SESSION II.

1923.

NEW ZEALAND.

DEPARTMENT OF HEALTH.

ANNUAL REPORT OF DIRECTOR-GENERAL OF HEALTH.

Presented in pursuance of Section 76 of the Hospitals and Charitable Institutions Act, 1909.

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The DIRECTOR-GENERAL OF HEALTH to the Hon. the MINISTER OF HEALTH, Wellington.

I HAVE the honour to submit my annual report for the year 1922–23.

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SECTION I.—GENERAL ADMINISTRATION.

PUBLIC HEALTH.

The public health, as shown by the death-rate, may be generally regarded as satisfactory, especially so when viewed in relation to certain of the more serious notifiable diseases. The report of Dr. Watt, Director of the Division of Public Hygiene, shows that the standardized death-rate has fallen from 10·93 per thousand to 10·70. These rates are markedly low, as is the infantile-mortality rate of 41·9 per thousand births. The death-rate of infants in the first month shows little change, and is still a matter for much concern.

It may be said here that the population of New Zealand has the greatest expectation of life of any of the leading countries of the world; and, apart from social and economic factors, it is not unreasonable to assume that this is in some measure due to the many activities of this Department.

Notifiable Diseases.—During the past year the Dominion was practically free from any of the outstanding outbreaks of disease. An outbreak of enteric fever at Mount Albert, Auckland, however, occasioned the Department much concern. A full report of this outbreak, by Dr. Makgill, is duly reported in an appendix. This unfortunate outbreak led to the death of some thirty persons, and should bring home to all local-governing bodies the grave responsibility which rests with them in providing and maintaining a supply of pure water and an efficient sewerage system. However, such outbreaks should be rare indeed when it is taken into consideration that at present there are few towns of over a thousand inhabitants that are not provided with an adequate supply of pure water and modern systems of drainage.

Scarlet Fever.—It is satisfactory to record a decline in the prevalence of scarlet fever. The same may also be said of diphtheria, poliomyelitis, influenza, and pneumonia.

Tuberculosis.—The death-rate of 6·5 per 10,000 of the mean population indicates a slight increase on the previous year's rate, 6·48. In last year's report attention was drawn to the housing conditions in this country, and the obvious part such play in the encouragement and dissemination of this disease. The striking figures quoted in the report of the Board of Health have attracted much attention, and there is evident a growing desire on the part of local authorities to initiate remedies for such conditions.

Much prominence has been given during the past year in the public Press to what is known as the Spahlinger treatment of consumption. The Department has been in close touch with the High Commissioner for New Zealand on this subject. The difficulty of obtaining an adequate supply—or, indeed, any of the Spahlinger serum is well known, and the medical profession of New Zealand have had practically no opportunity of estimating its value. In this connection the following extract from an editorial appearing in a recent issue of the *Lancet* may be of interest :—

" The issue being thus clear-cut, it is with keenest regret that we have noted during the last week evidences of a Press campaign to raise funds in this country on the ground that the reports already published prove beyond doubt the great national importance of the movement. A memorandum ostensibly prepared by several medical men as an authoritative statement of facts contains such regrettable exaggerations as that the methods of Spahlinger make it clear that tuberculosis can be prevented, and that when the treatment is over there is no trace of the disease remaining. There is a suggestion that, had they not been prevented from doing so by the fear of ' oblique advertisement ' (in the sense of the General Medical Council), many important signatures would have been appended to this statement. It seems to us improper to infer the weight of medical opinion in such a way. The Ministry of Health has found it necessary to reissue a statement of its position—namely, that up to the present the Minister has neither approved nor disapproved of the treatment. The memorandum justifies the appeal for funds by the grave danger from financial pressure to which Dr. Spahlinger's work is exposed. We can only trust that he will submit to the independent investigation of his remedy, which would put him right with the medical world and relieve him of his immediate difficulties. Could some arrangement be made to carry out this investigation with the usual controls, at one or other of the research institutes in this country, two objects would be served—(1) the money could be raised without risk of forfeit, and (2) the control would bring conviction to those among whom it is carried out. We appeal to Mr. Spahlinger, in the name of humanity no less than in that of science, to consent to this course."

We can reasonably expect more of the antigens of Professor Dreyer, the report of whose researches are awaited with the greatest interest.

Puerperal Septicæmia.—There were fifty-two deaths recorded from this disease, giving a death-rate of 1·79 per thousand live births, as against 1·68 for last year. During the past year the Department has given much attention to this question of maternal deaths, and it is satisfactory to report that in the St. Helens Hospitals there has been a fall from six deaths in 1921 per 1,308 births to three deaths in 1922 per 1,470 births. A great deal, however, remains to be done before this mortality can be reduced to a satisfactory minimum. An amendment in the Hospital Act is urgently needed to deal with unlicensed houses ; and the means of providing better accommodation in our private maternity hospitals is a matter that cannot be too strongly impressed upon those responsible. I am glad to say that some of our hospitals — *e.g.*, North Canterbury, Ashburton, and South Canterbury — are endeavouring to make adequate provision for maternity cases in their respective districts. A great deal more is being done in this respect than was the case a few years ago. It is hoped that the hands of the Department will be strengthened as regards the supervision and control of private hospitals.

Plague.—The Dominion is fortunate in having escaped a visitation of this disease, especially in view of the fact that it broke out in certain of the Australian States.

Cancer.—Of the non-notifiable diseases, cancer still claims its high place in the mortality-rate, accounting for no fewer than 1,066 deaths, giving a death-rate of 8·52 per 10,000 of persons living, in comparison with 8·53 for the previous year. The work of the Cancer Research Fund is being followed with great interest.

Of the other non-notifiable diseases, mention must be made of the very excellent work carried out by Professor C. Hercus, of Dunedin, and Dr. E. S. Baker, with regard to the prevention of goitre. The work of these officers shows very plainly that the greatest encouragement should be given to research work.

Of other diseases under this category we must draw attention to the low death-rates from those diseases of childhood—whooping-cough and measles.

Venereal Diseases.—During the past year the report of the special committee of the Board of Health set up to inquire into the question of venereal diseases in New Zealand was presented to Parliament. The committee may be congratulated on the manner in which it handled a very difficult problem. From an administrative standpoint it is of interest to note that the recommendations of the committee generally support the Department's long-outlined policy for dealing with these diseases. I have to thank the committee for its appreciation of the services of departmental officers who in clerical and routine matters assisted in the production of the report.

Deaths under Anæsthetics.—For some time past the Department has been concerned as to the number of deaths taking place under this heading. While associated with the Department Dr. Wylie investigated this question, and the conclusions contained in a paper read by him before the annual meeting of the British Medical Association in 1923, and published in the *New Zealand Medical Journal*, are worthy of careful consideration. The keeping of better anæsthetic records and the appointment of anæsthetists to our larger hospitals are matters that demand attention. That chloroform is being too extensively used seems indicated, especially so in regard to dental work.

SECTION 2.—FINANCE.

The position as regards the Department's appropriations from the Consolidated Fund is as follows:—

	1922–23.	
	Voted.	Expended.
	£	£
Payments	381,221	360,894
Credits	142,985	127,168
Net expenditure	£238,236	£233,726

By the exercise of rigid economy it was found possible to reduce the expenditure below the estimate, though the recoveries were considerably less than estimated, owing chiefly to the falling-off of military patients in our hospitals, for whom we recovered the full cost of treatment from the Defence Department.

The Trentham Military Hospital was closed towards the end of the year, and the time should not be far distant when it may be possible to close the King George V Hospital as an orthopædic institution. An endeavour is being made to induce the Hospital Boards of the North Island to take over the Otaki and Pukeora Sanatoria; and it is considered, further, that it is the function rather of Hospital Boards than of the Department to administer the various St. Helens Hospitals. The policy of the Department is to divest itself as far as possible of the actual administrative functions, more particularly as regards hospitals, and to devote its energies to its more proper function of inspection.

Subsidies.—In regard to the permanent appropriations under the Act for hospital subsidies, the amount voted last year was £425,000, but, owing to the fact that subsidies were claimed more promptly than usual, the result was that the expenditure slightly exceeded the estimate, but there was a much smaller amount of subsidy outstanding at the end of the year than usual. The amount required to be appropriated for the current year for maintenance purposes, it is gratifying to note, again shows a reduction. There is, however, an increase in the capital requirements; but the total requirements should be slightly less than last year.

Capital Requirements.—It is in the capital estimates only that it is possible to make any reduction. The Boards' maintenance requirements must be agreed to unless drastic steps were taken of closing wards in hospitals. The maintenance estimates of each year are the result of the capital appropriations of previous years, and every £100,000 worth of capital expenditure means a permanent annual maintenance expenditure of from £25,000 to £30,000. It is essential, therefore, that Hospital Boards should use the greatest prudence in embarking upon any but absolutely essential capital expenditure, if it be desired to prevent a further increase in the annual cost of hospitals and charitable aid. Furthermore, the fact that there is a slight increase this year in the estimated capital subsidy is little or no guide to the extent of the capital work proposed, as much of the expenditure has to be made out of loan-money, and, further, the repayment of the principal only of such loan is chargeable to capital, the heavier charge of interest being chargeable to maintenance.

Loans.—Taking together the loans proposed this year with existing loans, the interest payments that go to swell the maintenance requirements will be somewhere about £43,000 annually, apart from the ordinary maintenance expenditure resulting from such capital undertakings. The total amount of the proposed works submitted on the Boards' estimates this year amounts to not less than £657,000; and, needless to say, the great majority of these works are proposed to be erected out of loan-money. The loans at present in existence amount to £525,000, and by the time this amount has been paid off £1,000,000 or more will have been paid in capital and interest. The tendency of recent years to postpone the evil day of payment by means of loans, or at least to spread over a number of years the amount required, has no doubt proved an incentive to many Boards to undertake works which they would have hesitated to face if the money had required to be found by the contributory local authorities immediately. It would be ill to criticize those men who devote unselfishly much of their time to the service of the country as members of Hospital Boards, but it can hardly be denied that when the question of the erection of a hospital or the extension of existing accommodation comes under consideration, those responsible therefor often let their hobby run away with them, and it has been the Department's experience that in many instances plans have been submitted altogether too elaborate for the needs of the district. Considerable evidence was advanced by the Department before the Hospital Commission, which recognized the danger likely to occur from the too heavy expenditure which is made possible by long-dated loans, and the Commission recommended that only in the case of buildings in brick and stone should loans be for periods of twenty years, whereas in the case of buildings of more perishable materials the loans should not be for a longer period than ten years. It is hardly going too far to state that no Board should undertake building operations which it cannot see its way to pay off under ten years, having in view the fact that further capital expenditure is bound to arise by or before the end of such period.

In connection with the vexed question of the heavy increasing capital expenditure, it might be asked whether there is no way by which such could be avoided. It is noted that, exclusive of the smaller cottage hospitals, the figures for which might be misleading, the average day's stay in our institutions ranges from nineteen to forty, in the majority of cases being within the vicinity of thirty. An average day's stay of forty for any general hospital is, of course, absurd, and it is

questionable whether the average could not be reduced to even less than twenty without any detriment to the patients.

Hospital Board Accounts.—Owing to the pressure of work entailed by the Department assuming control of various hospitals previously administered by the Defence Department, neither the Inspecting Accountant nor the Inspecting House Manager have been able to visit all the Boards during the past year, but much good has notwithstanding resulted from the appointment of both these officers.

It is satisfactory to note that the annual returns and balance-sheets are now being presented in a much better condition than in the past, in many cases leaving nothing to be desired. In this connection the helpful co-operation of the Audit Department and its Inspectors cannot be overlooked. There is little doubt that in many cases an enthusiastic auditor can do and has done much to assist a Board's secretary in the intricacies of hospital accountancy. At the commencement of the year an Order in Council was issued revising the regulations for the keeping of hospital accounts, and this has been circulated for the information of Board officials.

Institutional Inspection.—The field of activities covered by the Inspecting House Manager's duties was practically a virgin one, and much has been accomplished in both efficiency and economy thereon. Much, however, remains to be done, but during the year several Boards have seen the wisdom of appointing qualified house managers to their institutions.

Accounting for Stores and Equipment.—In the majority of institutions visited during the year the inadequate control exercised over the custody and accounting for stores equipment was apparent. Elaborate systems are not expected or desirable, but the simple elements of recording receipts and issues and periodical checking are expected and desirable, for obvious reasons. The total sum sunk in equipment of a stationary nature in the hospitals of the Dominion amounts to over £375,000, and purchases of supplies and equipment during last year amounted to over £400,000. The accounting for such items should be attended to with the same regard as is given to receipts and issues of pounds shillings and pence.

Purchase of Supplies.—Wide discrepancies have been noted in the prices paid for standard lines in contiguous localities throughout New Zealand. In many cases this is mainly due to the purchase or articles from retailers in small quantities instead of in bulk in the wholesale market.

Constructional Economies.—The appointment of the Technical Inspectors has effected a large saving to the Department through the checking of plans and specifications sent in by the Hospital Boards. A further advantage in the interests of smaller Boards has been obtained by the preparation of plans and specifications for such of these as cannot secure the services of an architect who had specialized in hospital-construction. Also, more efficient building and engineering services have resulted from the checking of plans forwarded for the Department's approval.

Engineering.—As I write I have before me the reports of the Consulting Engineer to this Department. Only too vividly they portray the necessity, certainly for our larger hospitals, of obtaining competent engineers instead of leaving engineering matters in the hands of architects or persons not qualified to speak on the subject. Commenting on the unsatisfactory state of affairs in this respect the Consulting Engineer states :—

"The engineer's department in a modern hospital must be recognized to be a fairly important one ; steam and electricity are indispensible to provide the various services required, and much depends on the efficiency of this department in the successful administration of the hospital in all its branches. It is therefore essential that the engineer in charge should have the necessary experience and qualifications if his department is to provide efficiently and economically the services for which he is responsible. The credentials of applicants for these positions should therefore be carefully scrutinized, and expert advice, when making appointments, taken full advantage of. The same argument applies even to a greater extent where Hospital Boards employ consulting engineers, as the scope of the consultant is much more extensive than that of the resident engineer of the hospital, and an incompetent consultant can very soon lead Hospital Boards into difficulties from which it will be a costly business to extricate themselves. This has been my actual experience—viz., Napier, Auckland, and Wanganui."

With these few remarks I am putting the matter in the very mildest form.

SECTION 3.—PROPAGANDA.

Much useful propaganda-work covering many phases of preventive medicine has been carried out by officers of the Department. Articles have been contributed to the newspapers, and lectures delivered under the Red Cross Society, New Zealand Sanitary Inspectors' Association, and kindred associations. The Department heartily co-operated with the Wellington City Council in a "Health Week" campaign, which met with a considerable amount of success. The addresses and health talks arranged by the Medical Committee and given by members of the British Medical Association, New Zealand Dental Association, departmental officers, and recognized authorities on architecture, town-planning, &c., should have a stimulating effect in creating a sound public opinion on matters affecting the public health. At the exhibition held in the Wellington Town Hall the Department contributed three divisions. First there was a dental section, in which a very good collection of casts and other exhibits were displayed, and the importance of proper dietetic habits was demonstrated. The second showed pictorially the methods of transmission of disease. The third section, under Dr. Truby King, included a fine exhibit of health posters, and also diagrams showing the calorific value of foodstuffs, samples of which, suitably grouped according to the age and needs of the individual, were also exhibited.

In other centres the Medical Officers of Health and School Medical Officers have given willing assistance to health campaigns within their districts. It is an encouraging sign of the times that so many of the leading citizens of this country are evincing a keen interest in problems relating to the public health, for, in the words of the late Hon. William Gisborne, "the man who made two blades of health grow where only one grew before was recognized as in truth a public benefactor." There has also been experienced a spirit of growing fellowship with other countries regarding matters of public-health administration, and from far afield come inquiries showing the interest with which the Department's policy is being studied throughout the world.

Through the medium of our library all branches of the Department have availed themselves of the opportunity of keeping fully informed of the latest advances in preventive and curative medicine. Dr. J. P. Frengley, Deputy Director-General, acting as secretary to the Sanitary Section of the recent meeting of the Australasian Association for the Advancement of Science at Wellington, was able to obtain from leading Australian and New Zealand authorities valuable papers which added much to the interest of the congress from a public-health standpoint. Posters have been continued to be exhibited at railway-stations and suitable places in relation to cancer, consumption, venereal and other diseases, and the facilities afforded for treatment and care at our sanatoria and hospitals have been duly advertised.

SECTION 4.—DIVISIONAL REPORTS.

Child Welfare.

The report of Dr. Truby King, the Director of the Division of Child Welfare, presents a record of much useful work accomplished in special spheres of health instruction, and in the interests of the welfare of mother and child in their most critical periods of life. His observations on infant-welfare work in Australia will command much attention.

Nursing.

The report of the Director, Division of Nursing, will be read with much interest, and to those interested in nursing matters I would commend a perusal thereof. It is to be all the more regretted therefore that Miss Maclean, after some seventeen years of faithful service, has to give up the work to which she has so unsparingly devoted herself. It is therefore with the greatest regret that I announce the approaching retirement of an officer who has served the country so long and so faithfully, and I only hope that she may carry into her retirement a feeling of work well and faithfully done.

School Hygiene.

The figures given by Dr. Wilkins, Director of the Division of School Hygiene, as to medical examinations and inspections accomplished by School Medical Officers and nurses, is a striking testimony as to the value of this branch of the State service. I agree with the Director that it is a matter of concern that such a large percentage of our school-children are constitutionally defective. However, it is satisfactory to know that through the assistance of the parents excellent remedial results have been achieved in this direction. The inclusion of school hygiene in the public-health course for medical students at Otago University Medical School has everything to commend it, as also the lectures on such a subject at the teachers' training colleges. The Division must be congratulated on its extensive propaganda-work—an important aspect of school hygiene when we are dealing with the human mind in its impressionable stage. It is satisfactory to learn of the growing co-operation between the School Medical Officers and Education Boards, School Committees, and teachers, as largely the foundation of the success of the system of school medical services rests on such a spirit of mutual co-operation.

Dental Hygiene.

The report of Mr. Hunter, Director of the Division of Dental Hygiene, is, as usual, brief and to the point. The training of the dental nurses has proceeded upon sound lines, and it is a credit to the Director that twenty-nine of these young women are now being placed in different districts to carry out their valuable work amongst the school-children of this country.

Maori Hygiene.

To those specially concerned in matters affecting the Native race I can confidently recommend a perusal of Dr. Te Rangi Hiroa's interesting report. Of especial interest may be the increase in the Maori population, notably amongst the females, for, as Dr. Te Rangi Hiroa observed, "as this forms some indication of the race of the near future, the risk of extinction by an excessive preponderance of males seems to be disappearing."

Government Hospitals and Sanatoria.

Queen Mary's Hospital, Hanmer.—The opening of the women's hospital at this institution for the treatment of functional affections of the nervous system, and for convalescents of acute illness or following surgical operations, marks a new and important advance in hospital provision in this country. For many years the necessity for such has been apparent, and it is a matter for congratulation that skilled and sympathetic treatment can be afforded in such cases. Too much praise cannot be given Dr. Chisholm for his excellent work in this direction.

King George V Hospital, Rotorua.—The report of Dr. Wallis, Medical Superintendent, indicates a keen and progressive interest in the welfare of the patients. The advances made in the treatment of the various diseases, and the results arising therefrom, reflect great credit on the Medical Superintendent and his staff.

Otaki Sanatorium and Hospital.—These institutions, under Dr. Curtis, Medical Superintendent, continue to perform useful service.

Pukeora Sanatorium.—Dr. Short's report is a record of much useful work of a professional and administrative nature.

SECTION 5.—BOARD OF HEALTH, ETC.

Five meetings of the Board of Health were held during the year, and a large number of important matters were dealt with. On the recommendation of the Board, a committee from its members was set up to inquire and report regarding venereal diseases in New Zealand. The committee's report was adopted by the Board, and subsequently presented to Parliament. It is hoped that legislation will shortly be passed giving effect to the committee's recommendations. The report has awakened widespread interest in the subject throughout the country.

Other matters dealt with by the Board during the year have been railway sanitation, maternal mortality, housing, private maternity hospitals, and the Hospitals Amendment Bill.

In a number of cases the Board has exercised its coercive powers under section 22 of the Health Act, 1920, calling upon local bodies to carry out certain sanitary works.

The Government owes the members of the Board a debt of gratitude for the valuable services they have rendered during the year.

MEDICAL PRACTITIONERS ACT, 1914.

Four meetings of the Medical Board were held during the year under review. The following table, covering the past five years, summarizes the Board's work so far as the granting of applications by medical men for registration, &c., are concerned :—

——	1918.	1919.	1920.	1921.	1920.
Number on register on 1st January	969	985	1,015	1,064	1,071
Number added during year by registration	30	48	71*	60†	33‡
Number added during year by restoration	3	3	5	4	1
Number removed during year on evidence of death ..	17	20	25	10	8
Number removed during year by direction of Medical Board—					
Ceased to practise	..	..	..	..	1
Letter not delivered and returned to Registrar-General	..	1	..	40	21
Reported dead	..	..	..	7	2
Number removed during year by direction of Supreme Court	..	..	2	..	..
Number on register at end of year	985	1,015	1,064	1,071	1,073

* Includes 36 with New Zealand qualifications. † Includes 28 with New Zealand qualifications. ‡ Includes 21 with New Zealand qualifications.

The work of the Medical Board is largely of a confidential nature and involves inquiries into charges of misconduct which from time to time are made against medical practitioners. A number of such cases have been dealt with during the year.

The Board has under consideration at the moment some suggested amendments to the Act which, if passed into law, should improve the present statute.

PLUMBERS REGISTRATION ACT, 1912.

Two meetings of the Plumbers' Board, constituted under the above Act, were held during the year.

Examinations under the Act were held in June and November. At the June examination ninety candidates presented themselves for the theoretical portion, and eighty-three for the practical, the results being that seven candidates passed in the theoretical and sixteen in the practical, whilst nine qualified for registration, and their names were duly placed on the register. At the November examination 130 candidates presented themselves for the theoretical part and 113 for the practical part, the result in each case being eleven and seventeen passes respectively. Seven qualified for registration, and had their names duly recorded on the register.

To date the names of 1,440 plumbers have been entered in the register, and thirty-two names removed through death.

During the year 1,203 pocket certificates of registration were issued.

MASSEURS REGISTRATION ACT, 1920.

Four meetings of the Masseurs' Registration Board were held during the year. Altogether sixty-seven applications for registration were considered, and of this number six were refused. The Board also held two examinations under the Act, six candidates presenting themselves, of whom four were successful. To date 394 names have been entered on the register.

T. H. A. VALINTINE,
Director-General of Health.

PART II.—PUBLIC HYGIENE.

I have the honour to submit my annual report for the year ending 31st March, 1923.

SECTION 1.—VITAL STATISTICS.

Population.

The population of New Zealand at the census of 17th April, 1921, was 1,218,913. This total does not include Maoris, whose numbers were separately determined as 52,751.

The mean population for 1922 (exclusive of Maoris) was estimated to be 1,251,895. This total represents an increase over the corresponding figure for the previous year of 27,994, or a percentage increase of 2·29.

Births.

The births of 29,006 living children were registered in the Dominion during 1922, as against 28,567 in 1921 and a yearly average of 27,223 during the pre-war period 1910–14. The birth-rate for 1922 was thus 23·17 per 1,000 of mean population.

The general course of the birth-rate during the last ten years is shown in the following table :—

Births (Number and Rate) in New Zealand, 1913–22.

Year.	Total Number of Births registered.	Birth-rate per 1,000 of Mean Population.
1913	27,935	26·14
1914	28,338	25·99
1915	27,850	25·33
1916	28,509	25·94
1917	28,239	25·69
1918	25,860	23·44
1919	24,483	21·54
1920	29,921	25·36
1921	28,567	23·34
1922	29,006	23·17

It will be seen that the number of births registered in 1922 is the second-highest ever recorded, but the rate is exceedingly low, being, indeed, with one exception (1919) the lowest ever experienced.

Still-births.—Still-births, which are defined by the Births and Deaths Registration Amendment Act of 1915 as "children which have issued from their mother after the expiration of the twenty-eighth week of pregnancy and which were not alive at the time of such issue," are compulsorily registrable in the Dominion. The next table shows the number of such births, and their rate per 1,000 live births, in individual years for the quinquennium 1918–22.

Still-births (Number and Rate) in New Zealand, 1918–22.

Year.	Total Number of Still-births registered.	Rate of Still-births per 1,000 Live Births.
1918	701	27·1
1919	680	27·8
1920	840	28·1
1921	903	31·6
1922	842	22·1

A noticeable feature of the table is the low rate of still-births for the year under review.

Note.—Still-births are not included either as births or deaths in the various numbers and rates given elsewhere in this report.

Deaths.

The number of deaths recorded during 1922 was 10,977, as compared with 10,682 in 1921 and a yearly average of 9,370 in the period 1910–14. The Government Statistician gives the crude death-rate for 1922 as 8·77 per 1,000 of mean population, and the standardized death-rate (International Index of Mortality) as 10·70.

The following table gives the number of deaths and the death-rate in the Dominion for the decennium 1913–22 :—

Deaths (Number and Rate) in New Zealand, 1913–22.

Year.	Total Number of Deaths.	Crude (Actual) Death-rate.	Standardized Death-rate (Index of Mortality.
1913	10,119	9·47	11·92
1914	10,148	9·31	11·85
1915	9,965	9·06	11·38
1916	10,596	9·64	11·88
1917	10,528	9·58	11·66
1918	16,364	14·84	16·80
1919	10,808	9·51	11·75
1920	12,109	10·27	12·80
1921	10,682	8·73	10·93
1922	10,977	8·77	10·70

The crude death-rate for the year (8·77 per 1,000 of mean population) is extremely low, and approximates closely that of 1921, which is the lowest on record.

Infant Mortality.—The infant-mortality rate for 1922 was 41·9 per 1,000 births. This rate is the lowest on record, the previous best being the figure for 1919 (45·3 per 1,000 births).

The next table enables an estimate to be formed of the progress in infant-welfare work in New Zealand, and shows the relative obstinacy of the first-month mortality to react to the administrative measures which have proved so successful at later ages.

Infant Mortality in New Zealand, 1900–22.—Proportion of Deaths of Infants under Twelve Months to every 1,000 Births in Individual Years.

Year.	Under One Month.	One Month and under Twelve Months.	Total under Twelve Months.	Year.	Under One Month.	One Month and under Twelve Months.	Total under Twelve Months.
1900 ..	31·1	44·1	75·2	1912 ..	30·1	21·1	51·2
1901 ..	29·8	41·6	71·4	1913 ..	29·7	29·5	59·2
1902 ..	32·2	50·7	82·9	1914 ..	28·9	22·5	51·4
1903 ..	31·7	49·4	81·1	1915 ..	29·2	20·8	50·0
1904 ..	29·4	41·6	71·0	1916 ..	27·0	23·7	50·7
1905 ..	30·1	37·4	67·5	1917 ..	27·9	20·3	48·2
1906 ..	29·6	32·5	62·1	1918 ..	26·7	21·7	48·4
1907 ..	30·4	58·4	88·8	1919 ..	28·4	16·9	45·3
1908 ..	31·2	36·7	67·9	1920 ..	30·8	19·7	50·5
1909 ..	29·9	31·7	61·6	1921 ..	30·7	17·1	47·8
1910 ..	30·2	37·5	67·7	1922 ..	27·2	14·7	41·9
1911 ..	28·5	27·8	56·3				

SECTION 2.—NOTIFIABLE DISEASES.

The year under review was characterized by the relative immunity of the Dominion from grave outbreaks of disease. The most serious incident was a water-borne epidemic of enteric fever in Mount Albert, Auckland, due to a breakdown of the chlorinating process. A decline in the incidence of scarlet fever, diphtheria, poliomyelitis, influenza, pneumonia, whooping-cough, and measles makes the period, from the point of view of public health, a highly satisfactory one.

Scarlet Fever.

The course of scarlet fever in New Zealand during the last five years is briefly shown in the tables below. The notifications for 1922 reveal a satisfactory decline as compared with the previous year, while the death-rate also shows a striking decrease.

Scarlet Fever in New Zealand, 1918–22.

Year.	Notifications.		Deaths.	
	Number.	Rate per 10,000 of Mean Population.	Number.	Rate per 10,000 of Mean Population.
1918	1,654	14·99	30	0·27
1919	1,521	13·31	23	0·20
1920	1,248	10·46	15	0·13
1921	1,845	15·07	24	0·19
1922	1,449	11·58	10	0·08

Diphtheria.

As the next table shows, there has been a most substantial decline in diphtheria since 1918. It must be admitted, however, that the disease still remains all too prevalent in the Dominion. A more vigorous application of the method of active immunization with toxin-antitoxin mixtures of those found by the Schick test to be susceptible to diphtheria may be expected to cause a more rapid decline in the disease. This method was adopted in 1922 in two of the Hamilton schools, from which an undue number of cases of the disease had been notified. It was found to be simple in practice, caused very little inconvenience to those inoculated, and scarcely any interference with school-work.

Diphtheria in New Zealand, 1918–22.

Year.	Notifications.		Deaths.*	
	Number.	Rate per 10,000 of Mean Population.	Number.	Rate per 10,000 of Mean Population.
918	5,539	50·22	189	1·71
1919	3,499	30·61	157	1·37
1920	2,442	20·48	95	0·81
1921	2,611	21·33	107	0·87
1922	1,989	15·89	78	0·62

* Figures include deaths from croup.

Enteric Fever.

The position as regards this disease for the period 1918–22 is shown in the table below :—

Enteric Fever in New Zealand, 1918–22.

Year.	Notifications.		Deaths.	
	Number.	Rate per 10,000 of Mean Population.	Number.	Rate per 10,000 of Mean Population.
1918	423	3·83	33	0·30
1919	477	4·17	34	0·30
1920	389	3·26	40	0·34
1921	451	3·68	24	0·19
1922	539	4·31	67	0·54

The outbreak of enteric fever at Mount Albert, Auckland, was responsible for a considerable proportion of the 539 notifications, and also for some 30 of the deaths attributed to this disease.

A full account of this epidemic, contributed by the Acting Medical Officer of Health, Auckland, is presented as an appendix to this report.

Tuberculosis.

The notifications for 1922 show a slight decline in comparison with the preceding year, the figures being respectively 1,129 and 1,207.

The next table, based upon the death returns, gives a truer idea of the variations in the prevalence of this disease during the period 1913–22.

Tuberculosis in New Zealand, 1913–22.

Year.	Number of Deaths from Tuberculosis.	Death-rate from Tuberculosis per 10,000 of Mean Population.	Percentage of Total Deaths from all Causes.
1913	812	7·60	8·02
1914	728	6·67	7·17
1915	693	6·30	6·95
1916	742	6·74	7·00
1917	755	6.87	7·17
1918	832	7·54	5·08
1919	762	6·71	7·05
1920	851	7.21	7·03
1921	793	6·48	7·42
1922	821	6·56	7·48

The position disclosed by the table is on the whole a satisfactory one. It will be seen that the death-rate from tuberculosis for the year was exceptionally low. Of the total of 821 deaths in 1922, 626 were assigned to pulmonary tuberculosis, and the remaining 195 to other forms of tuberculosis.

Puerperal Septicæmia.

The following table shows the course of this disease for the quinquennium, 1918–22:—

Puerperal Septicæmia in New Zealand, 1918–22.

Year.	Notifications.		Deaths.	
	Number.	Rate per 1,000 Live Births.	Number.	Rate per 1,000 Live Births.
1918	76	2·94	48	1·86
1919	79	3·23	52	2·12
1920	124	4·14	67	2·22
1921	178	6·23	48	1·68
1922	262	9·03	52	1·79

It is well known that the returns of notifications in puerperal septicæmia are, as a general rule, far from complete. The marked rise in the notification-rate for 1921 and 1922, therefore, does not necessarily indicate an increased prevalence of the disease for these years, but represent rather an increased observance of the laws regarding notification. The returns of deaths provide a more accurate presentation of the position. The fact that 1922 has the second-lowest death-rate of the series is so far satisfactory, although there is no ignoring the fact that New Zealand occupies an unfavourable position as regards this disease in comparison with other countries.

Influenza.

The year under review was noticeable for its low incidence and general mildness of influenza. The figures for the severer types of this disease (the pneumonic, septicæmic, and fulminant varieties) are 216 notifications and 23 deaths in 1922, as compared with 295 notifications and 105 deaths in 1921.

Acute Primary Pneumonia.

This also was less prevalent than in 1921. In 1922, 946 cases were notified, as compared with 1,029 cases in 1921, and 1,933 cases in 1920, the first complete year for which figures are available.

Fuller information concerning the distribution of the above diseases, together with details of the remaining notifiable diseases, is contained in the subjoined tables.

Table A.—Notifiable Diseases in New Zealand, 1921, showing Distribution by Months.

Month.	Scarlet Fever.	Diphtheria.	Enteric Fever.	Tuberculosis.	C.S. Meningitis.	Poliomyelitis.	Puerperal Septicæmia.	Pn. Influenza.	Pneumonia.	Erysipelas.	Hydatids.	Tetanus.	Trachoma.	Ophthalmia Neonatorum.	Lethargic Encephalitis.	Anthrax.	Food-poisoning.	Actinomycosis.	Totals.
January ..	104	171	28	92	1	21	28	15	29	15	2	..	..	3	..	..	..	..	509
February ..	103	127	29	59	3	20	14	13	28	15	..	1	2	2	..	..	4	..	420
March ..	140	179	27	85	4	21	27	14	51	18	3	2	1	3	..	..	..	1	576
April ..	185	210	157	76	1	14	19	8	52	36	4	2	..	3	3	..	..	..	770
May	163	217	87	93	4	4	26	12	62	37	2	2	..	1	1	..	..	..	711
June	125	212	43	110	2	5	16	10	78	31	3	4	2	1	3	1	..	..	646
July	147	202	19	102	5	3	19	33	100	31	..	2	..	4	9	..	..	..	676
August ..	132	182	36	105	1	2	21	24	173	22	3	1	..	3	12	..	..	..	717
September ..	132	143	33	85	6	2	26	35	105	25	2	..	2	2	3	..	..	..	601
October ..	80	143	28	128	5	3	26	26	119	22	6	3	..	3	3	..	..	..	595
November ..	65	86	27	102	7	2	18	14	91	9	3	3	..	1	..	..	..	..	428
December ..	73	117	25	92	3	1	22	12	58	10	8	2	..	..	2	1	..	..	426
Totals, 1922	1,449	1,989	539	1,129	42	98	262	216	946	271	36	22	7	26	36	2	4	1	7,075
Totals, 1921	1,845	2,611	451	1,207	56	267	178	295	1,029	228	36	21	12	35	23	2	1	2	8,299

TABLE B.—INFECTIOUS DISEASES NOTIFIED IN NEW ZEALAND DURING 1922, SHOWING DISTRIBUTION BY HOSPITAL DISTRICTS.

Hospital District.	Estimated Population (excluding Maoris).	Estimated Maori Population.	Scarlet Fever.	Diphtheria.	Enteric Fever.	Tuberculosis.	Cerebro-spinal Meningitis.	Poliomyelitis.	Puerperal Septicæmia.	Influenza (Pn. Fulm. and Septl).	Pneumonia.	Erysipelas.	Hydatids.	Tetanus.	Trachoma.	Ophthalmia Neonatorum.	Lethargic Encephalitis.	Anthrax.	Food Poisoning.	Actinomycosis.	Totals.
Mangonui	3,967	2,814	..	12	5	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	19
Whangaroa	910	680	..	..	2	1	..	..	..	..	..	..	..	..	..	1	1	..	..	..	5
Bay of Islands	4,378	2,806	1	6	37	4	..	..	1	..	1	..	..	..	..	..	..	..	..	..	50
Hokianga	2,844	3,224	2	..	28	4	..	..	2	..	..	..	..	..	..	..	..	..	..	..	37
Kaipara	10,750	1,344	..	7	2	5	2	1	1	..	3	1	..	..	..	..	..	..	..	..	22
Whangarei	14,081	1,164	14	12	4	7	..	1	6	..	5	12	..	..	..	..	..	..	..	..	60
NORTH AUCKLAND	36,930	12,032	17	37	78	21	2	2	10	1	10	13	..	..	..	1	1	..	..	..	193
Auckland	199,075	1,705	153	365	235	136	8	30	68	31	146	41	..	11	1	7	7	..	..	..	1,239
Waikato	77,610	9,084	75	288	41	176	2	12	14	33	54	14	1	1	4	..	..	1	..	..	716
Thames	14,268	1,338	14	42	8	16	2	2	4	1	4	5	..	..	..	..	..	..	..	..	98
Waihi	3,957	..	6	..	..	6	..	1	..	..	8	2	..	..	..	..	..	..	..	..	23
Coromandel	2,143	295	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Tauranga	7,985	2,190	19	8	1	2	1	1	1	..	3	2	..	..	..	..	..	..	..	..	38
Bay of Plenty	8,383	4,084	2	21	13	5	..	..	1	1	1	1	..	1	..	1	..	..	..	..	47
Taumarunui	10,015	761	6	7	4	4	..	..	..	..	7	1	..	..	1	..	..	..	..	..	30
AUCKLAND	323,436	19,457	276	731	302	345	13	46	88	66	223	66	1	13	6	8	7	1	..	..	2,192
Waiapu	2,458	3,584	1	..	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7
Cook	23,119	2,256	40	6	16	34	3	1	8	..	24	9	..	2	..	1	..	..	..	..	144
Wairoa	4,477	2,906	3	1	9	7	..	1	2	6	25	2	..	..	..	..	..	..	..	..	56
Hawke's Bay	37,987	1,396	87	55	22	38	2	2	14	22	59	8	1	1	..	..	2	..	..	..	313
Waipawa	21,201	580	11	16	2	22	..	2	4	..	52	2	..	..	..	..	1	..	..	..	112
HAWKE'S BAY	89,242	10,722	142	78	52	104	5	6	28	28	160	21	1	3	..	1	3	..	..	..	632
Taranaki	28,372	1,731	40	81	2	11	1	..	2	9	26	2	..	..	..	..	2	..	..	..	176
Stratford	9,703	37	7	19	1	3	..	2	..	5	8	..	..	..	..	..	..	..	..	..	45
Hawera	18,669	949	10	11	6	1	2	5	1	4	21	3	..	..	..	..	..	..	..	..	64
Patea	5,098	311	7	4	5	1	2	2	1	..	2	..	..	..	..	..	..	..	..	..	24
Wanganui	49,024	2,049	138	130	7	34	1	..	4	13	55	11	1	..	..	..	1	..	..	..	395
WANGANUI	110,866	5,077	202	245	21	50	6	9	8	31	112	16	1	..	..	..	3	..	..	..	704
Palmerston North	48,900	1,988	91	137	8	41	2	2	11	18	78	9	2	..	..	1	..	..	4	..	404
Wellington	119,442	546	124	128	17	91	5	4	25	25	151	28	3	1	..	7	9	..	..	..	618
Wairarapa	32,476	811	61	43	5	14	1	14	2	1	21	1	5	..	1	..	3	..	..	..	172
Wairau	12,728	216	13	5	..	6	..	..	6	..	..	..	..	..	..	..	..	..	..	..	30
Picton	3,318	195	..	..	..	3	..	..	..	..	2	..	..	1	..	..	..	..	..	..	6
Nelson	25,966	96	11	35	21	6	1	2	1	..	..	..	..	..	..	..	1	..	..	..	78
WELLINGTON	242,830	3,852	300	348	51	161	9	22	45	44	252	38	10	2	1	8	13	..	4	..	1,308

Westland	7,488	69	..	4	1	1	..	1	..	..	..	1	..	..	..	..	..	..	..	..	8
Buller	9,202	4	10	17	..	1	2	..	1	..	1	..	..	..	..	..	..	..	..	..	32
Inangahua	3,447	..	13	20	..	2	..	..	..	3	5	..	..	..	..	..	..	..	..	..	43
Grey	11,956	6	12	43	..	7	..	..	1	..	1	..	1	..	..	..	..	..	..	..	65
North Canterbury	149,446	778	240	199	22	235	3	7	34	22	78	50	10	1	..	4	4	1	..	..	910
Ashburton	17,588	17	14	15	..	22	1	..	3	4	13	1	1	..	..	..	..	..	..	..	74
South Canterbury	41,260	233	73	63	2	31	..	..	12	4	20	7	5	..	..	..	..	..	..	..	217
CANTERBURY	240,387	1,107	362	361	25	299	6	8	51	33	118	59	17	1	..	4	4	1	..	..	1,349
Waitaki	16,635	47	17	12	1	9	..	..	2	2	38	4	1	..	..	..	1	..	..	1	88
Otago	93,977	111	59	131	6	86	..	2	14	..	15	28	3	1	..	3	3	..	..	..	351
South Otago	16,654	24	8	4	1	9	..	1	5	9	6	8	..	1	..	..	..	..	..	..	52
Vincent	5,114	..	4	1	..	7	..	..	1	1	5	5	..	..	..	1	..	..	..	..	25
Maniototo	2,821	..	2	1	..	7	..	..	..	..	..	..	..	1	..	..	..	..	..	..	11
Southland	54,090	255	53	39	2	28	1	2	10	1	4	8	2	..	..	..	1	..	..	..	151
Wallace	11,283	37	7	1	..	3	..	..	..	..	3	5	..	..	..	..	..	..	..	..	19
OTAGO	200,574	474	150	189	10	149	1	5	32	13	71	58	6	3	..	4	5	..	..	1	697
DOMINION TOTALS, 1922 ..	1,244,265	52,721	1,449	1,989	539	1,129	42	98	262	216	946	271	36	22	7	26	36	2	4	1	7,075
DOMINION TOTALS, 1921 ..	..	..	1,845	2,611	441	1,207	56	267	178	295	1,029	228	35	21	12	34	21	2	1	2	8,285

TABLE C.—NOTIFIABLE DISEASES IN NEW ZEALAND, 1922, SHOWING DISTRIBUTION BY AGE AND SEX.

Disease.	Under 1 Year.		1 to 5 Years.		5 to 10 Years.		10 to 15 Years.		15 to 20 Years.		20 to 25 Years.		25 to 30 Years.		30 to 35 Years.		35 to 40 Years.		40 to 45 Years.		45 to 50 Years.		50 to 55 Years.		55 to 60 Years.		60 to 65 Years.		65 to 70 Years.		70 to 75 Years.		75 to 80 Years.		80 Years and over.		Total Cases at all Ages	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Scarlet fever	1	4	126	140	210	344	72	177	42	71	17	55	19	41	12	33	17	35	3	15	1	8	..	4	1	1	..	..	..	..	..	..	..	..	..	..	521	928
Diphtheria	18	11	280	233	315	335	124	144	48	93	51	82	20	55	21	57	13	38	13	16	1	7	1	6	..	2	..	4	1	..	..	..	2	..	..	..	906	1,083
Enteric fever	1	..	13	13	55	39	40	32	39	26	36	33	27	25	22	20	11	19	20	10	15	8	7	8	8	1	4	4	1	..	2	..	..	..	..	..	301	238
Tuberculosis	..	..	5	3	9	15	14	30	44	83	103	102	154	72	99	61	76	46	56	27	35	26	11	7	14	6	10	5	3	2	2	..	6	2	1	..	642	487
Cerebro-spinal meningitis	..	1	4	4	7	4	2	2	2	3	4	1	1	..	..	..	3	1	..	1	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	24	18
Poliomyelitis	2	4	24	13	8	16	12	1	9	1	4	1	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	61	37
Puerperal septicæmia ..	..	..	..	..	..	..	..	..	..	7	..	68	..	66	..	61	..	44	..	12	..	3	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	262
Erysipelas	6	3	3	1	2	6	2	10	7	5	3	8	6	11	13	21	11	13	10	11	10	25	13	18	8	9	9	3	6	2	3	3	1	6	2	1	115	156
Hydatids	..	..	..	1	1	2	1	3	..	1	3	3	1	2	2	1	2	3	..	1	1	2	1	2	..	1	..	2	..	..	..	..	..	..	..	..	12	24
Ophthalmia neonatorum	18	8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	18	8
Influenza	..	..	10	13	16	15	9	7	10	7	8	7	7	10	9	3	18	9	12	5	7	4	8	2	2	2	5	4	3	..	3	..	..	..	1	..	128	88
Pneumonia	8	15	95	92	97	65	44	50	47	26	33	21	29	18	45	18	37	23	27	7	27	16	20	4	10	7	13	8	6	6	10	3	4	8	3	4	555	391
Lethargic encephalitis ..	..	..	..	1	..	..	2	2	1	..	1	..	6	3	..	..	4	2	..	1	4	3	2	1	1	..	1	1	..	..	..	..	..	..	..	..	22	14
Trachoma	..	..	..	..	..	..	..	..	1	..	3	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	6	1
Tetanus	..	..	1	1	9	..	2	..	..	1	2	..	..	2	..	..	..	..	..	1	..	..	1	..	..	..	1	..	..	..	..	..	1	..	..	..	17	5
Anthrax	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..
Food-poisoning ..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4
Actinomycosis.. ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..
Totals	54	46	561	515	729	841	324	459	250	324	269	382	273	306	223	275	192	234	141	109	102	102	64	53	45	30	44	31	21	10	20	6	12	16	7	5	3,331	3,744

SECTION 3.—NON-NOTIFIABLE DISEASES.

Measles and Whooping-cough.

These two diseases of childhood, which periodically assume epidemic proportions, were quiescent in 1922. Only 1 death from measles and 4 deaths from whooping-cough were reported, as compared with the 1921 totals of 47 and 49 respectively.

Cancer.

The following table, taken from the "New Zealand Official Year-book," shows the cancer death-rate in the Dominion for the last ten years:—

Number of Persons who died from Cancer, the Proportion per 10,000 Persons living, and the Percentage of all Deaths, 1913–22.

Year.	Deaths from Cancer.	Total Deaths: All Causes.	Deaths from Cancer per 10,000 of Living Persons.	Deaths from Cancer per 100 of all Deaths.
1913	856	10,119	8·01	8·46
1914	904	10,148	8·29	8·91
1915	900	9,965	8·19	9·03
1916	909	10,596	8·27	8·50
1917	957	10,528	8·71	9·09
1918	936	16,364	8·49	5·72
1919	1,031	10,808	9·07	9·54
1920	1,029	12,109	8·72	8·50
1921	1,044	10,682	8·53	9·77
1922	1,066	10,977	8·52	9·71

Fuller information upon this subject, together with a discussion upon the causes which have contributed to the rising cancer death-rate in the Dominion, will be found in an article by the Chief Compiler, Census and Statistics Office, in the Year-book for 1917.

Venereal Diseases.

The venereal clinics established in the four main centres in 1919 continue to do good work The following table shows in concise form the results of their operations during the past year:—.

Venereal Clinics—Cases treated during Year ended 31st December, 1922.

—	Auckland.		Wellington.		Christchurch.		Dunedin.		Total.	
Number of persons dealt with at or in connection with the out-patient clinic for the first time and found to be suffering from—	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Syphilis	152	53	71	15	49	23	24	12	296	103
Soft sore	21	..	10	..	10	..	1	..	42	..
Gonorrhœa	400	41	290	22	152	49	76	9	918	121
No venereal disease	51	16	65	29	63	33	3	..	182	78
Total attendances of all persons at the out-patient clinic who were suffering from—										
Syphilis	1,756	659	2,440	632	1,298	536	697	180	6,191	2,007
Soft sore	81	..	66	..	107	..	1	..	255	..
Gonorrhœa	7,136	388	24,645	954	5,273	675	1,232	143	38,286	2,160
No venereal disease	122	44	142	57	161	79	3	..	428	180
Aggregate number of "in-patient days" of treatment given to persons suffering from										
Syphilis	..	..	2,125	..	465	82	20	..	2,610	82
Gonorrhœa	..	..	3,569	..	510	230	28	59	4,107	289
Number of doses of salvarsan substitutes given	1,435	499	1,368	451	508	222	561	131	3,872	1,303
Examination of pathological material: Specimens from persons attending at treatment centre which were examined at this centre for—										
Detection of spirochætes	24	..	19	..	36	..	5	..	84	..
Detection of gonococci	1,414	202	907	244	326	144	120	12	2,767	602
Wasserman reaction	220	49	507	165	423	220	111	27	1,261	461
Others	87	4	34	1	101	55	..	..	222	60

SECTION 4.—QUARANTINE AND PORT SANITARY WORK.

Owing to the close proximity of Australia to the Dominion and the free intercommunication between the two countries, the presence of plague in Sydney and Brisbane during the year under review caused some anxiety to the New Zealand Health Department. It is most satisfactory to record, however, that the measures adopted by the Federal quarantine authorities to prevent the dispersion of plague by shipping were adequate, and that in no case were the sanitary conditions of ships arriving from Australia found to be in any way unsatisfactory.

Details concerning the port health inspection of overseas ships are contained in the next table.

PORT HEALTH INSPECTION OF OVERSEAS VESSELS DURING THE YEAR ENDED 31ST DECEMBER, 1922.

Port.	Number of Vessels inspected.	Remarks as to Cases of Infectious Diseases on Board or Persons not allowed to land.
Rawene	1	
Dargaville	1	
Whangarei	1	
Russell	8	
Auckland	291	9 cases infectious disease reported; 65 prohibited immigrants reported.
Thames	4	
Tauranga	1	
Gisborne	6	
Napier	12	1 (suspected) case of infectious disease reported.
New Plymouth ..	13	
Wanganui	9	
Wellington	140	31 infirm and 15 prohibited immigrants reported; 6 cases infectious disease and 1 case contagious disease reported.
Nelson	7	
Westport	4	
Greymouth	2	
Lyttelton	43	1 case infectious disease reported; 2 cases contagious disease reported.
Timaru	6	
Oamaru	1	
Port Chalmers ..	15	
Bluff	29	
Total	594	

SECTION 5.—BACTERIOLOGICAL LABORATORIES.

The facilities available in the Dominion for the bacteriological investigation of disease are being gradually extended. Apart from the main laboratories in the four centres, there are now six branch laboratories established in connection with the public hospitals of the subsidiary centres of the Dominion.

The table below, which summarizes the work of a definite public-health nature performed in these laboratories, shows the importance and wide range of the examinations undertaken in these institutions.

TABLE SHOWING PUBLIC HEALTH WORK PERFORMED IN BACTERIOLOGICAL LABORATORIES DURING THE YEAR ENDED 31ST DECEMBER, 1922.

Disease.	Number of Examinations.																			
	Positive.										Negative.									
	Whangarei.	Auckland.	Hamilton.	Gisborne.	Napier.	Palmerston North.	Wellington.	Christchurch.	Dunedin.	Invercargill.	Whangarei.	Auckland.	Hamilton.	Gisborne.	Napier.	Palmerston North.	Wellington.	Christchurch.	Dunedin.	Invercargill.
Diphtheria diagnosis ..	20	272	155	4	49	160	696	253	111	38	58	1,229	596	30	354	810	3,201	1,487	967	360
Diphtheria clearance ..	30	..	250	1	192	144	..	651	416	60	67	..	1,090	15	281	571	..	3,371	923	114
Tuberculosis—																				
Sputum	69	108	69	30	91	46	244	70	97	62	110	719	354	105	450	294	705	496	525	228
Cerebro-spinal fluid ..	..	..	..	..	1	..	..	9	1	1	1	6	15	1	25	16	28	26	29	11
Urine	..	1	2	..	9	8	10	20	3	2	10	30	36	1	111	97	47	132	74	50
Pleuritic fluid ..	..	..	..	..	1	..	..	1	..	..	..	..	3	..	50	6	32	62	..	12
Fæces	..	..	..	..	9	..	1	1	..	..	..	..	4	..	29	..	14	5	..	3
Other material ..	..	..	..	..	15	..	5	6	2	1	1	3	8	8	46	18	30	24	25	20
Typhoid-fever diagnosis—																				
Agglutination tests ..	11	61	26	8	34	8	62	9	10	1	12	90	59	11	128	32	796	56	42	10
Blood-culture ..	..	8	1	7	..	..	..	2	3	..	6	40	28	10	5	1	1	4	15	..
Fæces	1	3	1	..	9	..	..	6	..	..	27	49	32	26	39	5	19	29	18	3
Typhoid-fever clearance—																				
Fæces	..	..	1	..	2	..	..	2	1	..	14	..	31	2	30	5	5	23	7	..
Urine	..	..	4	..	..	5	..	..	2	..	1	20	49	21	15	10	16	31	5	2
Cerebro-spinal-fever diagnosis—																				
Swabs	..	1	1	..	..	..	..	..	..	1	1	8	11	14	3	1	8	4	..	15
C.S. fluid	..	..	4	2	..	1	1	..	..	..	1	3	1	2	14	12	34	22	..	2
Cerebro-spinal-fever clearance: Swabs	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..
Gonorrhœa	3	69	9	9	32	56	682	72	25	4	15	172	55	28	135	116	788	245	135	26
Ophthalmia neonatorum for gonococcus	..	..	1	..	..	..	11	..	..	..	..	..	7	..	6	2	35	..	..	1
Syphilis, spironema, pallidum	..	..	..	..	..	1	5	2	..	2	..	3	..	..	2	10	17	4	2	..
Syphilis, Wasserman reaction	..	159	..	..	26	..	245	136	104	..	..	454	..	..	55	..	1,040	489	297	..
Hydatid disease ..	..	7	3	..	2	1	1	9	14	1	..	..	3	2	22	6	3	26	26	6
Plague: Examination of rats	..	..	..	..	..	..	..	..	..	..	254	8,204	..	..	844	3	2,878	71	325	54
Vincent's angina ..	..	18	..	..	15	..	11	..	..	1	..	31	..	..	9	..	4	..	..	1
Leprosy	..	..	..	..	..	..	..	4	..	..	..	..	..	..	..	..	..	4	..	..
Anthrax	..	..	1	..	..	..	..	3	..	..	..	..	..	..	1	..	..	23	..	1
Tetanus	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Lethargic encephalitis ..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	5	..	..	..	..	..
Actinomycosis	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..
Others	..	4	..	..	28	..	8	4	..	3	1	26	..	1	55	..	19	1	..	8

NOTE.—This report represents only part of the work performed at the above laboratories. It does not include instructional work, investigations, or reports on specimens other than those of a public-health nature.

SECTION 6.—WORKING OF THE SALE OF FOOD AND DRUGS ACT.

The following tables enable a rapid survey to be made of the activities of the Department in the direction of ensuring compliance with the above Act. The corresponding figures for 1921 are supplied for the purposes of comparison.

TABLE 1.—SHOWING SAMPLES RESPECTIVELY OF MILK AND OTHER FOODSTUFFS TAKEN AND DEALT WITH DURING THE YEAR ENDED 31ST DECEMBER, 1922.

Hospital District.	Number of Samples taken.		Samples not complying.							
			Number of Samples.		Number of Vendors.		Number of Warnings issued.		Number of Prosecutions recommended.	
	Milk.	Other.	Milk.	Other.	Milk.	Other.	Milk.	Other.	Milk.	Other.
Kaipara	3	3	..	..	..	..	..	..	..	..
Whangarei	8	1	1	..	1	..	..	..	1	..
Auckland	201	7	1	1	1	1	..	1	1	..
Waikato	50	..	2	..	2	..	..	..	2	..
Thames	8	..	..	..	..	..	..	..	..	..
Tauranga	2	..	..	..	..	..	..	..	..	..
Bay of Plenty ..	5	..	..	..	..	..	..	..	..	..
Taumarunui ..	37	..	1	..	1	..	..	..	1	..
Cook	62	199	..	8	..	8	..	2	..	4
Wairoa	3	13	..	12	..	1	..	..	..	..
Hawke's Bay ..	162	78	5	11	5	10	3	6	2	5
Waipawa	48	17	2	1	2	1	1	..	1	1
Taranaki	12	..	..	..	..	..	..	..	..	..
Stratford	18	11	4	2	4	2	3	..	1	2
Hawera	21	22	2	4	2	4	..	2	2	2
Patea	..	3	..	..	..	..	..	..	..	..
Wanganui	20	5	5	..	5	..	3	..	2	..
Palmerston North ..	15	12	..	2	..	2	..	1	..	1
Wellington	1,698	45	49	8	43	6	21	3	17	6
Wairarapa	33	8	4	..	4	..	4	..	..	..
Wairau-Picton ..	30	4	3	..	2	..	1	..	..	1
Nelson	29	5	2	1	2	1	2	..	..	..
Westland	10	12	2	2	2	2	3	..	..	2
Buller	31	12	4	2	3	2	1	..	3	2
Grey	29	..	3	..	3	..	1	..	2	..
North Canterbury ..	175	19	42	5	36	5	22	4	17	1
Ashburton	24	1	4	..	4	..	3	..	1	..
South Canterbury ..	23	..	6	..	6	..	2	..	4	..
Waitaki	46	8	3	..	2	..	1	..	1	..
Otago	127	20	8	2	8	2	7	..	1	..
South Otago ..	26	2	1	2	2	..	1	..	..	..
Vincent	9	2	1	..	1	..	1	..	..	..
Southland	93	17	5	..	5	..	3	..	2	..
Wallace and Fiord ..	19	6	3	..	3	..	..	..	3	..
Totals, 1922 ..	3,077	532	163	63	149	47	83	19	64	27
Totals, 1921 ..	3,260	738	180	244	170	162	83	35	87	110

TABLE 2.—SHOWING THE RESULTS OF WEIGHING OF BREAD, BUTTER, AND OTHER FOODSTUFFS RESPECTIVELY DURING THE YEAR ENDED 31ST DECEMBER, 1922.

Hospital District.	Number of Samples weighed.			Samples not complying.												
				Number of Samples.			Number of Vendors.			Number of Warnings issued.			Number of Prosecutions recommended.		
	Bread.	Butter.	Other.	Bread.	Butter.	Other.	Bread.	Butter.	Other.	Bread.	Butter.	Other.	Bread.	Butter.	Other.
Bay of Islands ..	8	6	..	2	1	..	1	1	..	1	..	..	..	..	..
Kaipara ..	37	9	2	14	..	..	2	1	..	1	..	..	2	..	..
Whangarei ..	93	12	7	5	5	..	1	..	..	1	..	..	..	..	..
Auckland ..	659	287	34	148	17	6	39	5	3	9	..	..	5	..	..
Waikato ..	302	355	36	51	36	..	7	4	..	5	..	..	1	1	..
Thames ..	153	22	10	..	..	..	..	..	..	..	..	..	..	..	..
Tauranga ..	139	96	56	11	13	3	6	5	1	1	..	..	..	..	..
Bay of Plenty ..	444	66	7	13	9	..	1	4	..	..	..	..	1	..	..
Taumarunui ..	476	169	6	51	39	..	17	10	..	3	3	1	..	..	..
Cook	239	283	190	7	28	..	1	1	..	1	1	..	..	..	..
Wairoa ..	45	114	7	5	..	..	1	..	..	1	..	..	..	..	..
Hawke's Bay ..	399	303	27	58	22	11	23	5	2	9	5	..	2	..	2
Waipawa ..	331	546	102	5	16	..	1	3	..	1	3	..	..	..	..
Taranaki ..	178	388	34	33	155	..	5	5	..	1	..	1	3	5	..
Stratford ..	135	203	24	..	..	..	..	..	..	..	..	..	..	..	..
Hawera ..	204	314	114	5	3	..	1	1	..	1	1	..	..	..	..
Patea	40	82	76	..	..	..	..	..	..	..	..	..	..	..	..
Wanganui ..	311	300	102	13	1	5	2	1	5	..	1	5	2	..	..
Palmerston North	103	60	..	..	..	..	..	..	..	..	..	..	..	..	..
Wellington ..	424	251	..	20	..	..	2	..	..	..	..	..	2	..	..
Wairarapa ..	427	92	..	7	..	..	1	..	..	..	..	..	1	..	..
Wairau-Picton ..	199	47	6	..	..	..	..	..	..	..	..	..	..	..	..
Nelson ..	230	180	12	10	12	..	1	2	..	..	2	1	..	..	..
Westland ..	143	59	..	12	3	..	1	3	..	..	2	..	1	1	..
Buller	126	6	..	18	..	..	3	..	..	..	..	..	3	..	..
Inangahua ..	22	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Grey	50	..	..	30	..	..	3	..	..	3	..	..	..	..	..
North Canterbury	482	429	12	8	42	12	1	6	1	1	1	1	1	5	..
Ashburton ..	209	115	..	..	5	..	..	1	..	..	1	..	..	..	..
South Canterbury	30	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Waitaki ..	42	90	4	..	..	..	..	..	..	..	..	..	..	..	..
Otago	231	327	8	6	10	..	..	2	..	..	2	..	..	..	..
South Otago ..	373	378	..	..	3	..	1	1	..	1	1	..	..	..	..
Vincent ..	18	45	..	..	12	..	..	1	..	..	1	..	..	..	..
Maniototo ..	4	12	..	..	..	..	..	..	..	..	..	..	..	..	..
Southland ..	267	196	27	..	7	..	..	1	..	..	..	..	..	..	..
Wallace and Fiord	88	17	12	11	..	..	2	..	..	2	..	..	..	..	..
Totals, 1922 ..	7,661	5,859	915	543	439	37	123	63	12	42	24	9	24	12	2
Totals, 1921 ..	7,952	6,653	976	723	526	340	143	96	32	63	53	28	27	16	4

TABLE 3.—SHOWING INSPECTIONS OF PREMISES ENGAGED IN SELLING OR MANUFACTURING FOODSTUFFS DURING THE YEAR ENDED 31ST DECEMBER, 1922.

Health District.	Number of Premises inspected.*	Number of such Premises requiring Action *re* Sanitary Defects.	Number of Instances Articles were "seized" or "destroyed."	Health District.	Number of Premises inspected.*	Number of such Premises requiring Action *re* Sanitary Defects.	Number of Instances Articles were "seized" or "destroyed."
Mangonui	123	38	10	Wellington	1,227	8	5
Whangaroa	7	1	..	Wairarapa	1,334	16	..
Bay of Islands ..	53	8	..	Wairau-Picton ..	271	3	..
Hokianga	64	8	1	Nelson	379	..	2
Kaipara	127	33	7	Westland	99	4	16
Whangarei	288	24	8	Buller	276	5	2
Auckland	1,949	267	46	Inangahua	80	11	1
Waikato	1,548	106	19	Grey	222	54	19
Thames	1,240	261	1	North Canterbury ..	1,161	85	27
Tauranga	620	17	5	Ashburton	433	33	25
Bay of Plenty ..	574	125	..	South Canterbury ..	274	2	..
Taumarunui ..	713	121	..	Waitaki	647	81	11
Waiapu	36	..	..	Otago	641	87	13
Cook	711	33	19	South Otago	238	27	4
Wairoa	346	2	14	Vincent	86	9	..
Hawke's Bay ..	730	58	13	Maniototo	..	..	..
Waipawa	598	83	2	Southland	776	67	7
Taranaki	771	21	15	Wallace and Fiord ..	201	15	5
Stratford	240	9	6				
Hawera	335	33	22	Totals, 1922	20,866	1,794	337
Patea	50	9	..				
Wanganui	643	17	12	Totals, 1921	15,843	1,359	429
Palmerston North ..	755	13	..				

* Not number of inspections.

SECTION 7.—GENERAL.

During the year the usual routine work of the Department has been carried out in the direction of supervision of water-supplies and of refuse and sewage-disposal schemes, inspection of buildings, abatement of nuisances, &c.

Considerable time has been devoted to the preparation of regulations dealing with the many matters which come within the purview of the Department.

In, conclusion, mention should be made of the Wellington municipal milk scheme, which is now in full operation and working satisfactorily. The Wellington City Council at the present moment supply some seventy-five thousand people (approximately three-quarters of the total population) with pasteurized bottled milk treated and distributed by the Municipality.

M. H. WATT,
Director, Division of Public Hygiene.

APPENDIX A.—NOTES ON AN OUTBREAK OF TYPHOID FEVER IN THE MOUNT ALBERT DISTRICT, AUCKLAND.

(By R. H. MAKGILL, Acting Medical Officer of Health, Auckland.)

(1.) HISTORICAL.

Mount Albert is a suburban borough adjoining Auckland City and Mount Eden Borough. The total population of the borough is 12,500. It has its own water-supply, which is derived from a spring about a quarter of a mile outside the borough boundaries, situated in the centre of some 20 acres of grasslands belonging to the Avondale Asylum. The spring is tapped at the bottom of a well which passes through volcanic scoria rock. From this well a yield of about 15,000 gallons an hour has been obtained, sinking to about two-thirds of that in dry weather, when an auxiliary supply is obtained from the city mains. The catchment area of the spring covers the slopes of an extinct volcanic hill about 400 ft. high. This is merely a volcanic cone of ash and scoria with a central crater. A few lava-streams come from the hill, and the spring is probably an old water-course flowing from the hill, but covered with lava and scoria ash. These scoria beds vary in depth, being several hundred feet at the actual cone, but thinning off to nothing at the edges of the volcanic area. The stream forming the water-supply at Mount Albert is deeply covered throughout the catchment area. The lava beds are much broken and fissured, doubtless the result of accumulations of steam when the lava covered streams or swamps. Some big passage-like caves thus formed are known to exist on the hillsides. It is difficult in such country to know what the actual catchment area is, as springs flow out from the cone in various directions; but on the possible catchment there are now about one thousand houses, most of which have been built in the last five or six years.

The spring was first used about twelve years ago—the water being pumped to two reserviors, one near the top of the hill and the other half-way down. Besides the Mount Albert Borough, the Avondale Asylum and the Point Chevalier School, situated in the city bounds, are supplied. When the supply was first taken for public use there were few houses on the catchment area and the water was very pure, both by chemical and bacterial analyses. Since then the number of houses built on this area has rapidly increased. There are no sewers, and each household disposes of its slop waters by letting them soak into very porous scoria soil, dumps being dug for the purpose. Some of the houses have water-closets connected to septic tanks, the effluent from which is conducted to such dumps. For other houses there is a nightsoil service, the excreta being removed from the district.

As might be expected, this increase of population on the catchment area has been a source of anxiety to the Health Department, and a watch has been kept on the purity of the water for some years. Warning that the supply was beginning to show signs of diminished purity was sent to the Borough Council in 1913, but the water was not in such a condition as to occasion serious alarm till November, 1921. For example, the following were the results of bacterial and chemical analyses in January, 1921:—

Bacterial.—Sample taken on 20th January, 1921. Colonies on agar at 37° = 24. Colonies on gelatine at 22°C.—Liq. 5, non-liq. 44 = 49. Smallest quantity of water showing fæcal *B. coli* = 5 c.c.

Chemical.—Sample taken on 13th January, 1921. Free ammonia, 0·0007 part per 100,000; alb. ammonia, 0·0023; chlorides, 3·1; nitrites, nil; nitrates, 0·43; oxygen absorbed in four hours at 80°F., nil; odour at 100°F., nil; colour, nil; sediment, nil; reaction, faintly alkaline; appearance, brilliant.

Chemically, therefore, the water was still satisfactory. The Council, however, were advised to be making preparations for obtaining the borough supply from another source, as it was evident that the increasing population was a growing danger.

In November, 1921, the bacterial test showed the presence of *B. coli* in 0·1 c.c. of the water, while the number of bacterial colonies in gelatin was 127 per cubic centimetre. Hitherto the water had never shown the *B. coli* in less than 2·5 c.c., and the colonies in gelatin plates were about 50 to 60 per cubic centimetre. The Medical Officer of Health, Dr. T. Hughes, thereupon warned the Council that the water was no longer safe, and, pending arrangements for securing another supply, directed that chlorination should be done. A temporary chlorinating plant was established at the pumping-station, and the result of a test of the water after treatment made on the 13th December, 1921, showed that the smallest amount of water in which *B. coli* could be found was 50 c.c. The chlorination was therefore at that time effective. Towards the end of March the Medical Officer of Health recommended that the amount of chloride of lime used should be increased. Apparently there had been some complaint from some ratepayers as to the taste, and the Council had reduced the proportion below that originally indicated as necessary by the Medical Officer of Health.

(2.) The Epidemic.

On the 7th April, 1922, the Medical Superintendent of the Asylum informed the Medical Officer of Health that he had several cases of typhoid among the 1,100 patients in the Asylum, and the possibility of the water-supply—which was derived from the Mount Albert borough system—was discussed. At that time, however, only one case of typhoid had been notified in the Mount Albert district, the notification being received in February. So far since the 1st January the typhoid returns in the whole metropolitan area showed the following figures: January—City, one case. February—City, two cases; Mount Albert, 1 case. March—City, three cases. 1st–7th April—No cases in city or suburbs. Of the cases in the city some at least were probably infected outside the city or suburban area, and there was nothing suggestive of an epidemic in any part of the Auckland district. The water-supply at the Asylum was not therefore suspected. Next day the first case of the epidemic in the Mount Albert Borough was notified, but was at first diagnosed as pneumonic influenza.

Further samples of the water were taken on the 10th April and showed *B. coli* in 0·01 of the water at the pump-well; and, on learning from the laboratory on the 13th April that the results were so unsatisfactory, and in view of the fact that a number of cases diagnosed as gastric influenza existed in the Mount Albert district, Dr. Hughes thought it well to direct the Borough Council to shut off the water-supply from the Mount Albert Springs. This was possible since by an arrangement with the City Council a connection between the city and the borough mains had been made some years before, so that a supplementary supply from the city might be obtained in dry weather when the borough supply was deficient.

On the 13th April the reservoirs were chlorinated, and the mains and all dead ends flushed out with city water. The city water was then turned on throughout the area.

On the 17th April notices were also published in the Press warning the inhabitants of the area supplied from the Mount Albert Borough station to boil the water and take other precautions. The public schools were closed, since it was not possible to prevent the children drinking unboiled water from the school taps.

There is little doubt that this prompt action by the Medical Officer limited the outbreak very considerably, and it is satisfactory to note that three weeks from the date of these measures the number of notifications began to drop rapidly.

On the 17th April three notifications of typhoid were received from Mount Albert, and thereafter they began to come in rapidly. A number of so-called gastric-influenza cases were now diagnosed as enterica. On the 18th April sixteen cases were notified, and on the 19th fifteen.

The total number of cases, inclusive of those occurring outside the Mount Albert water-supply area but obviously connected with the Mount Albert epidemic, is 216, of which sixty were in the Asylum. Included among cases obviously connected with the epidemic are several children living in the city area but attending the Point Chevalier School, which has the Mount Albert water-supply. Other cases in the city or Mount Eden areas worked or visited in the Mount Albert area within two weeks of the beginning of their illness.

The progress of the epidemic is shown as follows:—

Date.	Cases.	Date.	Cases.
April 3–10	1	May 22–29	0
April 10–17	23	May 29–June 5	4
April 17–24	59	June 5–12	0
April 24–May 1	35	June 12–19	0
May 1–8	17	June 19–26	1
May 8–15	11	June 26–30	0
May 15–22	5		
			156

These figures do not include the sixty cases in the Asylum, which began chiefly in the first two weeks of April. Deaths reported and attributed to the epidemic at Mount Albert numbered fourteen. In the Mental Hospital a further seventeen deaths occurred from the 1st April to the 31st December.

(3.) Evidence that the Mount Albert Water-supply was the Source of Infection.

First Area affected: A glance at a spot map shows very conclusively how markedly the area supplied from the Mount Albert pumping-well has been picked out by the incidence of the typhoid cases. It forms a long narrow wedge running up between the city and the Mount Eden Borough, both of which are supplied from the city supply from the Waitakerei Ranges, ten miles out of the city. The edges of this wedge are sharply defined. For example, four adjacent streets running from Mount Albert to Mount Eden and bisected evenly by the boundary show on the Mount Albert side of the boundary fourteen cases and on the Mount Eden side one case.

Typhoid cases have occurred in every part of the Mount Albert water area, but in two districts the cases are sparse as compared to the population. In one of these the city supply mixes with the Mount Albert supply, and in the other a high proportion of the residents are returned soldiers who have been protected by vaccination.

The total population of Auckland City and metropolitan area is 157,000. Of this population 11,300 persons live in the area supplied from the Mount Albert springs, among whom there occurred 195 cases of typhoid between the 7th April and 20th May. During the same period among the 145,700 persons living outside the area so supplied, thirty-eight cases of typhoid have been reported, and of these fifteen were among persons who, like the Point Chevalier school-children, were known to

be exposed to the chance of infection from the Mount Albert water-supply. Of the twenty-three remaining cases, one was a nurse in the typhoid wards at the hospital who may have received the infection indirectly from the Mount Albert patients. In other cases, although no connection could be traced, it is probable that the infection was from Mount Albert, as in the case of three cases in Mount Eden who live close to the Mount Albert boundary and very possibly visited there.

In six of the twenty-three city and suburban cases infection was certainly received outside the metropolitan area—four of them being from overseas. Three of these latter arrived by the s.s. "Niagara" on the 7th April and showed symptoms from the 10th to 13th April—the incubation period being obviously too short to admit of the infection being contracted in Auckland. The fourth overseas case arrived from Suva on the 25th April and was notified on the 1st May. Here again the incubation period excludes infection being contracted in Auckland, and the presumption may be drawn that Suva was the source of infection in all four cases.

(4.) Evidence from the Stoppage of the Water-supply.

The table given above shows how rapidly, allowing for the long incubation period, the epidemic was checked after the water-supply was cut off on the 13th April.

(5.) Absence of other Possible Common Source of Infection.

In all cases complete inquiries have been made into milk-supplies, shell-fish, green vegetables, and other commodities supplied to each household, but it has not been found that there is any source of infection other than the water which is common to the 195 cases in the Mount Albert water area.

(6.) Evidence from the Examination of the Water.

Finally, we have the evidence from results of the bacteriological examinations. These show that the water during a period of years has shown increasing signs of pollution, and that in November last the condition was such as to warrant the Medical Officer requiring the Borough Council, who controlled the supply, to abandon the source and meantime to chlorinate the water. This chlorination was done, but obviously the method broke down, for samples taken on the 10th April showed *B. coli* in 0·01 c.c. of the water, whereas in March the least amount in which it could be found was 50 c.c.

The earliest cases were in the Asylum and were recognized by the 7th April. Of the earliest cases among the general public the symptoms first showed also early in April. We may conclude, then, that infection was present in the water towards the end of March. This may have been due to the very heavy rains in that month washing down an unusual amount of organic matter from the catchment area—too much for the natural scoria-bed filter to break up completely, and presumably too much for the amount of chlorine placed in the water by the Council authorities.

It is interesting to learn from the Government Bacteriologist that infection is not confined to one organism of the enteric group, but that typhoid and both types of para-typhoidal infection have been detected. This is suggestive of a fairly widespread state of pollution on the catchment area.

There is not the slightest reason to fear that the Auckland city supply or any of the other suburban supplies are sources of infection.

R. Makgill,
Acting Medical Officer of Health.

PART III.—CHILD WELFARE.

SECTION 1.—GENERAL ADMINISTRATION.

The health campaign throughout the Dominion conducted last year by myself as Director of Child Welfare, in conjunction with Miss J. B. N. Paterson, has been practically completed. This campaign, undertaken at the instance of the Hon. C. J. Parr as Minister of Health and Education, has met with general appreciation. Not only has it been of direct service in the promotion of health in general, and of mother and child in particular, but it has given a further impetus to the work and activities of the Royal New Zealand Society for the Health of Women and Children. The branches of this organization threw themselves whole-heartedly into the project, and spared no pains in organizing everything ahead with the local Education and Health authorities. By this means smoothness and economy of working were ensured, and our grateful thanks are due to all concerned for thus enabling us to cover effectively the maximum of ground in the minimum of time. The co-operation of the School Boards, School Committees, teachers, and medical and nursing staffs of the Department also contributed greatly to the success of the campaign.

Summary of Lectures, Demonstrations, Addresses, etc.

The special object of the health campaign, as explained last year, was to interest and enlighten the whole community in regard to the essentials for personal and national health and fitness, and to promote the standard of proficiency in hygiene and the prevention of disease among nurses, teachers,

and all those specially entrusted with the guidance and care of mother and child. The campaign embraced—

(*a.*) Public lectures and demonstrations bearing on fresh air, sunlight, bathing, swimming, and other forms of stimulation and exercise; recreation (re-creation), rest, and sleep; foods and feeding; regular habits; and other matters determining health and fitness. These lectures were illustrated by means of demonstrations, lantern-slides, and moving pictures.

(*b.*) Addresses to teachers and pupils in training colleges and in primary, secondary, and technical schools.

(*c.*) Addresses to large meetings of business girls in the four main centres, organized by the Y.W.C.A.; and similar addresses to young men arranged by the Y.M.C.A. and other bodies.

(*d.*) Saturday or Sunday evening addresses to large gatherings of men and women organized by the Workers' Educational Association and other bodies. Two short addresses were given to the Rotary Club; also an address to medical students at Otago University, given for the Chair of Public Health, and several health lectures for the Red Cross.

(*e.*) Meetings for mothers and young women concerning the needs of home and family. An important feature of these meetings was the encouragement of those who attended to ask intimate questions bearing on personal health and on various matters affecting mother and child.

(*f.*) Meetings of midwives for special lectures and demonstrations bearing on the pre-natal and post-natal care and the safeguarding of mother and child. At these meetings the nurses had the benefit of conferring and discussing matters with a specially qualified nurse (Miss J. B. N. Paterson) at the close of the lecture, and of arranging with her for further practical demonstrations or advice if desired.

As said in my last year's report, "One can scarcely overstate the safeguard and boon it would be to mother and child if all the midwives in the Dominion—numbering between one thousand five hundred and two thousand, registered and unregistered, to whom mothers, expectant and actual, turn for guidance and help during the most momentous and critical phases of life, could be depended upon to give uniform authoritative advice and assistance. Wrong advice has been so often tendered, and the wrong thing so often done, that no pains should be spared to heighten the sense of responsibility and raise the standard of knowledge and proficiency among all those licensed or authorized in any way by the State to undertake the special care of mother and child, before, during, and after child-birth." The relationship of this to reducing our unduly high rate of maternal mortality, and the deaths of babies occurring in the first month of life, may be seen by referring to the graphic chart included in last year's report, showing that in the Dominion two-thirds of the infants who succumb in their first year die in the course of the first month—mostly in the first ten days. The health and safety of mother and child during the puerperal period cannot be dissociated. The conditions which give rise to a high maternal mortality during the first fortnight are practically incompatible with a low infantile mortality during that time.

Apart from the completion of the health campaign, some other outstanding features of the year's work may be mentioned.

The Year's Progress in Infant-welfare Work.

The average infantile death-rate for the whole Dominion has been further reduced during the year from 4·7 per 100 births for 1921 to just under 4·2 per cent. for 1922—the lowest on record.

Consistency of treatment and organized system in following up cases, which has been established during the year between the Wellington Hospital and the Plunket Society, marks a most important step for child welfare. The following extract from an address by Dr. Wilson, the Medical Superintendent of the Hospital, speaks for itself:—

"The Plunket Society has become practically part of the work of our hospitals. Our hospitals must work hand in hand with the society. What seems to me one of the most important aspects of the work of the Plunket Society is the fact that it has established unity throughout the Dominion in regard to the feeding and care of children.

"I feel this is a matter of supreme importance for the Wellington Hospital. Our children are fed and cared for according to the Plunket system, and the Plunket Nurses are supplied with details regarding each child discharged from the Hospital, so that what is done in the institution may be consistently continued and followed up outside in the home."

Another encouraging feature of the events of the year was the inauguration of Health Week in Wellington. If this movement were taken up earnestly and actively in all large centres of population, the beneficial effect on the health of the family, especially on mother and child, would be very great.

The number of Plunket nurses subsidized by the Government has increased from sixty to seventy-one during the year. Over and above this, a further sixteen nurses have been requisitioned for mainly by branches hitherto without resident Plunket nurses, and a few as additional nurses to meet the progressive requirements of pre-existing residential centres. Besides keeping up with these demands within the Dominion, the Plunket Society has continued to train nurses applying voluntarily from Australia, or sent across by States of the Commonwealth, or by voluntary child-welfare agencies.

During the year nearly twenty thousand copies of the Department's book "The Expectant Mother, and Baby's First Month" have been issued free to nurses and married women, and to

men applying to the Registrar for marriage licenses. Appreciative testimony as to the practical value of this has been received from all directions; and a further fifteen thousand copies of an enlarged and revised edition of the book are about to be published. Similar appreciations reach the Department and the Plunket Society in regard to the services which the society is enabled to offer the mother soon after childbirth as a result of the Registrar's being instructed to supply prompt reports to the Plunket nurses, giving the necessary particulars (date, address, &c.) regarding all notifications of childbirth. The effect of this provision has been to bring a very much larger number of young mothers with their first babies under care before serious mistakes are made.

SECTION 2.—INFANT-WELFARE WORK IN AUSTRALIA.

Work in the interest of mother and child, conducted more or less closely on New Zealand lines, is now being carried out extensively in Queensland, New South Wales, Victoria, and Tasmania; and at the request of the Australian Health Association I attended the annual conference of the association held in Sydney in September last year as Government delegate for New Zealand. Statements made on this occasion by some of the Australian health authorities, with a view to accounting for the low infantile death-rate in New Zealand compared with the Commonwealth, afforded striking proof of the desirability of greater facilities for discussion and interchange of ideas and experiences, from time to time, between Australia and New Zealand on matters of mutual concern affecting public health.

It was stated at the conference that the essential reasons for so few babies dying in New Zealand compared with Australia were as follows: (1) The initially low rate of infantile mortality characteristic of New Zealand; (2) our cool, temperate, equable climate; (3) the small size of our cities. Further, since the conference it has been asserted repeatedly in the Australian Press that, owing to some inherent natural difference between the two countries, serious infantile diarrhœa is, and apparently always has been, practically non-existent in New Zealand—just as malaria and yellow fever occur in some countries and not in others. Further, it has been stated, on apparent authority, that but for the radical differences in climate and microbes there would actually be a lower infantile-mortality rate at the present time in some of the Australian States than in the Dominion.

While appreciating the excellent general public-health work done in the Commonwealth, it seems desirable to set down the leading facts bearing on the relatively low infantile-mortality rates in New Zealand:—

(1.) Originally the infantile-mortality rates differed but little in the two countries.

(2.) That coolness and equability of the New Zealand climate is not the cause of the discrepancy is shown by the simple fact that the average infantile mortality rate for Queensland is considerably lower than the rate for Tasmania, which is climatically similar to New Zealand, and that in the Dominion the subtropical City of Auckland has a low rate.

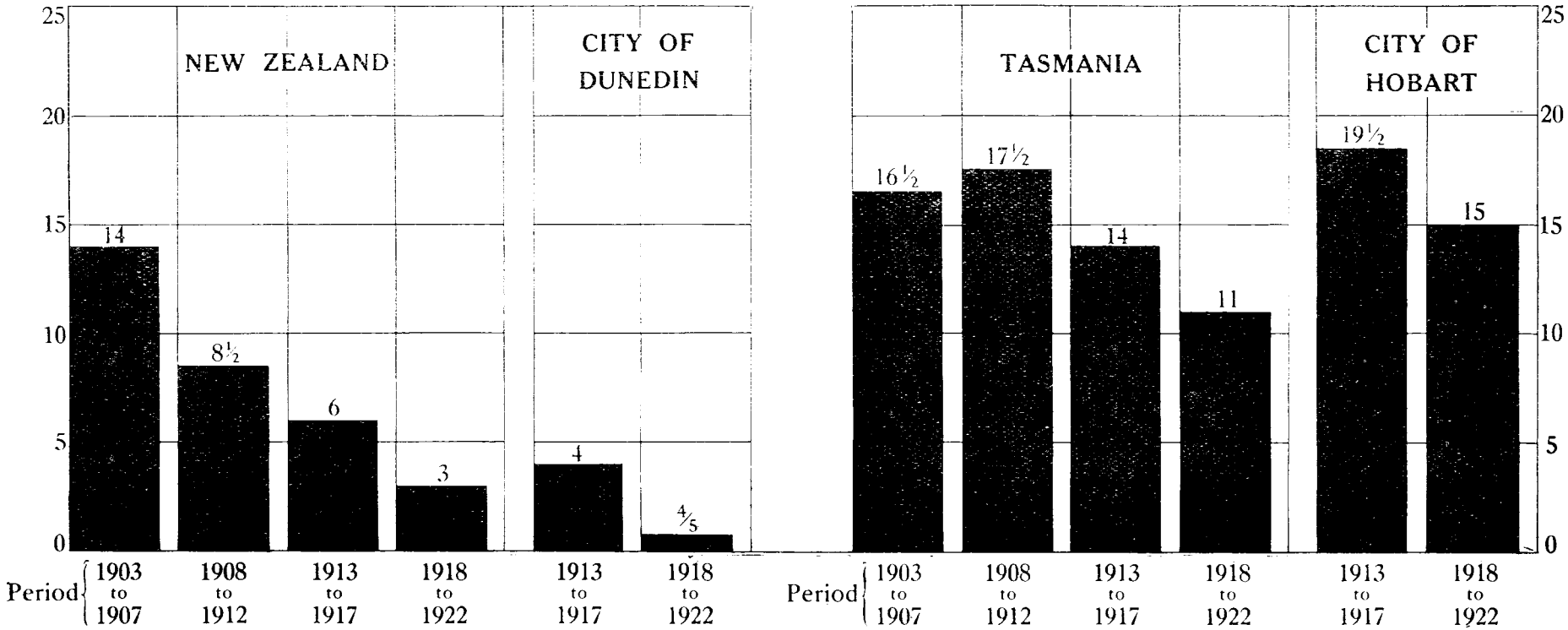
(3.) That the relative sizes of cities is not the determining cause is shown by the fact that while New Zealand cities have been almost doubling their populations they have been nearly halving their infantile-mortality rates; and in 1920 the City of Auckland, with 200,000 inhabitants, lost a smaller proportion of babies than Wellington, Christchurch, or Dunedin, which average about half the population of Auckland. Further, in the States of the Commonwealth itself the infantile mortality is sometimes in inverse proportion to the size of the cities.

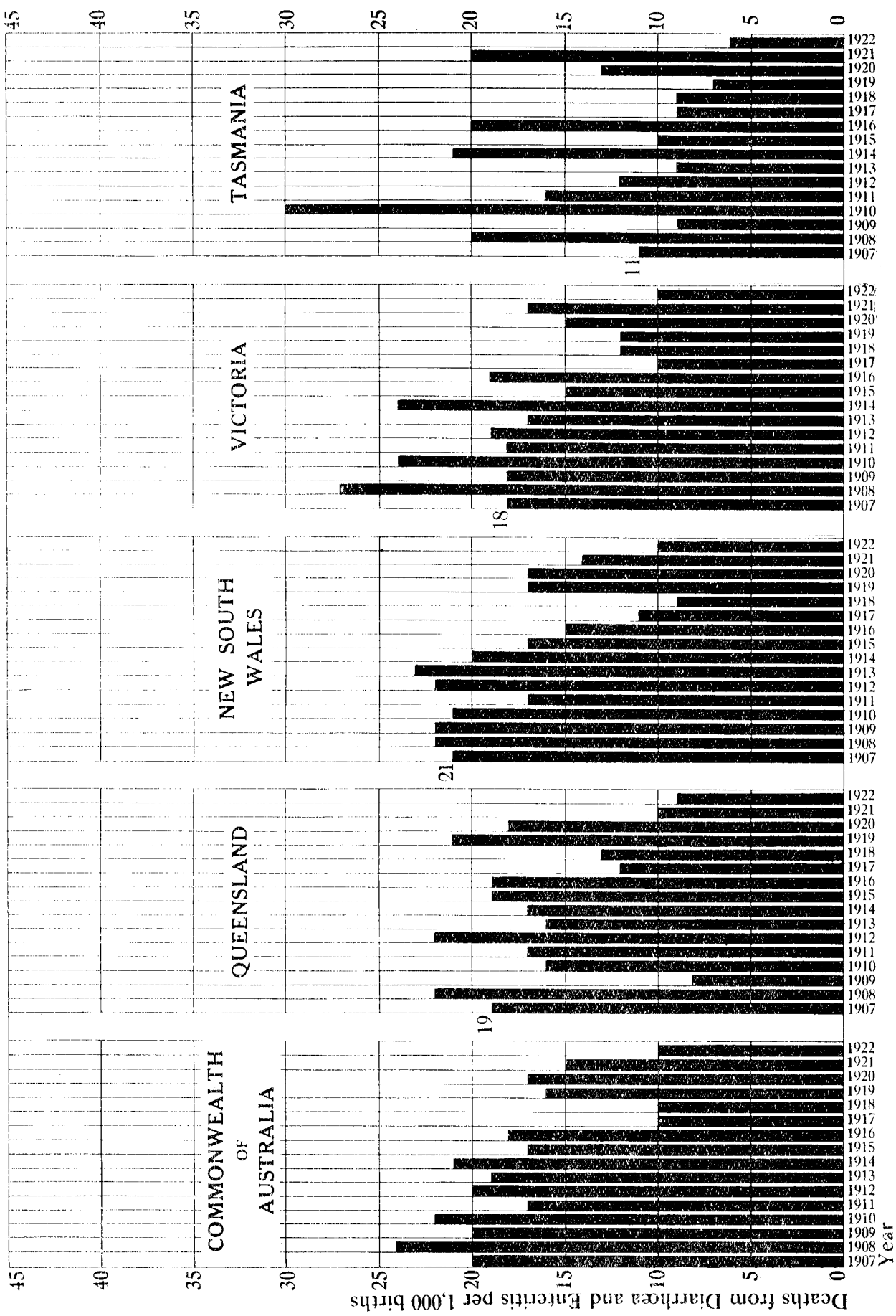
(4.) That New Zealand enjoyed no natural immunity to infantile diarrhœa and enteritis is proved by the fact that from fifteen to twenty years ago this form of disease killed annually from ten to twenty babies per thousand births. For the last five years, as shown on the accompanying graphs, the average rate for the Dominion has been only three deaths per thousand, as compared with thirteen deaths per thousand for the Commonwealth. More significant still is the fact that whereas formerly the deaths in New Zealand from infantile diarrhœa and enteritis occurred mainly in the cities, and are still regarded in Australia and elsewhere as almost inevitable concomitants of crowded city life, the position as between town and country has been reversed in New Zealand during the last sixteen years. Twice in the last five years not a single baby has died in Dunedin of diarrhœa and enteritis—and the average rate for the whole five years has been under one death per thousand births, compared with twenty-five per thousand in 1907. Almost equally striking is the fact that the rate in Christchurch, which was forty-five per thousand births for 1907, has averaged only three per thousand for the last five years. If the combined factors of subtropical climate and aggregation in cities were the essential factor of infantile diarrhœa, Auckland should have almost as high a death-rate from this cause as Sydney, and yet for the last five years the average rate for Sydney has been twenty per thousand births and for Auckland only four. The persistence in Australia and Tasmania of gastro-enteritis as the main cause of death among infants who survive their first month, and the extreme reduction of the disease in New Zealand cities of late years—as most strikingly illustrated in Dunedin—is to be attributed to one essential cause—viz., the systematic education and training in mothercraft which has been carried on throughout the Dominion for the last sixteen years. The seat of the earliest and most intensive work in this connection was Dunedin; and the following significant passage occurs in the annual report for 1919–20 of the Dunedin Branch of the Royal New Zealand Society for the Health of Women and Children.

"There has been scarcely any serious infantile diarrhœa during the summer months. In almost all incipient cases, the mother, knowing just what to do, was found to have taken the right course, rendering the essentail first aid herself, before the arrival of the doctor or Plunket nurse. This is exactly as it should be, and (taken in conjunction with the knocking-out of summer diarrhœa as a cause of infantile mortality throughout New Zealand) it goes to prove, in the most convincing and gratifying way, the practical value and effectiveness of teaching and training the mothers. The society's aim has always been to interest and ground parents in the simple main essentails of early life, both in health and sickness, thus helping them to make them the competent executives in their own homes, instead of allowing them to remain (as in the past) ignorant, helpless, and frightened to act in the absence of 'skilled assistance.' The mother is always on the spot, always on duty in the home: the doctor or nurse is only an occasional visitor—a visitor who often arrives not quite soon enough, and who is liable to arrive too late!"

GRAPH 1.—QUINQUENNIAL MORTALITY-RATES FROM GASTRO-ENTERITIS AND DIARRHŒA PER THOUSAND BIRTHS.

The rates for New Zealand and Tasmania are for the last twenty years, and those for Dunedin and Hobart for the last ten years only, the earlier figures for the two cities not being available. Note that the figures for the whole countries (New Zealand and Tasmania) show deaths from infantile diarrhœa occurring in the first year of life; while the city rates are for similar deaths occurring in the first two years. This makes all the more striking the reduction of the average rate for Dunedin for the last five years to less than one per thousand births (compared with three per thousand for New Zealand as a whole); indeed, in two of the years (viz., 1918 and 1922) not a single child below two years of age died in Dunedin of gastro-enteritis and diarrhœa (see Graph 3).



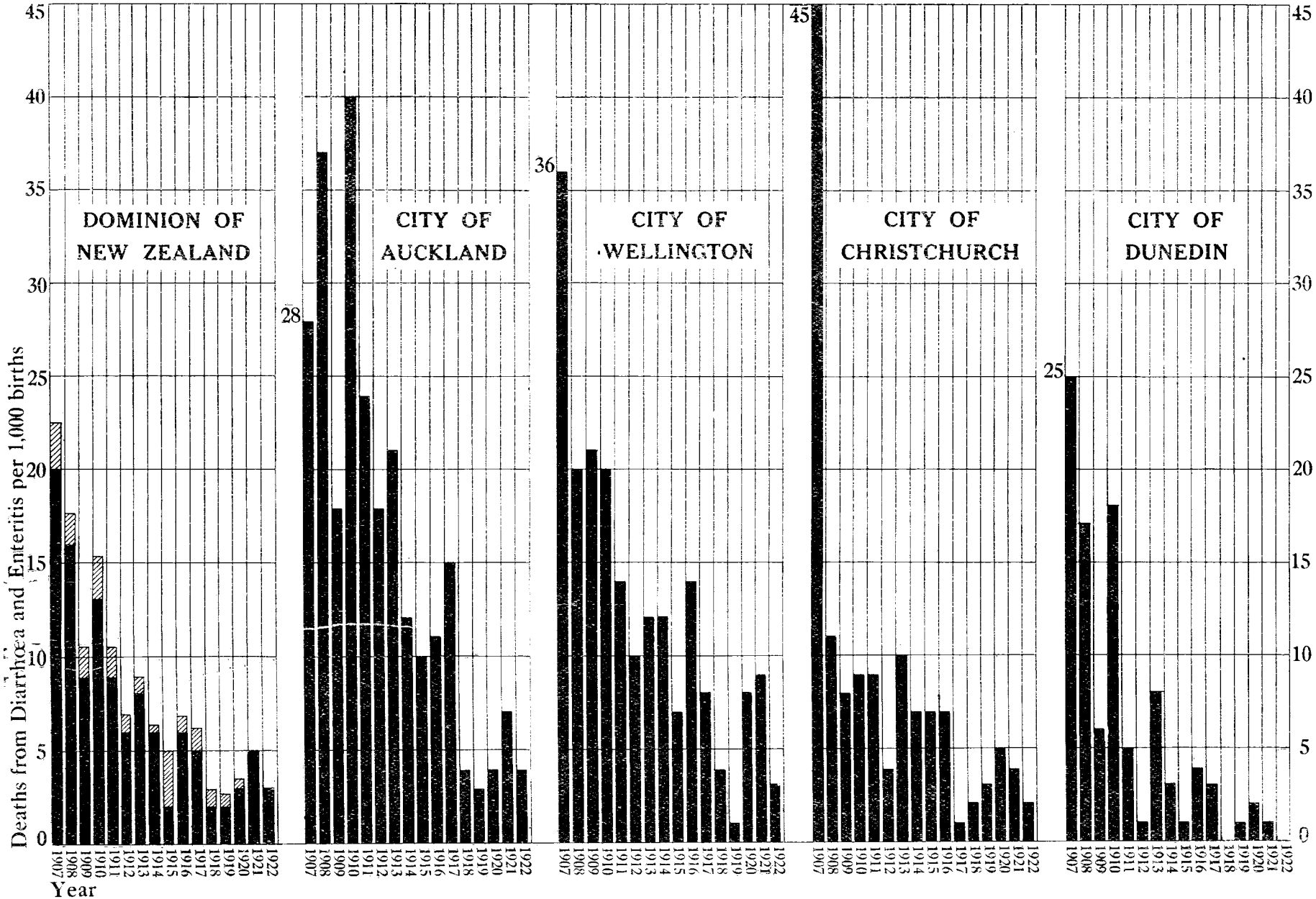


GRAPH 2.—ANNUAL MORTALITY-RATES FROM GASTRO-ENTERITIS AND INFANTILE DIARRHŒA IN THE FIRST YEAR OF LIFE, PER THOUSAND BIRTHS.

GRAPH 3.—ANNUAL MORTALITY-RATES FROM GASTRO-ENTERITIS AND DIARRHŒA PER THOUSAND BIRTHS, 1907–22.

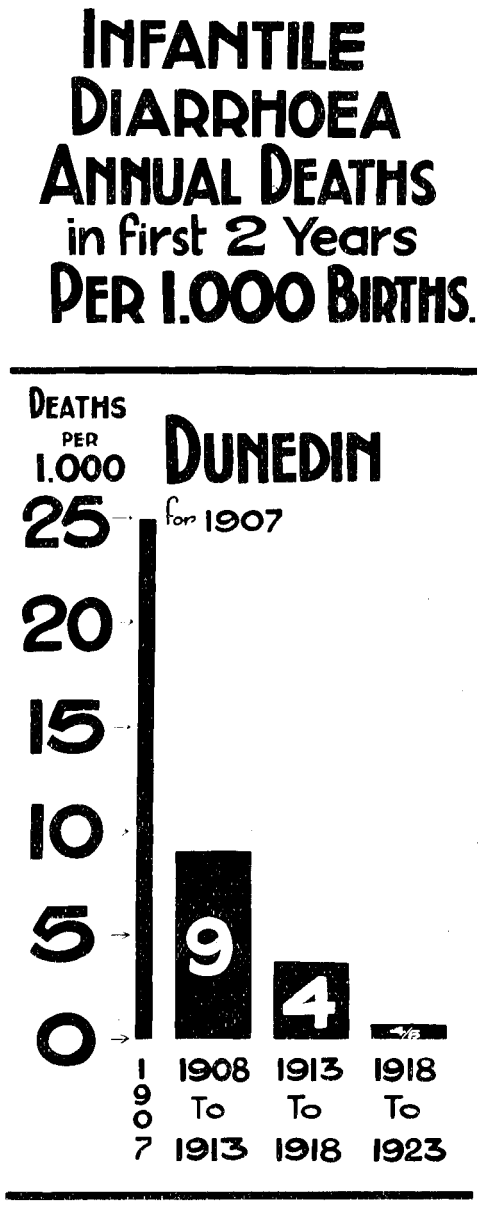
(1.) *For the Dominion of New Zealand.*—(*a*) The lower, solid, black columns show the deaths from diarrhœa in the first year of life; (*b*) the hatched part above shows the deaths in the second year of life: (*c*) the total height of each combined column shows the rate for the first two years of life.

(2.) *For the Cities.*—The columns all show the death-rates from diarrhœa for the first two years of life, and therefore they correspond to the combined columns as given for the Dominion.



GRAPH 4.

The following is given as a sample of the kind of graph found effective in bringing the community to realize the value of care and system in the rearing of children and the prevention of disease.



SECTION 3.—INCIDENCE AND IMPORT OF INFANTILE DIARRHŒA.

Infantile diarrhœa kills from half a million to a million babies every year, and makes weaklings of many millions more who do not actually die of the disease. Early mistakes in the feeding and care of children are life's greatest and most far-reaching handicap.

The full import and significance of the foregoing facts, figures, and charts can only be appreciated when it is realized that malnutrition, indigestion, and consequent infective gastro-enteritis, known as "infantile diarrhœa" or the "scouring" of calves, constitutes the one great common universal scourge of early life among ourselves and dairy calves.

This easily avoidable and fell disease still decimates our dairy herds in the course of rearing, and impairs the stamina and subsequent value of the survivors more than all other causes put together; and this will continue until the simple needs of young cattle placed under the artificial conditions of enforced domestication form an important though minute fraction of education, especially throughout rural communities. It is much cheaper and easier to rear babies and calves rightly than wrongly; simple instruction on sensible lines is interesting and easily imparted, and an understanding of the first principles of how to supply the common and special needs of domesticated mammals must and will play a very important part in all enlightened schemes of education in the near future.

Proper systematic feeding, open air and exercise, and freedom from undue coddling and restrictions are the universal needs of early life, and they must receive due attention if progressive deterioration is to be stemmed and replaced by a higher all-round standard of life and living.

Looking at humanity from the standpoint of adult life, and considering the mind, the feelings, the emotions, and the character of mankind, rather than the perfecting of the bodily mechanism alone, I need only quote from convictions formed and expressed seventeen years ago in special connection with asylum life: "If women in general were rendered more fit for maternity, if instrumental deliveries were obviated as far as possible, if infants were nourished by their mothers, and boys and girls were given a rational education, the main supplies of population for our asylums, hospitals, benevolent institutions, gaols, and slums would be cut off at the sources. Further, I do not hesitate to say that a very remarkable improvement would take place in the physical, mental, and moral condition of the whole community."—(Extract from my report on Seacliff Mental Hospital for 1906.)

The deep-seated, underlying causes which threaten modern civilization need, of all things, to be clearly understood at the present moment. Nothing can excuse or justify a continuation of the present cruel and utterly unnecessary sacrifice of mother and child, which has gone on almost unheeded for half a century; and it must never be forgotten that the damage-rate infinitely exceeds the death-rate. Indeed, as I have said already, comparatively few infants escape unscathed by the mistakes of omission and commission which would be rare if mothers—always anxious to learn anything needed for their children—were given the attention, instruction, and help they deserve. As Socrates said, in all human affairs "the beginning is the most important part, especially when we have to deal with anything young and tender."

F. Truby King,
Director of Child Welfare.

PART IV.—NURSING.

I have the honour to submit my annual report for the year ending 31st March, 1923.

SECTION 1.—NURSES REGISTRATION ACT.

During the year 1922–23 two examinations were held under the Nurses Registration Act—in June and December: 250 candidates presented themselves for examination, of whom 212 were successful and are now on the State register.

Forty-six nurses from overseas have been registered, of whom only a very few from England and Wales, Scotland, and Ireland have presented the certificate of the General Nursing Council under the respective Acts. This Act has now been in force for over three years, but there has been considerable delay in the making of regulations and consequently in the registration of nurses. Many of those coming to the Dominion have not been able to wait for their registration to be completed, and therefore have, as heretofore, been accepted by this Department on the ordinary certificate of training of their hospitals.

During the year the demand for nurses for private work has somewhat improved, but still there are periods when there are numbers of nurses awaiting work. The concentration of nurses in the four centres is greatly responsible for this, the few nurses venturing to practise in country towns usually being kept well employed.

There are still numbers of nurses from New Zealand away in America, Canada, and South Africa. They are all doing well, many being given positions of responsibility in hospitals, and all sought for for private nursing, the New Zealand certificate of training being recognized as a guarantee of high standard.

During the year the Secretary of State for the Colonies communicated with this Government in regard to reciprocity in the registration of nurses between the General Nursing Council for England and Wales and the Registrar of Nurses in this Dominion. Full particulars were sent of the training of the nurses, the State examination and registration, and the conditions on which nurses from other countries were accepted. Special emphasis was laid on the necessity of allowing training in the smaller hospitals of the Dominion, and inquiry made as to the acceptance for reciprocal registration of nurses trained in such hospitals. The reply received was to the following effect: That the General Nursing Council, at a meeting held on the 6th October, 1922, passed the following resolution:—

"That this Council agrees to accept a certificate of registration in New Zealand as sufficient evidence of fitness for admission to the register of this Council, provided that the Director of the Division of Nursing in New Zealand agrees to admit nurses registered by this Council with a certificate of three years' training and of having passed an examination to the New Zealand Nurses' Register."

It was added that the Council makes no condition as to the number of beds in the hospital recognized as training-schools, and they are content to accept the New Zealand certificate without further restriction.

This recognition without condition is extremely gratifying as showing that nurses from this Dominion had proved, especially in the great opportunity given by war service, that their training was of a high standard.

At the same time it is to be regretted that the condition which is being imposed on nurses training in Great Britain—that it will only be by affiliation with larger hospitals that nurses trained in small ones will be eligible for registration—has not been extended to other countries. A system of affiliation has been for years proposed by this Department, but only very half-heartedly carried out. We must now avoid the danger of resting contented with our present standard of nursing education, which has been so generously accepted by the Mother-country, and still aim at a much higher ideal. Reciprocity has been arranged with Queensland and Western Australia, and is now being arranged with South Australia.

Nurses in Government Departments.

There have been no new appointments of Nurse Inspectors as advised by the Maternity Mortality Commission, the need for economy in Government expenditure preventing at the present time the recommendation being carried out. The number of school nurses has also not been increased. A few resignations have been received and the vacancies filled.

As far as possible the vacancies have been filled by nurses in the Public Service who by the closing of the Trentham Hospital have been deprived of their hospital positions. Nurses from this institution were also transferred to King George V Hospital, Otaki Hospital, and Queen Mary Hospital, Hanmer, and all of the staff were given some opportunity of remaining in the service.

Owing to the resignation of Miss Ellen Brown, A.R.R.C., Matron of the Queen Mary Hospital, Hanmer, who was appointed Lady Superintendent of the Dunedin Hospital, Miss Thurston, C.B.E., R.R.C., Matron of Trentham Hospital, was transferred to the Queen Mary Hospital. Other changes in the nursing staff of the Department were the retirement on superannuation of Miss Inglis, Matron of St. Helens Hospital, Wellington, and the transfer of Miss Newman from the matronship of the St. Helens Hospital, Christchurch, to that of St. Helens, Wellington. The matronship of St. Helens Hospital, Christchurch, was then filled by Miss McLeod, previously Matron of Te Waikato Sanatorium, Cambridge, until its closure, and then of Pukeora Sanatorium. To the matronship of the Pukeora Sanatorium was appointed Miss Whyte, R.R.C., trained at the Auckland Hospital, and a member of the Queen Alexandra Military Service until the conclusion of the war.

In March Miss Bicknell, A.R.R.C., was appointed Director, Division of Nursing, in my place, I then being due for retirement. She was granted leave of absence for eight months to visit England, when she will inquire into nursing matters. In the meantime until her return I will carry on the work of my division as usual.

District Health Nurses for Natives.

No additions to this staff have been made, but the vacancies occurring have been filled, and there has usually been a sufficient number of applicants for this work, which appeals to a nurse with a love for country life and able to ride.

The nurses have done excellent work. There have not been so many outbreaks of enteric with which to cope as in past years, the constant supervision of the pas and instruction by the nurses and Inspectors having produced a good effect.

Three nurses have been granted leave to enter maternity hospitals for a six-months midwifery course.

The district nurse in charge of the Kahukura District Cottage, Nurse Blair, has resigned. Nurse Jameson, trained at Auckland Hospital, has been appointed in her place. This is an isolated place, and the nurse has much emergency work without medical supervision.

District Nurses under Hospital Boards and Societies.

These nurses, who are appointed by the Boards or by societies subsidized by Boards, are gradually increasing in number, but are not yet nearly enough for the needs of the country parts. This is partly owing to the apathy of the settlers and partly to the sparse settlement of the districts, which do not in many cases afford sufficient work to keep a nurse employed and content.

There are now twenty-nine nurses outside the larger towns. In the four chief cities there are District Nursing Associations, such as the Nurse Maude organization in Christchurch, which employs nine nurses; St. John Ambulance Associations, Wellington, Dunedin, and Auckland, which employ two to three nurses each.

The number of cottage hospitals and small maternity hospitals being erected under the Boards in country places provide in a very satisfactory way for the needs of the people, and from some of these the outside district-nursing work can be continued to a certain extent. The ideal way to manage such combined work is to post two trained nurses at a cottage, so that both the work and companionship are provided for.

Maori Nurses.

It is regretted that a Maori nurse, Ngapori Naera, after doing very good work for seven years, resigned. She is now doing private midwifery work quite successfully. Although there are exceptions, it has been found that the Native nurses are not so successful in dealing with their own people as the pakeha nurse, to whose instructions more attention is usually paid. This is specially to be regretted, as quite a number of Maori girls express a wish to train as nurses. The Napier Hospital has two in course of training, after a year of preliminary training, during which they lived at the

Maori College, and another is now undergoing the preliminary course. One nurse is training at Hamilton Hospital, and doing well; another, who had also served a preliminary course at Otaki, is shortly to enter at Palmerston North Hospital; one has recently completed her course and passed the State examination, and is now waiting for an appointment under the Department. At Auckland Hospital there is a Maori nurse nearly finished, and also a young Samoan girl sent from the island for training.

There is still one Maori nurse in the Department's service. Outside the service it is difficult for these girls to get positions. They are seldom retained on the staffs of the hospitals, and private nursing does not offer very freely. It is to be hoped that as more nurses qualify the well-to-do Maoris will give them employment.

Dental Nurses.

The training of the first batch of dental nurses has been completed, and they are now being placed out in various country districts. They are fully reported on by the head of their division.

Plunket Nurses.

The nurses, who are under the immediate charge of their own Director, Miss Pattrick, come under the control of the Director of Child Welfare. A large number of nurses avail themselves of the special course at the Karitane Harris Hospital, nurses being sent from Australia for this experience before taking up infant-welfare work in the States under Government Departments or private societies. The present Matron of the Karitane Harris Hospital is an Australian nurse trained at the Royal Prince Alfred Hospital, Sydney. Many New Zealand nurses, with a view to private nursing or to positions as Plunket nurses or on staffs of maternity hospitals, also go through the special course at Karitane.

Red Cross Nurses.

The nurses now under the control of the Red Cross, New Zealand Branch, are those who have been selected for the scholarships or the international course at Bedford College, London. Miss Webster has passed the examination, and has since been specially sent to Paris to inquire and gain an insight into the work of the Red Cross League, now transferred from Geneva to headquarters in Paris. Miss Clark started her course last October. It is intended to confer with the Director-General of Health with regard to the future work of these nurses, of whom Miss Webster is due to return in April.

Miss Lewis, the Red Cross nurse in Wellington, is kept busy lecturing on home nursing and hygiene generally at schools, colleges, and at the Red Cross rooms, as well as at various centres in the suburbs. She also investigates cases of poverty and sickness reported to the society.

The staffs of the Chronic Homes for Soldiers at Dunedin, Auckland, Christchurch, and Wellington, all of whom were transferred from this Department, are carrying on very satisfactorily. The Homes are well kept, and the patients looked after with the greatest care and solicitude.

Superannuation for Nurses.

It is much to be regretted that nothing further has been accomplished towards the above object. The subject is frequently brought up in Parliament, and it appears to be a general opinion that some provision should be made for these public servants, whose earnings are not sufficient to enable them to make much provision for themselves.

I am glad to report that an annuity has been granted under section 11 of the 1920 Amendment to the Hospitals Act by the New Plymouth Hospital Board to their late Matron, Miss Brown, who was in the Board's service for twenty years.

SECTION 2.—MIDWIVES ACT.

During the year two examinations have been held under the Midwives Act: 140 candidates presented themselves, of whom 133 were successful and are now on the register. Twenty-six midwives were registered from overseas.

Correspondence regarding reciprocity of registration has been going on with the Central Midwives Board but has not yet reached a satisfactory conclusion, the Board having agreed to accept the course of training prescribed under the New Zealand Act, but still requiring our midwives to sit for the Board's examination. This Department has decreed that midwives holding the certificate of the Central Midwives Board must show proof of an equivalent term of training or after-experience in a recognized midwifery hospital training-school to that required in New Zealand, or may be permitted to make it up here and sit for the New Zealand examination. Miss Bicknell will endeavour to come to some satisfactory solution of the difficulty with the Board.

With the Midwives Board of Victoria, Western Australia, and the Queensland Board of Health reciprocal agreements have been reached, and negotiations are proceeding with the South Australian Board.

The recommendation of the Maternal Mortality Committee with regard to the better training of midwives, and the more consistent and strict supervision of maternity nursing-homes when it is possible to carry them out, will be of advantage to midwives. A refresher course as advised is desirable, but difficult to attain under the present conditions of maternity nursing, when there is so much competition (if not actually encouraged by members of the medical profession, yet not actively opposed) by the unqualified women. It is chiefly this class of woman who acts as a midwife, and, though prosecuted by this Department, receives so small a fine that she is not deterred. Trained midwifery nurses often ask, What is the use of taking a course of training for a year and then finding that they are not supported as they should be by the public and by the medical profession?

The recommended amendment of the Hospital Act to prevent the admission of even one case at a time for payment into an unlicensed Home, if carried through, should prove of benefit to the trained midwives.

It is advocated by many doctors and others that more trained nurses should be trained as midwives. This is certainly ideal but far from practical, as, though a great number of registered nurses apply for midwifery training, few of them intend to work as midwifery nurses when qualified: they look upon the certificate, quite rightly, as a necessary adjunct for full qualification as a nurse. As it is necessary to have nurses who will make it their first object to nurse maternity cases, the regulation under the Act limiting the pupils registered as nurses in the State maternity hospitals to half the number in all is a wise one. Without shutting out the women who will devote themselves to maternity work it would be impossible to train the many general nurses who apply.

Health Department's Maternity Hospitals.

The following figures give a brief *résumé* of the work done at these institutions during the year:—

Town.	Births (Living Children.)	Still-births.	Deaths of Mother.	Deaths of Infants.	Outdoor Cases.	Pupil Midwives qualified.
Auckland	370	7	1	3	250	16
Wellington	335	18	1	5	180	22
Christchurch	281	16	1	3	142	13
Dunedin	145	6	..	2	76	6
Invercargill	137	5	..	1	13	7
Gisborne	95	4	..	3	3	5
Wanganui	107	5	..	1	6	6
Totals ..	1,470	61	3	18	570	75

State Maternity Hospitals.

St. Helens Hospital, Wellington.

At this Hospital there have been no additions. The very necessary accommodation for domestic staff which would free a room very suitable for storeroom, also much required, has not yet been started. It is hoped that something will be done this year.

The Matron, Miss Inglis, after seven years of good service as Matron, and in other positions in the Department, retired on superannuation in January, and Miss Newman, Matron of Christchurch St. Helens, has taken her place.

Dr. Agnes Bennett still continues in charge of the Hospital as Medical Officer. Dr. Bennett remarks in her report that the number of albumen cases is a matter for comment, but the ante-natal supervision and treatment have been most satisfactory, only one mother (emergency case admitted after ten fits), and one child (six and a half months premature, and macerated) being lost in the twelve badly toxic cases.

The accommodation of this Hospital is not yet fully taxed. Possibly the lack of an anæsthetic during confinement militates against its popularity with new patients. Old patients up to as many as nine times, return year after year and fully appreciate its advantages.

St. Helens Hospital, Dunedin.

In this, second-established St. Helens Hospital, no changes have taken place. The newly adapted ante-natal department has proved very useful. The medical students have had a number of cases; the patients are now quite used to their presence. Dr. Siedeberg, Miss Holfred, and Miss Gow continue to carry on as satisfactorily as usual. The number of patients admitted has increased slightly, and there have been more outdoor cases.

Dr. Siedeberg states in her report that there were nineteen premature births, three being still-born, one died, the remainder all doing well. One baby was born with a large goitre, delaying the birth. Three babies were detained in the Hospital after the mothers were sent to the General Hospital—one for heart-disease, one Graves disease, one oldstanding dislocation of shoulder.

St. Helens Hospital, Auckland.

The very urgently needed new Hospital for this very busy centre has at last been completed, and has been occupied by patients since the 14th February. The formal opening is deferred until some alterations to the Nurses' Home kitchen and storerooms and laundry have been completed, and a covered way connecting the new wards with the kitchen and Home built. Until this is done the grounds are in disorder, but owing to the urgent need of the accommodation the move into the new wards was made. The staff, although working under some disadvantages, find the facilities for treatment of the patients so much improved that the move was worth while.

The new wards provide for thirty-nine beds inside and two for isolation, but there is ample room for more patients if required. The veranda and balconies are excellent, and open off every ward, so that patients and babies can easily be wheeled out. The labour-room provides for two cases at a time with screen between, and every provision for asepsis is made. The sterilizing-room is alongside, and well fitted up.

Dr. Tracy Inglis remarks in his report that the year has been most successful. The only maternity death was due to an embolism. The morbidity list was large, but was due chiefly to an influenza epidemic. He testifies to the excellent work of the Matron, Miss Broadley, and the nursing staff, and hopes in the new building to be able to retain the cases of cæsarean section, which occasionally have had to be sent to the District Hospital. Dr. Inglis has a full set of 100 slides for lantern lectures to the pupils, which assist greatly in the teaching.

St. Helens Hospital, Christchurch.

At this institution no alterations have been made other than the addition to the laundry of a separate ironing-room. The need of an isolation ward is very great both for the benefit of the patients, who now have to be moved to the Christchurch Hospital when sepsis is developed or suspected, and for the instruction of the pupils in the nursing of cases of morbidity or septicæmia. There is ample room in the grounds for a small isolation ward, which could be moved to the new site when the long-projected hospital is built.

The Matron, Miss Newman, has been transferred to Wellington St. Helens, and Miss McLeod has taken her place.

St. Helens Hospital, Invercargill.

There have been no alterations at this Hospital, but more accommodation is needed. It is proposed to take the room now used as a nursery for patients and to erect a nursery. In the near future it will be necessary to make further additions. The grounds give a good supply of fruit and vegetables.

Townley St. Helens Hospital, Gisborne.

The work of this small St. Helens Hospital has increased during the last year. Alterations are much needed to improve the working-conditions. The grounds are much improved, and supply the Hospital with vegetables.

Seven cases of mothers totally unable to nurse their infants were due to their being run down in health from overwork in country districts. During the year ten infants were admitted from the district for treatment, and two born in Hospital were retained for nine months. All made good progress, and were in good health when discharged.

St. Helens Hospital, Wanganui.

This, the latest of the St. Helens Hospitals, has been doing good work. Patients are now coming in for the second time. Better accommodation for maids is needed, also laundry facilities. The vegetable and fruit gardens are very satisfactory. The doctor's report remarks that the absence of cases of pyrexia reflects great credit on the nursing staff.

WORK OF MATERNITY HOSPITALS UNDER BOARDS.

Hospital.	Births.	Deaths of Mothers.	Deaths of Infants.	Attended Outside.	Pupils trained.
Batchelor Hospital ..	179	..	3	76	6
Lawrence	45	..	4	..	..
McHardy Home	121	1	2	..	5
Wairau	185	..	6	1	8
Picton	58	..	1	..	..
Alexandra Home	179	1	1	121	10
Essex Home	105	..	4	..	2
Cromwell..	44	..	2	..	2
Mangonui	41	..	1	..	1
Hokianga	36	..	..	..	1
Whangarei	133	1	..	2	8
Kawakawa	39	..	2	..	1
Kaikoura	57	..	2	..	2
Oxford	34	..	..	..	1
Waikari	39	..	..	3	2
Naseby	43	..	7	..	3
Masterton	27	1	1	..	..
Rangiora..	114	..	..	..	..
Methven	20	..	..	..	..
Ashburton	90	1	4	..	..
Geraldine	12	..	..	..	..
Te Puke	51	..	..	..	..
Whangaroa	25	..	1	..	..
Salvation Army—					
Dunedin	63	..	2	..	..
Christchurch	41	..	3	..	..
Wellington	52	..	7	..	1
Gisborne	92	..	1	..	..
Auckland	50	..	1	..	..
Napier	73	..	2	..	1
	2,077	5	41	219	54

SECTION 3.—PRIVATE HOSPITALS.

The number of private hospitals in 1922–23 increased to 282. During the year fifty-three new licenses have been issued for medical and surgical private hospitals and twenty for maternity homes. Forty-eight in country places have licenses for maternity as well as general cases, but such double licenses are not granted where it is possible for separate hospitals to be maintained.

Especially for midwifery work, the present law which allows of one case at a time being treated in an unlicensed house militates greatly against the success of a qualified nurse in starting a maternity home in a country town. Five or six unqualified women in a town receiving one case at a time—which allowance is frequently overstepped—reduces the number she can depend on, and causes a very uphill struggle. Medical practitioners in the country towns should recognize more than they do the advantage of having a properly qualified nurse and a licensed private hospital, and refuse to attend patients in these unlicensed places.

Should the law be amended as proposed it should greatly assist nurses, but frequent inspection and the co-operation of Magistrates in imposing adequate fines for infringement of the law will be necessary to prevent the present unfair competition being still carried on.

In many country places where the number of cases is not sufficient, with the small fees charged, to ensure a living for a nurse, I consider that a subsidy from the Hospital Board of the district should be granted at least to enable a start to be made.

The establishment of maternity wards at or in connection with general hospitals does not meet the needs of private patients, and should not do so, as this again would be unfair to the registered nurse and midwife, whose training has been undergone to enable her to fulfil this need of people able to pay for private attendance.

H. MACLEAN,
Director, Division of Nursing.

PART V.—SCHOOL HYGIENE.

SECTION 1.—ADMINISTRATION AND MEDICAL INSPECTION.

I have the honour to submit my annual report for year ended 31st March, 1923.

(1.) STAFF.

The medical and nursing staff of this division numbers twelve school medical officers and twenty-seven school nurses. Owing to the absence during the year of Dr. Ada Paterson, the work of eleven medical officers only is represented in the figures which follow. The retirement from the service of Dr. H. A. Davies at the end of the year is much to be regretted. In the personnel of the school nurses there were a number of changes; this is regrettable, as changes interfere with the continuity of the work, which depends so much on personal knowledge of individuals and local conditions.

(2.) FIGURES RELATING TO THE WORK ACCOMPLISHED.

Owing to the development of the system of monthly reporting, it is possible for the first time to give comprehensive figures relating to the work of the division.

Schools inspected—		
Of roll over 500	129	
Of roll 100 to 500	289	
Of roll under 100	603	
Total	—	1,021
Children examined—		
Complete examinations	53,752	
Partial examinations	48,537	
Total	—	102,289
Letters of advice and notices to parents regarding conditions requiring treatment		34,198
Parents interviewed		3,556
Lectures and addresses to teachers and parents		114
Health talks given to school-children		876

The above totals refer to the work of the school medical officers: the figures for the work of the school nurses are as follows:—

Children examined preliminary to the Medical Officers' inspection	42,349	
Children re-examined to note progress and whether treatment has been obtained	29,396	
Total	—	71,745
Visits to homes in—		
Large towns	8,018	
Small country towns	1,725	
Scattered districts	1,627	
Total	—	11,370
Children taken to hospital or dental clinic		4,190

Much valuable work also is done which cannot readily be represented in figures. Furthermore, records are necessary for two reasons: first, as essential to the intelligent and methodical following-up of the facts discovered; and, secondly, to enable a systematic account to be given of the work accomplished. It will be clear from the above figures that some considerable clerical work is entailed.

(3.) Findings of Medical Inspection.

Percentage figures, it should be borne in mind, do not afford much criterion for comparison with other countries, as there are no international standards for general use. The standard adopted in New Zealand is, generally speaking, a high one, but the standards of individual medical officers inevitably differ somewhat from each other. The following figures relate not to mere physical imperfections, but to defects which actually interfere with health or efficiency, or which are in some way of definitely pathological significance. The percentages are based on the examination of 34,382 school-children, and include all ages :—

Percentage of children found to have defects	88·34
Percentage with defects other than dental	60·40
Percentage of children showing evidence of—	
Subnormal nutrition	7·41
Pediculosis	1·86
Skin-disease	2·83
Heart abnormality	0·90
Postural and structural deformity of the trunk and chest	26·03
Faulty development of the jaws and irregularity of the teeth	13·36
Dental decay	67·16
Enlarged tonsils	11·23
Obstructed nasal breathing (mostly due to adenoids)	3·21
Enlarged glands in the neck	11·25
Goitre	6·20
External eye-disease	0·95
Defective vision	3·18
Defective hearing	0·79

These figures may be considered in further detail and in relation to the three age-groups examined—Primer classes (aged five to six years), Standard II (eight to nine years), and Standard VI (twelve to thirteen years).

Subnormal or impaired nutrition is most marked in Standard II.

Skin-diseases show a general tendency to decrease in frequency as age increases. There are two probable reasons for this : first, a greater knowledge of personal hygiene ; and, secondly, a diminished susceptibility of the skin to infection in the case of the older children.

The percentage of *heart abnormality*, as would be expected, increases with age—being 0·8, 1·01, and 1·11 in the three age-groups. It has not been found practicable to differentiate between organic and functional heart-conditions.

The frequency of *lung-disease* (bronchitis, &c.) found in children attending school decreases with increasing age. A reliable figure cannot be given for lung-disease as a whole, as it generally occurs as an acute illness which prevents the sufferer from attending school.

Deformity of the trunk and chest may be divided roughly into postural deformity and structural (or bony) deformity—the former including stooped shoulders, postural flat chest, and spinal curvature ; the latter, pigeon breast, depressed sternum, and asymmetry of the chest. Depressed lower ribs form a mixed group, being in many cases merely the result of faulty posture, other cases being undoubtedly of rickety origin.

The postural deformities increase in frequency, being 8·08, 11·47, and 15·71 in the three age-groups. This suggests an increasing inadequacy of vitality or muscular tone in these children as growth proceeds. Faulty carriage of the body at the same time undoubtedly reacts unfavourably on the organs of the chest and abdomen, and consequently impairs the health of the whole system.

The structural deformities—which are undoubtedly due to rickets or some serious interference with nutrition in early life—show, on the whole, a tendency to decrease as growth proceeds, thus suggesting gradual recovery as a result of subsequent healthy growth.

True flat chest, associated as a rule with a poor general physique, was present in 0·41, 0·80, and 1·43 per cent. of children in the three age-groups, this steady increase with age suggesting a failure of the chest to develop proportionately with the general growth of the child. Much remains to be done to increase our knowledge of the precise causation and significance of these different types of deformity.

Malformation of the jaws, with or without crowding or irregularity of the teeth, is increasingly manifested with the progressive eruption of the second set of teeth. The exact cause of jaw-deformity is still a matter of some conjecture ; as stated in my last report, it is a disease of modern civilization, and its increase should be viewed with concern.

The figure, 67·16 per cent., recorded for children suffering from *dental decay*, is undoubtedly an underestimation, as slight decay may unavoidably be overlooked when large numbers of children have to be examined. Dr. R. J. R. Mecredy, who has devoted special attention to the recording of dental decay, finds over 90 per cent. of children with actual caries, and a dentist examining with probe and mirror would undoubtedly find a still higher percentage. Dr. R. B. Phillipps says : "Superlatives used too frequently are inclined to lose their effect, but it is only by means of superlatives that one can describe the truly appalling condition of the teeth of the rising generation." Dental disease continues to be our main problem, and consequently special investigations in this connection are valuable. The following investigations by Dr. Mecredy into the incidence of decay at different ages and at different schools are of particular interest. His figures refer to the numbers of teeth showing

evidence of untreated and treated decay. The term "treated teeth" comprises all extracted permanent teeth and fillings of either permanent or temporary teeth; extracted temporary teeth are not recorded. The average number per head of such treated and untreated carious teeth in the primer classes was 7·1; in Standard II, owing to some of the first teeth being shed, the figure falls to 6·2; in Standard VI, when the first teeth have practically all been shed, the figure has risen again to 7·0; and later, in a batch of seventy-six candidates for the teaching profession (between sixteen and twenty-two years of age), an average of 15·3 teeth per head were found to be carious, filled, or extracted. This is clear evidence of the rapidity with which decay of the teeth is taking place in the school-children and young adults of the Dominion.

The number of carious teeth found in different schools throws some interesting light on the causes of dental decay. Dr. Mecredy says: "The relationship of dental caries to the store (confectioner's shop) is indicated by the greater number of carious and treated teeth per head in schools near a store. The actual ratio is as 100 in schools near a store to 73·5 in the schools remote from a store. The amount of caries is therefore over 25 per cent. less in the latter schools. It would appear from these figures that the store, which mainly sells sweets and biscuits to the children, is therefore responsible for a quarter of the dental caries found in schools." Again: "There are two classes of children—apart from the question of the store—who have teeth which are above the average. The first class is found in the orphanages where the diet is strictly controlled, and the second is recruited from the homes of the very poor. In the case of the latter the diet is of necessity the simplest: stale bread takes the place of the fresh bread dear to the heart of the housewife, sweets and sugar play a small part in the diet, and eating between meals is reduced to a minimum."

Apart from estimates of the number of teeth per head showing signs of decay, the percentage of children with perfect sets of teeth is a valuable index of the general state of the teeth of the children. Of the thirty-four thousand children for which statistics are available the number with perfect sets of teeth was returned as 4·8 per cent. This, again, owing to the limited time which school medical officers can spend in examing the teeth, is certainly an overestimate. Dr. Mecredy's estimate is 2 per cent. He finds that the number steadily decreases from the primer classes to Standard VI, being 1 in 27, 1 in 91, and 1 in 166 in the three groups.

Obstructed nasal breathing, mostly due to adenoids, decreases steadily from the primer classes to Standard VI. *Enlargement of the tonsils* shows a similar tendency to decrease. The decrease in these two conditions with increasing age is due partly to the fact that bad cases receive operative treatment, and partly to the tendency of these enlargements to subside with the approach of puberty.

Goitre increases steadily from the primer classes to Standard VI. Its incidence varies enormously in different districts. Very slight enlargements of the thyroid gland also are recorded as incipient goitre. These form an additional 9·77 per cent. which are not included in the figure given above. Some investigations have been undertaken with regard to the local distribution of goitre. For instance, in Otago there is a "high incidence of goitre along the main Clutha watershed, and a low incidence up the Manuherikia and Poolburn watersheds. The incidence of goitre is practically the same in the upper and middle Clutha groups of schools. This would seem to indicate that the causative factor is constant through the whole course of the river; but whatever this factor may be it obviously does not operate up the Manuherikia branch of the Clutha." The working-out of such goitre maps is an important step towards ascertaining the local causes of goitre, whatever these may ultimately be found to be. It should be mentioned that in certain areas goitre occurs in nearly 40 per cent. of the school-children. A valuable paper on the causation of goitre reviewed in the light of the findings in New Zealand was published in the *New Zealand Medical Journal* jointly by Dr. Baker and the Professor of Public Health, Otago University.

Tuberculosis in its various forms is uncommon in children attending school, occurring in less than 0·1 per cent. It should be emphasized that an extremely important precursor of tuberculosis is a lowered state of general health—and this is not uncommon. The problem of tuberculosis in children of school age is therefore largely one of preventing malnutrition and maintaining a high standard of general health.

Of *infectious diseases*, measles, whooping-cough, and scarlet fever are the cause of an enormous amount of damaged health. Common colds are collectively a serious problem, being the direct and indirect cause of much general ill health and loss of efficiency, as well as being one of the chief causes of nose, throat, and ear trouble.

General State of Health of the Children.

Apart from the very serious extent of disease of the teeth, there are other reasons why we should be far from satisfied with the health of the rising generation in this country, where the opportunities for good health are so exceptional. Dr. Phillipps says: "I find very few children who come up to the standard which I have mentally fixed as readily attainable. Many children are of comparatively poor physique, and their muscular tone is poor." Again, he refers to the "large number of pale faces, the almost invariable drooped shoulders, and the frequent poor chests." Dr. Mecredy, speaking of malnutrition and anæmia, says: "A poor home environment is often responsible. A faulty diet, an overcrowded and ill-ventilated sleeping-room, short hours of rest, and a life in the streets in the daytime are prominent factors in wrecking many a child's physique. At the opposite pole we find the child of the well-to-do parent similarly suffering from malnutrition and anæmia. The history in many of these cases suggests a lack of parental control. The child eats when and where he pleases, and generally indulges to excess in lollies, biscuits, and cakes. Lack of sleep, frequent visits to the 'pictures,' and a love of the indoor life are also often noted in these children."

The fact remains that we can ill afford to be satisfied with the health of the rising generation: widespread defect is evident in children of school age, which, though not immediately serious in its power to incapacitate, yet in the aggregate and in its ultimate effects places serious limitations on the possibilities of health and efficiency in the adult population. The vast bulk of this defect, however, is readily preventible by a rational and common-sense regard for the simple necessities of healthy upbringing.

SECTION 2.—TREATMENT OF DEFECTS.

According to the facilities for treatment in different districts from 40 per cent. to 84 per cent. of the cases notified have received treatment. A new system of estimating the proportion of cases treated has been set in operation during the year by which more complete information will be obtainable annually regarding this important matter. The main difficulty in the way of many parents obtaining the necessary treatment for their children is that of expense, and in country districts the long distances to be travelled and the time involved. In a small proportion of cases obstinacy and indifference is the stumbling-block. Generally speaking, however, the vast majority of parents welcome the advice of the school medical staff and are whole-heartedly anxious to obtain any treatment which may be required in the interests of their children's health.

In connection with treatment, special reference should be made to the progress of the valuable work carried on by Dr. Eleanor Baker in connection with the treatment of goitre with salts of iodine. The results have been of an encouraging nature, roughly half the cases deriving considerable benefit from the treatment.

A successful camp for children whose health and nutrition were below par was again conducted this year by Dr. Elizabeth Gunn in her district. A total of ninety-six children were treated, all of whom gained considerably in health and nutrition as a result of the simple diet, ample rest, and free open-air life in the camp; a special feature was made of heliotherapy. In connection with this and previous camps held by Dr. Gunn the Department is much indebted to the generosity of Mr. B. P. Lethbridge, on whose ground the camp was held.

The Notifying of Parents.

As regards the general methods of conducting the work, this has been briefly described in previous reports. Steady progress has been made in several important respects. The success of the work depends essentially on getting into personal touch with and awakening the individual interest of both children and parents. This takes time: it necessitates more intensive work. The plan of inviting the parents to be present during the medical examination of their children has this year been more generally adopted. By this method a definite link is established between the parent, the medical officer, and the child; the child's health can be more fully discussed, and doubts and difficulties cleared up. Parents welcome the opportunity of personally consulting the school medical officer, and very encouraging attendances of parents have been reported—from 50 to 80 per cent., and occasionally 100 per cent., attending. The credit of having first adopted this plan in New Zealand must be given to Dr. Elizabeth Gunn, and it is the aim of the division to apply it generally.

When parents do not attend the inspection notices are sent to those whose children require treatment or special attention. In filling in these notices some medical officers endeavour to make them as personal as possible. Dr. Baker especially—who originated the plan of elaborating the formal notice to suit each particular case—finds the extra work entailed to be well worth while. There is no doubt that when the parent cannot be interviewed the personal note is the next best method of approach.

SECTION 3.—EDUCATION AND PREVENTION.

It should be clearly recognized that there are two main aims in the school medical officer's work: one the ensuring of necessary treatment, the other—fundamentally of much greater importance—the prevention of the need for treatment by improving the child's habits of life and the hygiene of the home. Work in both these directions is carried on to a great extent simultaneously. Much valuable information on matters of general health is spread amongst parents through the medium of the various printed leaflets. But for a large class of parents the leaflet is not a very effective means of approach: the message must be delivered more personally. Much general information, however, cannot be given to parents individually during the inspection of their children: the parents must also be addressed collectively. Most school medical officers, however, have found this on the whole disappointing work. Parents are not as a rule interested in health in a general way; their interest is really alive only when the immediate health of their own particular child is concerned. The parent's interest is therefore best aroused through the child. For this reason health talks to the children have largely replaced addresses to the parents; but the two may sometimes be combined successfully by inviting the parents to be present when the children are addressed. I have found that parents attending these addresses take a particularly keen interest in what is told to their children, and they are thus in a better position to co-operate in carrying out the principles of health in the home.

Health Talks to Children.

In improving the health habits of the rising generation the child's willing and interested co-operation is absolutely essential; and furthermore, the child whose interest has been effectively awakened will himself instruct his parents. Dr. H. J. C. Wilkie says: "The children are more accessible and more receptive, and carry home what they are taught." Dr. Rosa Collier, in the same connection,

writes: "The children go home and discuss what the school doctor has told them. Where the mother is difficult to reach the child is the convenient medium." Dr. Baker finds that "school-children make a very interested audience, entirely different from adults." And, finally, Dr. A. Clark's experience is that "propaganda work amongst the children (the teachers being present) is of far greater value and importance than popular lectures." For my own part, I do not hesitate to say that to visit a school and not find time to address the children is to neglect the most vitally important part of the work.

The problem of how best to present the subject to the child, how to awaken and maintain his interest, and ensure that what is taught is put into practice—this is a matter to which the serious attention of both school medical officers and school-teachers should be specially directed. I have myself made a practice of giving a carefully planned talk on the essentials of healthy living to the children at all schools visited; and several school medical officers also have made a special feature of this aspect of the work. One soon discovers that correct answers to questions mean little in practice. The teaching must be lived, and to this end the children must be vitally interested. In the case of children from, say, five to seven or eight years of age, a few of the most important practical matters of health are perhaps best presented in the form of a simple story or fairy-tale. For older children the rules of health may be effectively represented as the rules of a game with penalties—sooner or later, and in one form or another—for continued disregard of the rules. Other useful methods are to represent the body as a machine which, like all machines, must be cared for in certain ways and driven with skill; or as a building which must be soundly built and for which the best materials must be selected. The application and practical truth of such health teaching must be frequently impressed on the children by concrete examples. It is, moreover, important to encourage healthy living not so much with the idea of avoiding ill health but because of the joy and beauty of health, because of its essential rightness, its value in life. On account of the outstanding importance of this aspect of the work and to give point to my remarks, I quote in full the statement of the "Rules of the Game of Health," which I have used as the basis of these health talks.

THE RULES OF THE GAME OF HEALTH.

1. Take plenty of regular outdoor exercise—running, jumping, swimming, skipping, climbing, games, &c.
2. Live as much as possible in the open air and sunshine. Keep your windows open day and night as wide as the wind and weather will allow.
3. Go to bed early; have ten or twelve hours of sound sleep with door and windows open.
4. Breathe through your nose; keep your mouth closed.
5. Have three meals daily; do not eat between meals.
6. Eat slowly and chew thoroughly; chew your food to a cream before swallowing.
7. Eat brown bread in preference to white: have it toasted or dried in the oven. Have two kinds of vegetables daily; have green vegetables several times a week. Eat fruit at the end of every meal. Eat meat only once a day. Drink one or two cups of milk daily.
8. Avoid lollies, chocolates, biscuits, and cakes, especially between meals. Do not take much sugar. Avoid pickles and condiments. Do not take much tinned food.
9. Avoid tea, coffee, and tobacco while you are young.
10. Do not wear tight clothing or tight boots. Do not wear too much clothing.
11. Always wash your hands before eating; keep your finger-nails trimmed and clean. Have a cold or cool bath every morning, followed by a brisk rub and exercise. Have a hot bath at least once a week.
12. Keep your mouth clean. Train your tongue to clear away all particles from your teeth after meals. Brush your teeth, especially after your evening meal.
13. Accustom your bowels to act regularly at least once a day; after breakfast is the best time.
14. Stand and walk erect; do not slouch. Be upright in body and mind.

Remember: If you do not keep the Rules of the Game you will pay the penalty sooner or later in pain and ill health. Treat your body with respect, take a pride in being healthy, do your part in keeping the Rules of the Game and you will reap your reward in health, happiness, and enjoyment of life.

I wish specially to thank Messrs. Whitcombe and Tombs for their generous offer to print an abbreviated form of these rules in the cover of school-books sold by their firm.

THE RESPONSIBILITIES OF SCHOOL-TEACHERS.

The efforts of the school medical staff in establishing a truer regard for the fundamentals of healthy living can of course be of little avail unless followed up actively and with sincerity by the school-teachers. The teachers have a continuous influence on the children which in the long-run must count for much more than occasional visits by a school medical officer. While much has been done by school medical officers towards establishing sounder teaching in the schools of their districts, it must be recognized that the responsibilities of teachers in regard to the subject of health require to be clearly defined by the central authorities and the whole matter put on a satisfactory official basis. The entire machinery of education must recognize health as the first and most fundamental subject in the curriculum, and full credit in the grading system should be given to teachers for their efforts in this direction. With this object a supplement to the syllabus has been prepared which the Director of Education has promised to issue.

HEALTH WEEK LETTERS TO SCHOOL-CHILDREN.

In connection with the Health Week activities, a set of health letters was prepared in Christchurch by Drs. Baker and Phillipps, and later in Wellington by myself, and read by the teachers to the children of the upper standards. These letters were much appreciated by the teachers as a basis for their health teaching in the schools, and the Wellington letters have since been amplified with a view to their publication.

Health Leaflets.

Several of the Department's leaflets were revised during the year and some additions made to the original number. In this connection I have to acknowledge contributions by Drs. Baker, Gunn, Clark, and Mecredy. The leaflets play an important part in the propaganda of the division, and in addition are used to a considerable extent by teachers as the basis of their health lessons in the schools. The most important of these publications, a pamphlet entitled "The Health of Children, with Special Reference to Food and Feeding," prepared by the Directors of Child Welfare, Dental Hygiene, and myself, was published during the year. It occupies an important place in briefly defining the lines along which instruction should be given in regard to this vital subject of diet. The pamphlet is now being amplified and reprinted.

SECTION 4.—THE WORK OF THE SCHOOL NURSES.

Each school nurse has her allotted district and set of schools. She is an essential factor in the work. By the majority of parents the nurses are warmly welcomed, and they receive much gratitude for the advice and assistance which they give. Dr. Clark says, "The school nurse is a most popular and well-known person in the school community, and her influence is great and good with the little folk." For the further extension of the school medical work—indeed, in order to obtain the full benefit of the work of the existing staff of medical officers—a much larger number of nurses is required.

SECTION 5. — CO-OPERATION WITH UNIVERSITY MEDICAL SCHOOL AND TEACHERS' TRAINING COLLEGES.

The co-operation of the Professor of Public Health and Bacteriology at the Otago University Medical School should prove of far-reaching value to the work of the division. Lectures on the scope and aims of the school medical service as being an important branch of preventive medicine have been included in the public-health course for medical students, and this should go far to establish a greater degree of co-operation and understanding between the practising doctor and the school medical officer. These lectures were this year given by Dr. Mecredy, one of the school medical officers of Otago. The keen co-operation of the home-science department of the Otago University is also very much valued.

At the majority of the teachers' training colleges, by request of the training-college authorities, series of lectures have been given by the school medical officers. It is becoming more and more necessary to define the scope of these lectures and their relation to the general course in hygiene. This of course is bound up with the whole matter of the school-teachers' responsibilities in regard to health training in schools, to which reference has already been made in this report. As yet the school medical officer has no official status in the training college; on the other hand, it would be difficult to overestimate the practical importance of the sound training of prospective teachers by the school medical staff.

SECTION 6.—PHYSICAL EDUCATION: CHILD WELFARE.

Physical Instructors.

While the staff of physical instructors is controlled by the Education Department, it must be recognized that the school system of physical education is an integral part of the health supervision of the school-child; it is important both as a remedial and as a preventive measure, and for a large class of defects—postural and other deformities of the chest and spine in particular—it is the only generally available means of treatment. The reduction of the staff of physical instructors is therefore very much to be regretted, as the efficiency of the teachers' work depends on adequate instruction and supervision by the itinerant instructors. It is significant that in one district which is particularly well staffed with physical instructors the resulting high efficiency of the general physical training resulted in there being so few bad cases of postural deformity that it was unnecessary to continue the special corrective classes this year, whereas in districts where the staff is inadequate some school medical officers have even questioned the value of the instructors' work when spread over such disproportionately large areas. It must be emphasized that efficient physical training for school-children is an indispensable accompaniment to the work of the school medical officer.

The Organized School Lunch.

Many children, owing to the distance of their homes, of necessity take a sandwich lunch with them to school. There are a number of children also who would be greatly benefited by taking lunch in a quiet and orderly fashion at school in place of hurrying to and from their homes for a hasty meal with the nervous anxiety of being late on their return. For health reasons it should be compulsory for children lunching at school to sit down and eat their lunch in an orderly fashion without hurry. This can be readily arranged for under schemes of self-government with little extra work for the teaching staff. Parents would undoubtedly welcome such supervision of the midday school meal. It is important that the organized lunch should take its proper place in the curriculum as a valuable item in the practical health training of school-children. It affords a unique opportunity for practical training in good manners as well as for the illustration of important principles of dietetics. While excellent work has been done in some few districts in establishing the organized school lunch, much still remains to be done.

Tooth-brush Drill.

For some years Dr. Gunn has had tooth-brush drill established in practically all the schools in her district, and she very highly extols its value. A move in this direction has followed this year in the Auckland District, where, at the instigation of the school medical officers, the Education Board issued instructions to its teachers that tooth-brush drill was to be carried out at all schools. Some opposition from the teachers resulted, but a compromise has since been arrived at. Dr. Wilkie says: "The drill has been started in all of the schools I have inspected since September. Its beneficial effects are seen even after quite a short time." Other medical officers also have established tooth-brush drill in some of their schools.

School medical officers, however, are not unanimous that organized brushing of the teeth as a school routine is the best way of meeting the problem. Dr. Collier says: "I am glad to say that I do not now think it as necessary as it first seemed. The children are responding to the talks that have been given at all the schools, and are taking a live interest all over the district. There are very few septic mouths, and I hope before long there will be none at all." Dr. Clark says: "I do not advise the inauguration of schemes of tooth-brush drill, as this tends to remove the responsibility for the cleaning of the teeth from the children to the teachers. At the same time I enlist the co-operation of the teachers in frequent inspection of the pupils' teeth." It is important to recognize that tooth-brush drill is only one of the ways of meeting the problem of dirty teeth in school-children, and that as an educational measure it has drawbacks. Indeed, excellent results are being obtained by school-teachers placing the responsibility on the children and insisting on the idea of a clean mouth as a condition of common decency even apart from health. Dr. J. N. Keith reports valuable work in this direction. It must however become more generally recognized that the hygiene of the mouth is an important responsibility of the school-teacher as well as of the school medical officer.

SECTION 7.—SCHOOL BUILDINGS AND SCHOOL SANITATION.

As the designing of school buildings is the official concern of the Education Department rather than of the Department of Health, I only make brief reference to this important subject. As a result of recent scientific research our ideas of the relation of ventilation and exercise to bodily health have developed rapidly, and there is little doubt that the open-air school in some form or another will before long be recognized as an essential feature in education. The question should therefore be seriously considered whether the erection of buildings of brick and stone, designed to last a century, is not a mistake in view of the fact that our conception of the ideal in school buildings is undergoing change. It is important to recognize that a satisfactory school building need not be expensive, and it would appear desirable to erect light structures capable of alteration rather than massive buildings which it would be practically impossible to alter should it later be found desirable to do so. In the designing of school buildings and in the general planning of the school routine, much more deference should be given to that beneficent health-giver the sun, and to the maintenance of the natural warmth of the body by frequent bouts of exercise rather than by artificial means of heating. The practicability of more open-air teaching and the great benefit resulting to the health of the pupils has already been amply demonstrated. I wish specially to acknowledge a valuable report by Dr. Phillipps on this important subject.

Sanitation and Cleaning.

As regards the sanitation and cleaning of school premises much is to be desired. The school should inspire a high ideal and be a practical model to the children in regard to the principles of cleanliness, neatness, and order. How far we are from this ideal! No doubt there are often difficulties in the employment of suitable labour for cleansing purposes, but these difficulties, it should be emphasized, can be largely solved under voluntary self-governing schemes by which the children themselves assume the responsibility. The educational value of such methods is very great, and a number of schools have already adopted the plan with complete success. In view of the importance of a bright and cleanly school, from the educational point of view as well as of health, it should certainly not be possible for a school medical officer to report that "the majority of schools are dirty and very badly kept." In order to assist School Committees and Education Boards in maintaining higher standards in this matter a leaflet has been issued in which simple sanitary requirements are set forth.

SECTION 8.—RELATION TO EDUCATION BOARDS, SCHOOL COMMITTEES, AND TEACHERS.

During the last few years school medical officers have been brought into closer touch with Education Boards and School Committees. School medical officers now report regularly to their Boards, and in many cases by the Boards' courtesy the school medical officer personally attends the monthly meetings. It is the practice also to meet the School Committees as far as possible, and in general a very cordial relationship exists between the school medical officer and these bodies. Again, on behalf of my staff I wish to express appreciation of the co-operation and assistance of the school-teachers in the interests of the health of the children. The following extract from a letter to a school medical officer from the head teacher of a large high school illustrates the interest taken by many of the teachers: "I wish to say how much I appreciate the help rendered by yourself and the nurses. A twofold result has been manifest: first, the children have been led to make greater efforts in caring for themselves in the matter of cleanliness and in attention to their teeth; secondly, the parents are now paying far greater attention to the physical well-being of their children, there being a distinct improvement in cases where before were laxity and neglect." Again, the head teacher of one of the large town schools, writing of the progress made during the last few years, says: "The health and general conditions obtaining in our schools have vastly improved. The medical examination of school-children has become one of vital and effective interest."

SECTION 9.—MENTAL DEFICIENCY: SEX EDUCATION

Mental Deficiency.

The inadequate provision for feeble-minded children continues to be a blot on our social scheme. Year by year the problem increases in urgency and magnitude. I referred to this subject in my last report, and I again quote Dr. Baker's contention that "With a population of a million the problem could, I think, be faced squarely and dealt with, but as the population increases it will get out of hand." The problem *is* steadily getting out of hand.

Sex Education.

The report of the Venereal Disease Committee clearly gives expression to the opinion that sound and wholesome training in childhood should be regarded as a fundamental in dealing with those evils of which venereal disease is merely a concomitant. At the request of the Education Department, two articles were prepared during the year for the *Education Gazette* outlining the principles and scope of the subject. Educational authorities are agreed that even without giving any specifically sexual instruction—which is essentially the function of parents—the school can do much to create a more natural and wholesome attitude to sex matters in general. A problem of this kind, however, related as it is to some of the most fundamental problems of human life, is not one which should be entered upon without the most careful planning.

SECTION 10.—MEDICAL EXAMINATION OF CANDIDATES FOR THE TEACHING PROFESSION.

This is a recent and important addition to the school medical officer's work, and, as a general scheme, was carried out last year for the first time. The results of the examination of these teachers when correlated with the findings of the medical inspection of school-children are of very great value in affording a more extended view of the health of the rising generation.

The conclusions I drew in my last report regarding the extent of dental decay in these candidates have been amply confirmed by a more extensive survey this year. Records were kept of the teeth of 344 candidates between sixteen and twenty-two years of age, and the total number of teeth was estimated at thirty for each individual:—

> Total number of teeth, 10,320. Number carious, 431; number filled, 1,944; number extracted, 1,453: total number of teeth which had suffered decay, 3,828—*i.e.*, 37 per cent.

Well over a third of the second set of teeth have therefore decayed before adult age is reached. One only of the 344 candidates presented a complete naturally sound set of teeth. I should emphasize that, as these examinations are made without the aid of dental probe and mirror, fairly obvious decay only is recorded.

Of the 344 candidates 10 per cent. were found to have suffered from major illnesses, including pneumonia, pleurisy, and empyema, typhoid, infantile paralysis, rheumatic fever, sarcoma, appendicitis, &c. Between three and four out of every hundred had suffered from appendicitis. This high incidence of appendicitis considered along with the extensive dental decay already referred to is at least suggestive that a general underlying cause is at work. Dental disease, appendicitis, poor chest-development, anæmia, &c., should, I believe, be regarded not so much as isolated diseases or defects, but as symptoms of damaged health resulting from neglect of the primary essentials of healthy living. One thing is clear: that, apart from mortality, an enormous amount of avoidable wastage of health and efficiency is taking place during the first couple of decades of life. How very far we fall short of the ancient ideal, "*Mens sana in corpore sano.*" It is not by medical treatment that this wastage of health is to be prevented—but by education. Progress in preventive medicine lies largely in the direction of attending to the common things of daily life, the rationale of personal habits. Yet in our educational scheme we have as yet little realized the enormous possibilities in the teaching of the fundamentals of the art of living.

E. H. Wilkins,
Director, Division of School Hygiene.

PART VI.—DENTAL HYGIENE.

In connection with the work of my division I beg to submit a report for the year ending 31st March, 1923.

SECTION 1.—STAFF, ACCOMMODATION, EQUIPMENT.

Staff.

There are eight officers, allocated as follows: Mr. Dunn, supervising the training of the dental nurses; Mr. Elliott is carrying out the treatment for patients at King George V. Hospital, Rotorua, Pukeora, and Hanmer Sanatoria; two officers conducting clinics in the Auckland District; one officer at Wanganui; one officer at Nelson; one officer at Dunedin; one officer at Christchurch; and one at Timaru General Hospital.

I regret to have to report the resignation of Mr. Peacock, Assistant Supervisor, who has rendered able assistance in the training of the nurses. Mr. Peacock is taking up general practice, and in this connection I would emphasize the difficulty the Department will have in obtaining and keeping in the service professional men with suitable qualifications for responsible positions unless a salary is given something approaching that which can be earned in private practice.

I am pleased to be able to report favourably on the staff as a whole. I would again particularly emphasize the valuable service rendered by Mr. Dunn and his late assistant Mr. Peacock in the training of the dental nurses.

The following is a summary of the operations performed and treatment carried out from January, 1922, to December, 1922: Fillings, 24,603; extractions, 25,436; other operations, 12,857: total, 62,896. The above figures include treatment performed by dental trainees. Besides the above, many children have been examined and teeth charted, duplicate charts being sent to parents, resulting in the treatment of many cases by private practitioners or at hospitals.

Accommodation.

Since my last report we have opened a clinic at Wanganui, and in a response to a circular sent through Education Boards, and personal interviews with Boards and Committees, I am pleased to be able to say that we have promises of suitable surgeries fitted up, free of expense to the Department, at Napier, New Plymouth, Invercargill, Avondale, Auckland district, Motueka, Westport, Greymouth, and Hokitika, and expect to be able to report shortly that several others will meet the Department in the same generous manner. The saving to the Department that will be effected can be readily estimated when it is pointed out that the average cost to the Department of fitting up, apart from equipment, rooms suitable for clinics was £140.

Equipment.

Up to date we have been equipping clinics with second-hand material from the Defence medical stores. As their stock was becoming exhausted I drew up lists of requirements to be purchased abroad for the new clinics being staffed by the dental nurses. Most of this has arrived. In this connection I consider it imperative that definite arrangements be made for the regular forward purchase and storage of equipment, so as to avoid being forced to buy in the local market, with the uncertainty of having orders fulfilled, together with its high prices.

SECTION II.—DENTAL NURSES.

The following report of Mr. Dunn, the Supervisor, speaks for itself:—

"The period of two years' training for the dental nurses in my charge closes with the current month, and I beg to submit my report.

"Of the thirty-five probationers appointed in April, 1921, twenty-nine have completed the course laid down. One, I regret to say, is deceased, one left to be married, and four resigned under circumstances known to the Public Service Commissioner. These twenty-nine students have now completed two calendar years' training, a period equal to three academical years, and they have made good use of their opportunities. After a period of some months' introductory study and practice on dummy patients they began practical work in November, 1921, and since that time have been occupied under my personal supervision, and for a year under the careful instruction of Mr. Peacock, in dentally treating children in the large clinic which forms the principal part of the training-school. During that time 30,000 dental operations have been performed, chiefly on children of tender age. From the very first it was clear that you had made no error in supposing that women would prove themselves specially adapted to this work. During the period of training the trainees have been continually under my eye. I have seen that they have constantly improved in technical skill and manual dexterity, and I have now much pleasure in reporting that I consider them well trained and efficient for the range of work for which they are intended, and that you may with every confidence send them out to the stations to which you have allotted them.

"I should like to add to this report that I consider that one of the lessons learnt during the last two years is that it is neither just to the girls nor in the interests of the service to keep the work going on in the training-school for long unbroken periods. The constant strain of study work; the wear-and-tear of life among other girls in a large clinic; the nervous output resulting from handling so many children, often dental wrecks, and from dealing with so many parents, are altogether too heavy during the training-years; and I would submit that it might be better both for the trainees and the Supervisors to be able to *look forward* to fixed periodical vacations, rather than such rests should be given, as they have been in the past, when all have become stale and there are obvious signs of a general breakdown."

With regard to the nurses who have completed their training, I expect to place most of these out towards the end of this or beginning of next month. In the meantime I am visiting the different districts to arrange for suitable clinics.

Fifteen new probationers were appointed in October, 1922, and are making good progress with their studies; but it will be some months before they will be able to take up any practical work. This will necessitate the closing-down of the clinic for some months, as the present staff is depleted, and the gradual reopening for children under school age on the plan followed last year.

Propaganda.

This is not being neglected. During "Health Week" in Wellington the Department had an exhibit in the Town Hall which attracted a very considerable amount of attention, and the nurses in attendance were able to give valuable information to the many eager inquiries.

The nurses are instructed to take every opportunity of imparting useful information to parents, and, as a number of them are being placed out, good results may be anticipated.

Mr. Dunn gave two lectures on prevention of dental disease. I also have taken advantage in interviewing meetings of committees and parents of addressing them on the same subject. I cannot stress too much the importance of this branch of the work.

Thos. A. Hunter,
Director, Division of Dental Hygiene.

PART VII.—MAORI HYGIENE.

I have the honour to submit herewith my annual report for the year ending 31st March, 1923.

SECTION I.—NATIVE HEALTH.

Maori Health Councils.

All these bodies are now in working-order with the exception of three in the South Island, which I have not been able to complete by correspondence. Owing to the smaller number distributed over a wide area and the less urgent need, concentration of organization has been confined to the larger population of the North Island.

Sufficient time has now elapsed since the organization of these Councils to know that no better system could operate for the betterment of health and sanitary conditions generally amongst the Natives than these bodies as at present constituted. Through these bodies we are able to reach the Native people with advice regarding the necessary precautions to be taken to preesrve health and organize against epidemic diseases.

It is a difficult problem to organize the white people in cases of emergency, let alone the Natives, but with the reorganized Councils co-operation can be obtained almost immediately. Improvements in living-conditions are continuously being made, especially to dwellinghouses, and sleeping on damp earthen floors is almost a thing of the past. Almost all communal meeting-houses, which exist in every kainga, have been floored and ventilated. Water-supplies are being sought, and keen interest generally displayed. Good water is one of the first elements towards good health, and when we have supplies established where needed we can look forward to still more improved conditions amongst the Native people.

We also use these Councils for the dissemination of all matters incidental to Native health, registration of births and deaths, and the compilation of information regarding the culture of the race, in order that the past may assist us in the present and pave the way for the future. In the registration of births and deaths we find them useful, and by gradual educational methods I hope in time to make these bodies a valuable agency in completing this very necessary registration. We are able to get far more information through this source than has been obtained in the past, and hope to be able to render greater assistance to the Registrar-General in the future.

It must be understood that in dealing with Maoris, strict supervision must be coupled with tact in order to lead the people to help themselves. Real propaganda work necessitates personal visits and the attendance at important Maori gatherings in order to be in touch with current Maori opinion and assist in directing it into useful channels.

The merging of the Health Act with the Maori Councils Act has meant a large amount of work to supervise and control, both through correspondence and personal advice.

Since the inauguration of these Councils we have been able to put in two substantial water-supplies, one at the cost of £150, connections being made to all dwellings by pipes. Details and instructions in connection with these works were attended to from my office. The first supply is in the Arawa Maori Council district, and the latter in the Whanganui. Both these Councils were assisted by the Hon. the Native Minister, who granted subsidies in both instances. We have approximately £1,000 to credit of these Councils, and I am having this money utilized in the carrying-out of the most urgent sanitary works within those districts who have their own funds available. Something will need to be done for those who have not as yet raised sufficient money.

Native Health.

I am pleased to say that the health generally of the Native people shows improvement over that of last year, and this to my mind is in no small measure due to the activities of our Maori Health Councils, co-operating under the guidance of our Native nurses and Inspectors.

We have had outbreaks of typhoid in the northern portions of the Island, Bay of Plenty, and East Coast districts. The spread has been confined, and has not had any far-reaching effects.

Inoculation.

Anti-typhoid inoculation has no doubt played its part well in connection with this disease, especially so in the Bay of Plenty districts, where typhoid had become endemic. The number of cases during the past year compared with previous outbreaks certainly go to show that we will, with our sheet-anchor "Inoculation," coupled with strict supervision and general clean-up work by our Councils, soon be able to look upon this disease as practically a thing of the past, or at any rate reduced to a minimum.

It must of course be also understood that Natives are becoming more amenable to hospital treatment and to instructions given by our Native health nurses, who are continuously on the alert and give early advice, which means that cases are immediately located and thereby the spread minimized.

The total number of inoculations done amount to 2,317. These figures represent inoculations completed in the vicinities where typhoid was present or had existed. The work is being continued throughout the country as circumstances permit.

Tangis and Huis.

The sanitary conditions surrounding these gatherings are being carried out in a highly satisfactory manner, no complaint having reached me during the whole of the twelve months just past. Sanitary committees are set up to carry out the terms of the Maori Health Council by-laws, and in some parts policemen have been appointed to see that the conditions are complied with.

Latrine accommodation for both sexes is established, and a special feature is the removal and destruction of the refuse. In most cases this is done as a matter of routine by the Village Committees themselves. We do, as in the past, instruct our nurse and Inspector to keep a watchful eye on these gatherings in case of emergency. At an unveiling at Rotorua during last month, when some two thousand Natives gathered, the whole of the sanitary arrangements were under the control of the Arawa Maori Health Council, and no fault could be found with the manner in which this huge concourse of Natives was managed. These improved conditions have been materially assisted by the inauguration of our Health Councils, and for this reason alone their existence is justified.

Maori Health Nurses.

Our nurses continue to render yeoman service amongst the Natives, and in many instances to the white population also. Their services are highly appreciated by the Maori, and constant applications have been received to establish nurses in new districts. It is on very rare occasions any opposition is encountered, and generally speaking all are ready to comply with her instructions.

In view of the importance of the work our nurses are doing, under many difficulties, I have no hesitation in stating that no other service would be more sadly missed than that of our nursing service amongst the Natives.

Native Health Inspectors.

We have two Native Health Inspectors, one operating in the northern portion of the Island and the other in the East Coast district. They both belong to the Native race—the advantage being their intimate knowledge of the Maori language and customs. They are both doing excellent work amongst the Natives, especially regarding sanitary matters. The success of their work is found in the co-ordination of their duties with our various Health Councils. The services of both these officers are also greatly utilized by local bodies and Medical Officers of Health.

SECTION 2.—MEDICAL ATTENDANCE AND SUPPLIES.

Subsidized Medical Officers.

No complaints have reached me from the Maoris regarding the reductions made in the number of these appointments, and I consider the existing scheme to be working satisfactorily.

Medical Supplies.

These are still being supplied in moderation to Native-school teachers for distribution to Natives in isolated districts where a medical man is not accessible. The teachers are ever ready to do their utmost in attending to health matters amongst these people, and their services are highly appreciated.

Propaganda.

This is a very important branch of the work incidental to my division. Circulars on illness, precautionary measures, &c., and advice generally are continuously being submitted through our Councils, and letters received show how greatly these efforts are appreciated and acted upon. We reach also a large number of people through the pages of the Maori newspaper *Te Toa Takitini*, to which articles are frequently supplied on epidemic diseases and health matters generally.

SECTION 3.—DEMOGRAPHICAL.

Population.

The Maori population according to the census of 1921 was returned as 52,751. In spite of a mortality of well over 1,000 due to the influenza epidemic of 1918, this shows a material increase over the previous census (in 1916) of 2,975. This shows an increase over the first proper census (in 1906) of 5,020.

Population under Fifteen Years.

A gratifying feature is the percentage increase of the Maori population under fifteen years of age. In 1891 the percentage of under fifteen years to the total population was 34·1. This percentage has steadily increased to 40 per cent. in 1921.

Proportion of Sexes.

A factor viewed with apprehension has been the great preponderance of males over females. Authorities consider that when this disproportion becomes excessive it spells race-extinction. In 1891 the number of females per 1,000 males was 832. The number of females since then has steadily increased to 890 in 1921. In the previous census of 1916 it reached 919, but as there were such a large number of males absent on war service it was not a true racial proportion. From statistics gathered by this office from Native-school teachers, the proportion of females is still further increased. For 4,500 Native-school children the proportion of females to 1,000 males was 926. As this forms some indication of the race of the near future, the risk of extinction by an excessive preponderance of males seems to be disappearing.

Dilution of the Race.

Though the total population, as shown by census returns, has been increasing, it does not follow that the Maori will continue to exist as a distinct full-blooded race. The greater European population by its very increase is rendering the Maori sparser and sparser, as it were, in the total population of the country. In 1891 there were 14·9 Europeans to one Maori. This has steadily increased until in 1921 there were 23·6 Europeans to one Maori. This increasing external dilution must prove a factor in affecting the distinctive culture of the Maori, and with better education and improving material conditions lead to internal dilution through increasing intermarriage.

Miscegenation.

In the census returns the numbers of half-castes living as Maoris and those living as Europeans are given. For 1916 the percentage to the total Maori population works out at 12·7 per cent. This, however, is no true criterion of the amount of miscegenation, as fractions of European blood less than a half are counted as Maoris. In 1919, of 814 men of the Maori Battalion, 48 per cent. had European blood. Of the 4,500 Native-school children investigated in 1922, the percentage with white blood was 50·1. These figures can only be taken as an approximate indication of the considerable amount of miscegenation that has taken place. No exact figures can be arrived at until the entire population is subjected to scientific examination according to the genealogical method. Sufficient data, however, is available to show that certain factors exist which, combined with the work of the Departments of Health and Education in assisting the inherent adaptability of the people, must sweep away barriers and inimical conditions that during the confused period of the mixing of two distinct cultures have done so much to retard the progress of hygiene and health amongst the Maori people.

Not the least important factor towards improving health and sanitation is the activity of the Native Department in clearing up the confusion that has existed around Maori land-titles, and the permitting of the individualizing of interests to enable the Maori to utilize his resources to the physical betterment of himself and his family.

Te Rangi Hiroa,
Director, Division of Maori Hygiene.

PART VIII.—HOSPITALS AND SANATORIA: EXTRACTS FROM ANNUAL REPORTS OF MEDICAL SUPERINTENDENTS.

SECTION 1.—QUEEN MARY HOSPITAL, HANMER.

Dr. P. Chisholm, Medical Superintendent; Miss Thurston, C.B.E., R.R.C., Matron.

Hospital for Women.—The most important of the improvements in the Hospital during the past year has been the establishment of the Women's Hospital. Alterations to the houses leased for this Hospital were completed at the end of October, and patients were admitted in November; the Hospital became full a fortnight later, and since then there have been no empty beds. In as far as one is able to convert old houses, this section of the Hospital is satisfactory. It has been comfortably furnished, and is comparatively easily worked. Further few improvements are required, the chief one being the sheltering of the covered veranda between two of the buildings. Another matter which would need to be considered by the Technical Inspector is the heating of what is known as the second house. It could, I believe, be done by the present hot-water service, but I would prefer Mr. Allen, the Technical Inspector, should consider this. In respect to the development and success of this Hospital the erection of a suitable Women's Hospital is absolutely necessary.

Heating.—Improvements have been made in the central heating-system and has added greatly to the comfort of the patients. This has been troublesome for a long time, and an unsatisfactory method of heating the Hospital, but the improvements suggested and carried out by the Technical Inspector of the Health Department has made the whole of the heating arrangements as satisfactory as they can be under the circumstances.

Staff.—There have been a considerable number of changes in the staff. The most serious change in the staff from the point of view of the Hospital was the resignation of Miss Brown, who had been Matron of the Hospital for some eighteen months. Miss Brown proved to be exceptionally able and capable, and had improved her section of the Hospital beyond recognition. Miss Thurston, C.B.E., was appointed to Miss Brown's position, and has only just recently taken over the duties of Matron. The conduct of the staff during the past year has been very satisfactory.

Farm.—The farm has been successful, and has undoubtedly saved the Department a considerable amount of money.

Bathhouses.—The bathhouses have been painted and renovated. The buildings are very old, and the time is not far distant when a complete rebuilding will have to be considered.

Tea-kiosk.—The tea-kiosk has been thoroughly renovated, and has run very satisfactorily during the year.

Ornamental Grounds.—The grounds have been kept in excellent condition by the head gardener, and are a source of pleasure and admiration to the visitors. A new grass tennis-court has been laid down. The asphalt tennis-court has been top-dressed, and another grass court is now in the process of being laid down. These tennis-courts are a very definite source of revenue, and give a great deal of pleasure to the visitors.

Electrical Services.—The new turbine engine has been recently installed, and is very satisfactory. The electrical services, on the whole, have been fairly good, but I am informed by the electrician that a great many faults are now to be found in the wiring in the Main Hospital. This work was done in 1915–16, was rushed, and was not satisfactorily put up.

Y.M.C.A.—The Y.M.C.A. passed their interests over to the Red Cross at the beginning of 1923, and I understand the Y.M.C.A. hut will be run by the Red Cross in a similar way to that of the Y.M.C.A. The value of this recreation-room to the patients is immense.

SECTION 2.—KING GEORGE V. HOSPITAL, ROTORUA.

Dr. W. Stanley Wallis, Medical Superintendent; Dr. F. W. Lumsden; Dr. W. B. Fisher; Miss E. Hodges, A.R.C.C., Matron.

Staff.—Before submitting my report I would pay my tribute to those officers who have left the staff during the year—namely, Dr. Hogg and Dr. Hockin—who by their merit and ability have laid the foundations for a successful administration and an efficient special department. By a reallotment of the duties of those medical officers remaining it has been possible to carry on without the replacement of those who have retired, this having been rendered possible both on account of the sound foundations laid down by my predecessors and the loyalty of the present staff, who have with energy cheerfully undertaken their additional duties.

Surgical Division.—During the year 369 surgical operations have been performed, 183 of those having been definitely reconstructive in character, and of these latter 86 have been taken for their basis one or other form of sub-astragaloid arthrodesis, upon which plan the architecture of the foot is remodelled amd stabilized before applying those additional procedures to gain increasing function. This procedure, which is a new attempt as far as New Zealand is concerned to effectively deal with the problem of the paralytic foot, has been undertaken only after a careful study of the reports of Commissions set up in other countries to consider the best means available to combat this disablement, and has in this Hospital given such uniformly good results that I feel confident that the publicity that will be given to it by its presentation at the last Conference, and its publication in the journals, will bring it into universal use throughout the country by those surgeons competent to deal with the condition.

We are further developing along new lines, again as far as New Zealand is concerned, the surgery of the spastic paralyses—hitherto a class of case which has been a sore trial to the parents, a bugbear to medical men in attendance, relegated by the latter to the status of the incurable, thereby rendering the former open to the depredations of charlatans and humbugs. In this class of case, with selected types, we can show results which, by the combined aid of muscle re-education, hospital and school discipline and training, and reconstructive surgery, render the subject of our attention definitely able to make his contribution to society rather than the reverse.

The third definitely new procedure which has been introduced is a surgical plan to gain increased length in a limb when this has been the sole disability, or has assumed such serious proportions in considering the whole aspect of the case that the attempt to carry out this measure would be justified.

Further, to the above we have brought into routine use Steindler's procedure for releasing a muscle-bound claw foot. This consists of a sub-periosteal resection of the soft structure from the oscalcis, and replaces the older and usual method of dealing with this condition—namely, plantar fasciotomy—in the same way that Soutar's operation for flexion contracture of the hip-joint replaces the cutting of tendons and muscles. The improvement in the results has been marked.

The last new procedure that we have introduced is one concerned with the reconstruction of the shoulder-joint, and the utilization of the fibula, in part or in its entirety, to repair the loss of the humerus, whether as a result of traumatism (gun-shot wound) or after its operative removal following bone-disease (sarcoma, infection, &c.).

Anæsthetics.—The introduction of the warmed-æther apparatus and its continuous use tells its own story, thus: Even after prolonged anæsthesia, necessary in these tedious reconstructive operations, administered in the great proportion to children, I can recall no case where the surgeon has been worried during the course of his work regarding the condition of his patient, nor can I call to mind any post-operative complications attributable to anæsthesia.

Tuberculosis of the Bones and Joints.—During the year fuller and more extensive use has been made of that ancient but none the less valuable curative system designated heliotherapy; and, favourably situated as we are in Rotorua, I am confident that we can establish here a sun clinic which should be unrivalled in its opportunities and demonstrate its results accordingly.

Physiotherapeutic Department (Dr. Lumsden).—During the year 53,827 treatments have been given. According to your request I am submitting the following analysis in percentages of the functional improvement gained by considering one hundred cases just as they appeared in the admission and discharge book. These included cases not amenable to treatment and whose functional improvement was nil. The estimate was conservative, yet fair, and was arrived at by a study of the records of each individual case. It varies from nil to 75 per cent. It is as follows: Average percentage of functional improvement in relation to limb affected, 40·82; average percentage of functional improvement in relation to whole body, 45·6; average duration of stay in hospital, 10·3 months.

The average percentage of improvement according to treatment accorded works out as follows, the groups being made according to the particular form of treatment that has been the factor contributing towards the *greatest* functional improvement, although, of course, all forms are to some extent interdependable and interchangeable: P.T. (physiotherapeutic), 43·835 per cent.; O. (operation), 42·465 per cent.; A. (apparatus), 8·219 per cent.; O + A, 1·369 per cent.; P.T. + A., 1·369 per cent.; nil, 2·739 per cent.

In considering the above figures, which have taken some time to compile, I will cite a typical case which demonstrates the difficulties in estimating in cool figures functional improvement:—

A man, "B," came to this Hospital on crutches—both thighs functionally useless, the whole of one limb paralysed, a small residum of power below the knee being left in the other leg. Briefly, he was useless below the waist. His method of progression on crutches was peculiar. He moved both crutches in front of him, and swung from the hips both limbs together, the heels landing on the ground in front of him synchronously and in line. By a locking-back of the knee (he had a subluxation of these joints) he was enabled by a push on his crutches to pivot forward and bring his crutches in front again. He was not well educated, had not studied, and since the outset of his disease had not done any useful work. He had outlined no policy for the future. After treatment and a series

of operations he was discharged. When he was leaving the office I asked him what he was going to do. He said, "I am going back to my work as a electrical engineer." As a matter of fact, he is now working in a grocery-store, serving behind the counter. He wears no apparatus, has one stiff knee, and gets about with the aid of a stick. The point is that, from the point of view of the State, he started a "minus," because he required attendance, and if he returns to his former employment he ends as a "plus" 75 to 80 per cent. Yet he is still a cripple, and I can estimate his functional improvement only as follows: Functional improvement with respect to the limb affected, 40 per cent.; functional improvement with respect to the whole body, 50 per cent.

Plaster Department.—Throughout the year 1,420 plaster operations have been performed. Dr. Lumsden has taken over the treatment by corrective plaster jackets, &c., of those cases of functional and structural scoliosis that are from time to time admitted. In this connection one might add that for the past three years we have been carefully noting, filing, and studying all the literature that has come our way concerning the operative treatment of this hideous and disabling deformity (the cases here are usually severe), and being now satisfied that such progress has been made that the experimental stage is past, and that an operative treatment of scoliosis is now possible and commendable, it is probable that during this year we will launch our own attack.

X-Ray Department.—The X-ray examinations for the year total 647. This Department is being made more use of as time goes on by the medical men of the district.

Laboratory and Dispensary.—Laboratory: The greater proportion of the laboratory work is now sent to Hamilton or Auckland, and we will definitely continue to carry out this policy. Dispensary: The number of prescriptions dispensed during the year is 1,386.

Surgical Bootmaker's Shop.—The number of surgical boots made during the year is 124, and the number of repairs is 631.

Infectious-diseases Hospital.—We have been entirely free from anything in the nature of an epidemic among the children in this Hospital.

Services rendered.—In conclusion, I would record again the help I have received from my responsible officers, the Matron and the nursing staff, and acknowledge our appreciation of the services rendered during the year by the Red Cross Society, the Rotorua Women's Club, and many other friends, who have contributed time, money, or its equivalent for the welfare of our patients.

SECTION 3.—OTAKI SANATORIUM AND HOSPITAL.

Dr. A. H. Curtis, Medical Superintendent; Miss Sealy, Matron.

Results of Treatment.—In submitting the analysis of cases treated at the Sanatorium during 1922 I consider the results on the whole satisfactory. Comparing the results for this year with those of 1921, in the latter year forty-eight cases were arrested, as compared with only twenty-three in 1922. The term "arrest" as used in 1921 was taken to mean "free from symptoms," but in the present report is restricted to those cases not only free from symptoms but with sputum free from bacilli. Those free from symptoms but with positive sputum are now included under the term "much improved." The term "first stage" is also an arbitrary one, but is here restricted to patients whose physical signs are limited to the area of the lung above the clavicle and spine of the scapula. It will be seen that the percentage of such cases (twenty-two per cent.) is low, and is likely to remain so under the present system of admission. On the whole, however, the class of case admitted during 1922, clinically speaking, has shown considerable improvement on the class previously admitted. Out of the fifteen cases "improved," six were admitted in an advanced stage and soon afterwards discharged.

Administration.—With regard to the Sanatorium itself, the routine and general running of the institution has been for the most part satisfactory. Since October the management, from a business point of view, has been much improved by the advent of the house manager. The farm, under the Department of Agriculture, has done well during the year. The supply of milk has been abundant and of excellent quality, a good supply of eggs has been available, also of vegetables. Mutton obtained from fat sheep slaughtered on the premises has been much better quality than that supplied by local butchers, and quite appreciably cheaper. Drainage of bush swamp at the back of the Sanatorium has been undertaken in order to reduce the breeding-ground for mosquitoes. With regard to the gardens, fresh ground has been brought into cultivation during the year, new beds and lawns having been formed at the Medical Superintendent's house and in front of the Sanatorium buildings.

Otaki Hospital.—It speaks well that out of 178 cases treated 124 were discharged recovered, while a death-rate of 6·1 per cent is certainly not unduly high.

SECTION 4.—PUKEORA SANATORIUM.

Dr. Hugh Short, Medical Superintendent; Dr. W. Fulton, Assistant Medical Superintendent; Miss I. Whyte, R.R.C. (Medaille de la Reine), Matron.

General.—It is gratifying to be able to state that the general morale of the patients has shown a marked improvement during this period, a state of affairs beneficial both to their health and to the smooth running of the institution. This improvement is put down to two main factors: (1) The sympathetic attitude of the administering Department; (2) passage of time, bringing with it a gradually improving mental attitude as compared with that previously evinced by the majority of patients—viz., service patients—and produced by military service with its attendant disciplinary restrictions. As time goes on these patients are learning more and more the necessity, for their own health's interests, to conform with the routine laid down in a complacent and co-operative spirit.

Treatment.—With regard to the character of the cases admitted during the year, it may be stated frankly that there still remains much to be desired in the selection of civilian patients. All too frequently cases are allowed to remain under treatment outside a sanatorium far too long before being advised to seek admission.

Administration.—Male cooks were introduced and the female cooks dismissed. This change in personnel has so far proved of distinct advantage. The meals have been cooked much more satisfactorily both for the patients and the staff, and the cleanliness of the kitchen and appointments thereof has shown marked improvement as compared with the condition of affairs under the female cooks. The supervision of the kitchen-garden, consisting of 11 acres, which had previously been the care of the farm-manager, was taken over by the institution on the 1st September, 1922, and a marked increase in production has been thereby effected.

X-ray Department.—The X-ray Department has been in operation during the last six months, and has assisted the professional side of the work of the institution in the matter of taking plates and screening. The return of the work done during the year is as follows: Total number of cases screened, 90; total number of plates taken, 132.

Laboratory.—The laboratory has been in full use throughout the year. The return of the work is as follows: Average number of sputum examinations for T.B. per month, 324; average number of sputum examinations for albumen, 50; average number of urine analyses per month, 70; average number of treatments by tungsten light per month, 165·5. Brief survey of work undertaken in the laboratory for the year, exclusive of above: Urine for T.B.; microscopic examinations and preparation of sections of tissue; cultivations for diagnosis (various pathological material); vomit examination, chemical and microscopic; pus, histological and cultural; veterinary examinations; swabs for gonorrhœa; sputum, histological, &c.; swabs, microscopic and cultural; preservation of specimens; P.M. assistance; examinations of blood for various purposes; preparation of culture media, &c.

Dispensary.—The dispensary has required throughout the year the full-time services of a dispenser. The return of work done is as follows: Average number of prescriptions dispensed monthly, 250; dispensing of stock-mixtures, &c.

Vocational Training.—The vocational workshops have been very satisfactorily attended by the patients, the number of patients attending and the hours attended in each subdivision being as follows —

	Average Number attending.	Average Hours attended per Month.
Carpentry	11	560
Leatherwork	22	554
Basketwork	9	164
Raffia-work	12	345
Bed patients (knitting, &c.)	10	..

In connection with the disposal of the articles made in these workshops, it has been suggested that a change in the policy hitherto adopted should take place. Owing to the existence of a recreational fund, service patients draw a monetary bonus as a result of the sale of work performed both by service and civilian patients. This, in effect, means that in a large percentage of cases the idea of providing occupational work on account of the purely mental benefit to be derived therefrom has been largely lost sight of by the patients, and the idea of personal gain has displaced the therapeutic value of the workshops in a number of cases. It cannot be denied that this is an unsatisfactory factor in the treatment of tuberculous patients, and it further has the disadvantage of making a line of demarcation between service and civilian patients, to the detriment of the latter.

Services.—The medical staff has given entire satisfaction throughout the year in their professional duties. The usual custom of seeing daily all patients before their daily exercise has been continued. Examinations of patients on exercise have been made periodically, and of cot cases frequently.

SECTION 5.—STATISTICS OF PATIENTS FOR THE YEARS ENDED 31ST MARCH, 1922 AND 1923.

	King George V. Hospital.		Queen Mary Hospital.		Otaki Hospital.		Otaki Sanatorium.		Pukeora Sanatorium.	
	1922.	1923.	1922.	1923.	1922.	1923.	1922.	1923.	1922.	1923.
Number of patients in hospital at commencement of year	234	180	80	82	8	9	36	36	137	144
Number of patients admitted during year	633	598	390	379	138	169	71	76	276	273
Total admitted	867	778	470	461	146	178	107	112	413	417
Patients discharged cured	251	177	102	136	..	124	..	..	7	9
Patients discharged relieved	273	349	218	202	103	23	50	57	215	30
Patients discharged unrelieved ..	116	73	67	14	20	16	17	15	48	240
Patients who died	17	29	1	..	14	11	2	..	13	19
Patients transferred to other hospitals ..	..	..	..	7	..	..	..	..	..	..
Patients remaining in hospital at end of year	210	150	82	102	9	4	38	40	130	119
Total patients treated ..	867	778	470	461	146	178	107	112	413	417
Average daily number of patients treated	189	196	78	90	9·3	7·5	..	..	135	139
Average mean residence (*d* = days; *m* = months)	95*d.*	73*d.*	71*d.*	54*d.*	24*d.*	15·3*d.*	6*m.*	6½*m.*	120·2*d.*	118·4*d.*
Total number of deaths within 24 hours of admission	2	4	Nil	Nil	3	3	Nil	†	Nil	Nil
Rate of mortality per cent. over total cases under treatment	1·73	3·21	0·21	..	7·5	6·1	1·8	..	3·14	0·04
Total number of operations performed ..	279	369	Nil	Nil	23	28	Nil	..	Nil	Nil
Rate of mortality per cent. of operations	Nil	Nil	Nil	Nil	4·25	3·5	Nil	..	Nil	Nil

† Number of deaths after discharge, 9.

APPENDIX B.

PRELIMINARY REPORT FROM DR. A. G. PATERSON ON ASPECTS OF CHILD-WELFARE WORK IN BRITAIN AND AMERICA.

Having been granted a year's leave of absence by the Department for the purpose of inquiring into matter connected with maternity and child welfare abroad, I have the honour to forward a preliminary report on some of the results of my observations and investigations in both Europe and America.

I left Wellington for Sydney in December, 1921. While in Australia I was fortunate in meeting with Dr. Harvey Sutton, Principal Medical Officer for the Education Department of New South Wales, and Dr. Jane Greig, who occupies the corresponding position in Victoria. Though it was holiday season, and therefore impossible to see work in progress, I was glad of the opportunity to discuss school medical topics with these energetic and experienced officers.

I travelled to England via Suez, and *en route* spent three weeks in Egypt and Palestine, where I visited several Native schools and dispensaries.

I reached England in March, and with the exception of six weeks on the Continent I remained in Britain till the following November. I returned to New Zealand by way of America, spending six weeks in Canada and the United States.

I had the honour of representing the Dominion in Paris in July at the Congres International de Protection Maternelle et Infantile, and also at Bournemouth during the same month at the Congress of the Royal Sanitary Institute. These meetings I have already dealt with in special reports.

Upon my arrival in London, Sir James Allen, High Commissioner for New Zealand, kindly gave me letters of introduction to Sir Robert Blair, Chief Education Officer, L.C.C.; Dr. W. H. Hamer, County Medical Officer of Health and School Medical Officer, L.C.C.; and Sir George Newman, Chief Medical Officer, Ministry of Health. I was thus given opportunity for seeing such aspects of the work as I wished. I must record that wherever I travelled the presentation of the official introductions given me on departure by the Hon. the Prime Minister, the Hon. the Minister of Health and Education, the Director-General of Health, and the Director of Education was sufficient to ensure me a cordial welcome, and to place at my disposal all possible facilities.

In Edinburgh Sir Leslie Mackenzie, Director of the Scottish Board of Health, not only planned out my short stay in Edinburgh to advantage, but arranged with Dr. Alister McKenzie my visit to Dumfermline and the Carnegie Trust there. Lady Mackenzie and Dr. Mary Menzies (Superintendent of Maternity and Child-welfare Work, Scottish Board of Health) gave up a day to showing me interesting phases of work in Edinburgh, and Dr. Mary Menzies also accompanied me to Dumfermline.

In Glasgow, Mr. Clark (Director of Education) and Dr. Roberts (Principal Medical Officer) planned out my time to best advantage, and on one or two occasions placed a departmental motor at my service.

Dr. Buchan, M.O.H. for Bradford, and Dr. Matthew Hay, of Aberdeen, were equally kind. Dr. Wheatley, M.O.H. for Shropshire, invited me to be the guest of his wife and himself during my short stay there.

In America I must specially acknowledge the hospitality and attention given me by the Health Department in Toronto. Dr. Hastings, M.O.H., arranged for an officer of the Department (with a motor-car) to take me to such places as I wished to visit.

By the courtesy of Dr. Barrie Lambert (hon. secretary of the Invalid Children's Aid Association and a member of the L.C.C.) I was invited to attend the summer conference of the Royal Orthopædic Society, which was held for two days in May at the Lord Mayor Treloar Hospital for Crippled Children at Alton and Hayling Island (Hampshire). Many of the eminent orthopædic surgeons of England were present, the main interest being the study of the helio-therapeutic treatment of tuberculosis carried on there by Sir Henry Gauvain.

When in London, in view of the use of such knowledge when dealing with mentally backward children, I took a course in psychological medicine at the Mansdley Hospital. The course, which was that for Part II for the diploma of Psychological Medicine, composed the following:—

(1.) The diagnosis, prognosis, and treatment of mental diseases.
(2.) Mental defect and crime (W. C. Sullivan, M.D., Broadmoor Asylum).
(3.) The practical aspect of mental deficiency (Dr. H. Shrubsall).
(4.) The pathology of mental diseases—including brain syphilis, its symptomatology and treatment.
(5.) The symptomatology of mental diseases.
(6.) The psychoneuroses (Bernard Hart, M.D.).
(7.) Demonstration in neurology (Sir F. Mott and Mr. Golla).

Dr. Shrubsall, who is in charge of the special schools under the L.C.C., gave demonstrations of the examination of mentally defective children. Dr. Mapother gave a series of demonstrations at Epsom Mental Hospital.

I took also a post-graduate course of infant and child welfare by Dr. Eric Pritchard, at the Marylebone General Dispensary. This course comprised twelve lectures, and attendance at infant consultations conducted by Dr. Pritchard twice weekly at the dispensary.

The Royal Society of Medicine in Wimpole Street I found most useful. After introduction by a Fellow of the Society I was given the use of its well-equipped library and reading-room and the privilege of attending lectures by eminent men of the profession.

I have also attended the out-patient departments of Great Ormond Street Hospital for sick children; St. John's Hospital for skin-diseases; the London and the Royal Orthopædic Hospital.

The Different Aspect of School Medical Work Abroad.—Owing to differences in social and economic conditions, the problem of effective supervision and care of the school-child necessarily presents many aspects in Great Britain which differ very materially from those presented to us in this Dominion. Thousands of parents in Britain are without employment, and their families depend solely upon the unemployment dole for an inadequate sustenance. Housing conditions are unspeakably bad, especially in the overpopulated areas of industrial cities. Added to the overcrowding is often a lack of proper sanitary conveniences, and even of sufficient water-supply. The sunlessness of the climate is another depressing factor; so that to a visitor like myself it was a matter of wonder that the condition of children from such homes was not worse.

Another feature I noted was the different attitude of parents to governing authorities. We in New Zealand have not to deal with a mass of people who are more or less inarticulate, as are thousands in England. The average New Zealand parent so far, fortunately, seems to regard the welfare and destiny of his children as a matter for which he is directly responsible, and, as we who deal with the children soon discover, will freely criticize our efforts for their benefit. In Great Britain there exists a large section of the people which instinctively looks to the machinery of the State for assistance in every domestic crisis. The problems associated with birth, sickness, death, unemployment, &c., appear to be matters in which the individual effort of those involved counts for little. If the existing need is not provided for successfully, the responsibility is placed at the door of the presiding authority, who are supposed to have failed in their duty. I do not wish to disparage the excellent provision that is made by Public Health and Education authorities in Britain. Such provision is obviously necessary, and is bound to exert a powerful and beneficent influence on the people, especially where it is educational as well as ameliorative. Nevertheless, I feel sure that we shall lose greatly if the administration of our Health services in any way lessens the proper sense of parental responsibility. It is better policy to teach people to live healthily and to prevent disease than it is to treat them as irresponsible units for whom care has to be provided.

It is in the educational aspect of health work that Canada and America are often so admirable—they do so much active teaching of the people, and stress so publicly and forcefully the advantages of healthy living. In my report I refer in more detail to their propaganda.

The social condition of a large mass of the people abroad has made necessary the provision of many things which so far we have not attempted to include in our school medical service. Such are the arrangements for giving free or cheap meals; school baths; the treatment of skin-infections at a disinfection station; extra facilities for open-air life, either by residence in the country or by the various grades of open-air schools in the city. The supervision of the child who is receiving orthopædic treatment, and of the debilitated or the tuberculous child, is undertaken in a manner of which we, so far, have had no experience. This brings in the question of voluntary helpers, a class to whom we have as yet made little appeal. Nevertheless, it is certain that we need in New Zealand to make treatment more accessible from both the financial and distance points of view.

One advantage is found in the larger cities of Europe and America: Where so many individuals exist it is much easier to classify them, and make suitable provision for those of similar requirements, so that special schools for the deaf, mentally backward, myopic, &c., can be established within reach of a comparatively large number of non-resident pupils. In order to provide the same educational advantages for these classes of children throughout New Zealand, the establishment of residential schools would be necessary.

School Medical Service only one Part of a National Health Scheme.—Wherever I went I found that the school medical service is regarded as only one part of a wide scheme for securing national health, which to be effective must include other activities, such as maternal and infant welfare work, the care of the child between one and five years, the work of tuberculosis and venereal-disease officers, &c. The ultimate ideal is to have a complete life record of the individual, beginning at the ante-natal clinic, going on through infant clinic and the pre-school age to the school medical history. All births in an area are notified to the local welfare centre through the Medical Officer of Health. The home is then visited by the health visitors, and the mother is encouraged to bring her baby to the post-natal clinic. The child is thus kept under supervision until it is of school-age, and becomes the care of the school medical authorities. At many welfare centres very complete records of individuals or of families may be obtained. Such records contain also information as to housing, financial condition, and other matters of social interest. Tuberculosis and venereal-disease records are included.

It is impossible to discuss arrangements for the care and treatment of children without defining roughly the responsibilities of the authorities and officers engaged. In England Sir George Newman is not only Chief Medical Officer to the Ministry of Health, but is also Chief Medical Officer of the Board of Education, the necessary co-ordination of the services being thus secured. In the same way Dr. Hamer acts for the London County Council as County Medical Officer and as School Medical Officer. This arrangement obtains also in many of the provinces. In Scotland the Medical Officer of Health is distinct from the School Medical Officer, who is under the Education Authority, but in practice there is considerable co-operation between the departments. In Toronto the health and school services are united into one organization under the Health Department, and the same arrangement is found in the States.

The duties of the School Medical Officer, therefore, vary according to the organization under which he is working. Sometimes he only inspects and advises as to treatment; in others he is part-time inspector and part-time employed in treatment centres, where his work may be more or less that of a specialist; in others again he may be responsible not only for the care of school-children, but may spend part of his time at welfare centres and give advice an ante-natal or infant clinics, &c.; or, again, as in the Toronto scheme, he may act as Health Officer in his own area, and be responsible for all the various phases of public health, including school medical activities.

In the same way *the duties of the school nurse* vary greatly according to the system under which she works. As in London, many duties which would otherwise be hers are taken over by the voluntary workers of the care committees, much of her time is devoted to superintending the cleanliness of the children—noting verminous or infectious skin conditions, and arranging for their treatment at the local centre. She also assists the School Medical Officer in his examinations, or she may be appointed to a treatment centre and give necessary assistance there. In Scotland, where there is not the same organization of voluntary workers, she visits in the children's homes. Necessarily also the different phases of the work, as entailed by the existence of special schools, provision of school meals, baths, &c., give variety to the work of the school nurse. In Liverpool a section of the nursing staff devotes all its energies to the early detection and supervision of contagious diseases—*e.g.*, measles. In Toronto a school nurse is also a public-health nurse, and her interests are therefore much wider and more varied.

Comparative Results of School Medical Inspection.—I have been present at routine medical inspections in London, Glasgow, Edinburgh, Toronto, and New York (in this last children were not undressed). The method of examination approximates our own. A school nurse is present, and details regarding weight, height, cleanliness, condition of clothing are recorded by her before the child sees the doctor. She often makes a preliminary examination of hearing and eyesight. One thing that has impressed me is the questionable value of comparative statistics. There was evident at these examinations the same divergence among medical officers as among ourselves. Marked defects are always recorded, but in the case of slighter deviations from the normal the personal equation of the examiner has to be considered. What one thinks worthy of record another ignores. Thus at one examination there was no notice taken of postural defect; at another the child was extorted to stand straight, but the faulty posture was not recorded; and in a third instance a postural scoliosis was marked accurately on the special card, and the child noted for supervision. Again, nutrition which I should have noted as subnormal was frequently recorded as normal. Broadly speaking, I feel sure that, regarding the question of recording of defect, in New Zealand we note as defective conditions which are elsewhere thought to be not worthy of record. Thus our statistics, compared with those of other countries, probably show an amount of defect which in proportion is not as great as appears.

Treatment Centres, or School Clinics.—It is generally recognized that the parents, when circumstances permit, should be encouraged to get necessary medical or surgical treatment from the private practitioner. When, as is the case with a large percentage, they are not in a position to pay his fees, or when they are too careless to seek treatment, it is obvious that provision must be made by the authorities responsible for the school medical service. This is generally done by the establishment of the treatment centre or school clinic.

The activities of a school clinic include the examination of eyes for defective vision, the provision of dental treatment, inoperative treatment for adenoids and enlarged tonsils, the care of minor ailments, and in some places the treatment of verminous or contagious skin conditions.

I visited treatment centres in action at St. Pancras, Fulham, North Islington, Harrow, Glasgow, Edinburgh, Aberdeen, Birmingham, Bradford, Shropshire, Liverpool, and Toronto. Details of the organization and treatment given will be found in my larger report.

Provision for Special Groups of School-children.—It is recognized that children suffering from physical defect or from mental retardation cannot receive satisfactory education in classes where the curriculum and environment are adapted to the requirement of the average child. Such children are injured in the effort to conform to the existing standard, and have no opportunity of overcoming weakness which under favourable conditions would be eradicated. Moreover, they are a drag on the rest of the class, and tend to become a discouraged and neglected minority when they do not altogether succumb to influence of unsuitable surroundings. Hence such children are, when discovered at the routine medical inspection or subsequent to a report from the teacher, formed into classes or schools which provide educational facilities and at the same time offer a regime adapted to their particular needs.

Such special classes or schools deal with children suffering from conditions as anæmia, rickets, malnutrition, tuberculosis, heart trouble, defects of eyesight and hearing, mental backwardness, epilepsy. I forward a full description of several such schools (many of which are of an open-air type), and have also dealt with the nutrition clinics of America.

One of the most striking features in the educational world to-day is the amount of attention bestowed upon the problem of mentally backward and feeble-minded children, interwoven with which is the problem of the juvenile delinquent. In England the duties of a local Education Authority respecting mentally defective children are—(1) The ascertainment of defect; (2) the determination of educability or otherwise; (3) the provision of educational facilities; (4) the notification of custodial cases to the local authorities under the Mental Deficiency Act, 1913. In America the problem is dealt with in an equally comprehensive manner, and I feel sure that in New Zealand we must before long follow the example of these older countries.

Other matters relating to school medical work, such as physical education, juvenile employment, school buildings, &c., will be found dealt with at greater length in my main report. I shall submit an account also of many aspects of maternity and infant-welfare work which came under my notice.

A. G. Paterson,
School Medical Officer.

The Director-General of Health.

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