received.	Nature of Sample.	Date received.	Adulteration suspected, or for what analysed.	Result.			
		1907.					
Police, Gore ..	Hop-beer ..	April 4	Alcoholic strength	1·5 per cent. of alcohol by weight. Not intoxicating.			
Health Department	Water from Gore	March 26	Impurities ..	No. 1: Mineral matter, 32 gr. per gallon; organic matter, 1·4 gr.; by De Chaumont's test, good.			
Ditto ..	,,	,, 26	,, ..	No. 1A: Mineral matter, 31 gr. per gallon; organic matter, 1·3 gr.; by De Chaumont's test, good.			
,, ..	,,	,, 26	,, ..	No. 2: Mineral matter, 20 gr. per gallon; organic matter, 1·5 gr.; by De Chaumont's test, good.			
,, ..	,,	,, 26	,, ..	No. 2A: Mineral matter, 21·3 gr. per gallon; organic matter, 1·7 gr.; by De Chaumont's test, good.			
,, ..	,,	,, 26	,, ..	No. 3: Mineral matter, 14·6 gr. per gallon; organic matter, 7·8 gr.; ammonia, some; nitrogenous matter, trace; by De Chaumont's test, bad.			
Public Health, Gore ..	Water before pumping	,, 26	,, ..	Mineral matter, 19·3 gr. per gallon; organic matter, 0·7 gr.; by De Chaumont test, 0·9 gr., good.			
Ditto ..	Water after seven hours' pumping	,, 26	,, ..	Mineral matter, 19·1 gr. per gallon; organic matter, 0·6 gr.; by De Chaumont test, 0·9 gr., good.			
Ditto ..	Water, reticulated supply	,, 26	,, ..	Mineral matter, 19·2 gr. per gallon; organic matter, 0·7 gr.; by De Chaumont's test, 0·8 gr., good.			
Public Health, Invercargill	Water from household tap ..	April 7	,, ..	Mineral matter, 16·6 gr. per gallon; chlorides, 1·2 gr.; De Chaumont's in app. for iron.			
				Total Solids. Per Cent.	Fat. Per Cent.	Solids not Fat. Per Cent.	
Police, Dunedin	Milk	May 18	Adulteration, percentage of fat, purity, &c.	13·9	4·1	9·8	
,, ,,	,, ...	,, 18	Ditto ..	14·3	4·7	9·6	
,, ,,	,, ...	,, 18	,, ..	14·9	4·9	10·0	Good; genuine quality.
,, ,,	,, ...	,, 18	,, ..	14·1	4·5	9·6	
,, ,,	,, ...	,, 18	,, ..	14·4	4·7	9·7	
,, ,,	,, ...	,, 18	,, ..	14·4	4·8	9·6	
,, ,,	,, ...	,, 18	,, ..	13·1	3·8	9·3	
,, ,,	,, ...	,, 18	,, ..	14·4	4·5	9·9	
,, ,,	,, ...	,, 18	,, ..	12·1	2·8	9·3	Deficient in fat.
,, ,,	,, ...	,, 18	,, ..	14·1	4·6	9·5	Good.
,, ,,	,, ...	,, 18	,, ..	14·2	4·5	9·7	
,, ,,	,, ...	,, 22	,, ..	13·7	3·7	10·0	
,, ,,	,, ...	,, 22	,, ..	13·1	3·3	9·8	
,, ,,	,, ...	,, 22	,, ..	12·7	2·46	10·24	Deficient in fat.
,, ,,	,, ...	,, 22	,, ..	14·0	4·1	9·9	
,, ,,	,, ...	,, 22	,, ..	13·9	4·0	9·9	
,, ,,	,, ...	,, 22	,, ..	14·9	4·5	10·4	
,, ,,	,, ...	,, 22	,, ..	13·1	3·8	9·3	
,, ,,	,, ...	,, 22	,, ..	13·5	4·0	9·5	
,, ,,	,, ...	,, 22	,, ..	13·0	3·0	10·0	
,, ,,	,, ...	,, 22	,, ..	14·1	4·2	9·9	
,, ,,	,, ...	,, 22	,, ..	12·2	2·91	2·29	
,, ,,	,, ...	,, 22	,, ..	13·1	3·8	9·3	
,, ,,	,, ...	,, 22	,, ..	14·0	4·3	9·7	
Public Health, Dairy Industries	,, ..	June 8	,, ..	12·4	2·7	9·7	
Ditto ..	,, ...	,, 8	,, ..	13·8	3·9	9·9	
,, ..	,, ...	,, 8	,, ..	9·3	2·4	6·9	Fat deficient; water added.
,, ..	,, ...	,, 8	,, ..	12·7	3·0	9·7	
,, ..	,, ...	,, 8	,, ..	11·3	2·3	9·0	Fat deficient.
,, ..	,, ...	,, 8	,, ..	11·5	2·4	9·1	,,

RETURN OF ANALYSES. (Analytical Laboratory, Dunedin.)—*continued.*

Department or Person from whom Sample received.	Nature of Sample.	Date received.	Adulteration suspected, or for what analysed.	Result.			
		1907.		Total Solids. Per Cent.	Fat. Per Cent.	Solids not Fat. Per Cent.	
Public Health, Daily Industries ..	Milk	June 8	Adulteration, percentage of fat, purity, &c.	13·3	3·8	9·5	
Ditto ..	„	„ 8	Ditto ...	13·1	3·4	9·7	
„ ...	„	„ 8	„ ...	13·4	3·7	9·7	
„ ..	„	„ 10	„ ...	13·0	3·6	9·4	
„ ..	„	„ 10	„ ..	12·9	3·4	9·5	
„ ..	„	„ 10	„ ..	13·7	3·2	10·5	
„ ..	„	„ 11	„ ..	12·1	2·6	9·5	Fat deficient.
„ ..	„	„ 13	„ ..	11·9	2·5	9·4	„
„ ..	„	„ 13	„ ..	12·85	3·1	9·75	
„ ..	„	„ 13	„ ..	11·34	3·2	8·14	Water added.
„ ..	„	„ 13	„ ..	12·0	3·02	8·98	„
„ ..	„	„ 13	„ ..	14·21	4·25	9·96	
„ ..	„	„ 25	„ ..	13·25	3·03	10·22	
„ ..	„	„ 25	„ ..	13·5	3·6	9·9	
„ ..	„	„ 25	„ ..	11·7	3·0	8·7	
Public Health ..	Water	„ 25	Impurities ..	Mineral matter, 8·4 gr. per gallon; organic matter, 2·8 gr.			
„ ..	„	„ 22	„ ..	Mineral matter, 11·2 gr. per gallon; organic matter, 4·9 gr. Suspicious.			
				Total Solids. Per Cent.	Fat. Per Cent.	Solids not Fat. Per Cent.	
Police, Oamaru	Milk	„ 29	Quality and purity	13·96	4·2	9·76	
„ „	„	„ 29	„	11·71	3·4	8·31	Water added.
„ „	„	„ 29	„	13·3	3·7	9·6	
„ „	„	„ 29	„	13·98	4·3	9·68	
„ „	„	„ 29	„	12·9	3·1	9·8	
„ „	„	„ 29	„	14·2	4·4	9·8	
				Extract soluble in Water. Per Cent.	Ash. Per Cent.	Soluble Ash. Per Cent.	
„ Dunedin	Tea	Sept. 20	Purity and strength	42·0	6·0	3·4	Fair quality.
„ „	„	„ 20	„	37·0	6·0	3·9	„
„ „	„	„ 20	„	36·0	6·0	3·9	„
„ „	„	„ 20	„	33·0	5·46	3·3	„
„ „	„	„ 20	„	34·0	5·8	3·0	Good quality.
„ „	„	„ 20	„	37·0	5·3	3·0	„
„ „	„	„ 20	„	35·4	5·3	3·0	Fair quality.
„ „	„	„ 20	„	44·0	5·4	3·7	Good to fair quality.
„ „	„	„ 20	„	41·0	5·7	3·0	Poor quality.
„ „	„	„ 20	„	32·0	5·5	3·0	„
„ „	„	„ 20	„	31·5	5·3	3·1	„
„ „	„	„ 20	„	32·0	5·0	3·0	„
„ „	„	„ 20	„	40·0	5·6	3·4	Good quality.
„ „	„	„ 20	„	37·0	5·0	3·1	Fair quality.
„ „	„	„ 20	„	43·0	5·2	3·1	Good quality.
„ Milton	Whisky ..	Aug. 14	„	68·2% proof-spirit.			Charge of adding too much water withdrawn.
„ „	„ ..	„ 14	„	89·9%	„		Conforms with Licensing Act.
„ „	„ ..	„ 14	„	81·7%	„		Ditto.
„ „	„ ..	„ 14	„	78·6%	„		„
„ „	„ ..	„ 14	„	70·5%	„		Charge of breach of Licensing Act dismissed.
„ „	„ ..	„ 14	„	75·0%	„		Conforms with provision of Licensing Act.
				Bottles containing these six whiskies had not been quite emptied of the water used in washing them when the constable took the samples; hence the discrepancy of my results and those of the Customs Department. The information and charges of adding too much water were quashed by the Magistrate at Milton.			
Health Department	Water	July 25	Impurities ..	Contains zinc derived from galvanised tank.			
Public Health ..	Condensed milk ..	Oct. 8	Preservatives ..	No preservatives found except sugar.			
				Percentage of Proof-spirit.	Degrees under Proof-spirit.		
Police ..	Whisky ..	„ 14	Strength and purity	79·3	20·7		
„ ..	„ ..	„ 14	„	79·8	20·2	No adulterants found.	
„ Lawrence	„ ..	„ 14	„	79·3	20·7	Traces of impurity incidental to water while breaking down.	
„ „	„ ..	„ 14	„	79·3	20·7		
„ „	„ ..	„ 14	„	79·3	20·7		
„ „	„ ..	„ 14	„	75·6	24·4		
„ „	„ ..	„ 14	„	76·0	24·0		

RETURN OF ANALYSES. (Analytical Laboratory, Dunedin.)—*continued.*

Department or Person from whom Sample received.	Nature of Sample.	Date received.	Adulteration suspected, or for what analysed.	Result.
		1907.		Percentage of Proof-spirit. / Degrees under Proof-spirit.
Police, Lawrence	Whisky ..	Oct. 14	Strength and purity	82·7 / 17·3
,, ,,	,, ..	,, 14	,,	87·1 / 12·9 } No adulteration; proper
,, ,,	,, ..	,, 14	,,	79·3 / 20·7 } strength.
				Per Cent. Per Cent.
,, ,,	Colonial port-wine	,, 14	,,	Alcohol by weight, 22·1 = 47·4 proof-spirit.
,, ,,	,,	,, 14	,,	,, 8·7 = 19·0 ,,
,, ,,	,,	,, 14	,,	,, 17·3 = 37·3 ,,
,, ,,	,,	,, 14	,,	,, 16·5 = 35·6 ,,
,, ,,	,,	,, 14	,,	,, 12·5 = 27 0 ,,
,, ,,	,,	,, 14	,,	,, 17·0 = 37·0 ,,
,, ,,	,,	,, 14	,,	,, 17·5 = 37·5 ,,
,, ,,	,,	,, 14	,,	,, 12·5 = 27·0 ,,
,, ,,	,,	,, 14	,,	,, 17·4 = 37·3 ,,
,, ,,	,,	,, 14	,,	,, 17·4 = 37·3 ,,
				All contained much sugar. Colouring-matter of fruit origin.
Public Health..	Water from Bruce Woollen-mills and Tokomairiro Creek	July 8	Impurities ..	Fairly good water; suitable for household use.
,, ..	Ditto	,, 8	,, ..	Bad water, containing 5 gr. of organic matter per gallon.
,, ..	,, ...	,, 8	,, ..	Very bad: much organic filth, and dangerous for cattle or horses drinking it.
,, ..	,, ...	,, 8	,, ..	Ditto.
,, ..	,, ...	,, 8	,, ..	,,
,, ..	,, ...	,, 8	,, ..	,,
,, ..	,, ...	,, 8	,, ..	,,
,, ..	,, ...	,, 8	,, ..	A mass of organic filth, wool-fibres, alkaline. Is a semi-gelatinous mass of organic *débris* of an alkaline nature, containing free soda.
				Percentage of Mineral Matter. / Percentage of Organic Matter.
,, ..	,, ...	Sept. 2	,, ..	43·0 / 91·0 Utterly bad and polluted.
,, ..	,, ...	,, 2	,, ..	73·0 / 68·0 ,,
,, ..	,, ...	,, 2	,, ..	7·7 / 3·5 Polluted and very suspicious.

2nd June, 1908.

JAMES G. BLACK, Analyst.

By Authority: JOHN MACKAY, Government Printer, Wellington.—1908.