1928.

NEW ZEALAND.

DEPARTMENT OF HEALTH.

ANNUAL REPORT OF DIRECTOR-GENERAL OF HEALTH.

Presented in pursuance of Section 100 of the Hospitals and Charitable Institutions Act, 1926.

HON. J. A. YOUNG, MINISTER OF HEALTH.

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REPORTS.

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

I HAVE the honour to set forth in this, the twenty-first year of my administration, the annual report of the Department for the year 1927–28.

PART I.—GENERAL SURVEY.

VITAL STATISTICS.

The crude (actual) death-rate of the Dominion for the past year was 8·45 per 1,000 of the mean population. In 1926 that death-rate was 8·74. The infantile-mortality rate was 38·74 per 1,000 births, as against 39·76 for 1926.

The birth-rate of 20·29 per 1,000, however, is not satisfactory, being the lowest birth-rate yet recorded in this country. This is a matter for grave concern. I have no sympathy with advocates of birth-control, who appear to be overjoyed by the fact that relatively fewer children are being born in a country so favoured as New Zealand, for, as stated in a previous report, "there is no doubt that our population is best replenished and our empty spaces best filled by our own natural increase. The new-born infant, in other words, is our best immigrant."

Tuberculosis.

The death-rate of 4·86 per 10,000 of the mean population is the lowest so far recorded in this Dominion. Since 1872 the death-rate from this disease has fallen from 12·66 to 4·86. Despite this noticeable decline in the tuberculosis death-rate and the fact that we have the largest proportion of beds for tubercular cases of any country in the world, I have been much concerned at the demands, through their respective Boards, of certain Medical Superintendents, particularly of the South Island, for increased sanatorium accommodation. The matter, however, was brought to a climax by the application last November of the Medical Superintendent, through the North Canterbury Hospital Board, for additional accommodation for chronic tubercular cases in connection with the Cashmere Sanatorium. I asked the Board to wait until a committee of recognized physicians could report on the whole question of sanatorium accommodation in the two Islands. My request to defer the matter for the nonce was not favourably considered either by the North Canterbury Board or the Medical Superintendent concerned. However, in February I told the executive of the British Medical Association that I was asking that body to give the Minister of the Department the names of certain physicians whom they could recommend for this investigation. This has been done, and a committee consisting of Dr. Fitchett, of Dunedin, Dr. Fenwick, of Wellington, and Dr. Johnson, of Auckland, are now investigating the position as regards tuberculosis in the two Islands. The report of these gentlemen and their recommendations is awaited with great interest.

In an editorial the late editor of the *British Medical Journal*, Sir Dawson Williams, says: "Probably the real truth about sanatorium treatment is that, while of value to the individual, it is mainly educative, that it is expensive, and that from the point of view of prevention or the extermination of tuberculosis its value is small compared with the magnitude of the whole task. Throughout all the reports that we have examined there runs the thread of State assistance and subsidy, and it is interesting to note that when Governments embark on large schemes of social amelioration each successive plunge in welfare schemes brings with it fresh difficulties." In referring to village settlements the same editorial states: "Without any wish to minimize the misfortunes of the consumptive, nor any desire to undervalue attempts to reduce or control possible sources of infection to the rest of the community, it is possible to feel doubts as to the wisdom of embarking on a large expenditure of State money in what are, at present, experiments. Neither sympathy for the unfortunate consumptive nor fears for extension of infection should be allowed to lead to hasty and ill-considered expenditure. Behind the whole method of settlements, sanatoria, and other attempts at curative measures there looms the question whether research should not be directed mainly to the production of resistance to the attacks of an ubiquitous and unexterminable germ."

Information regarding the measures undertaken by the school medical service for the prevention of tuberculosis will be found in the report of the Director, Division of School Hygiene. An endeavour is being made to select such children as would likely to become victims of tuberculosis, and to provide for their special supervision and care. This includes advice to parents as to improvement of home environment, the arrangement for residence in convalescent homes and health camps, the establishment of nutrition classes in schools. Children who are inmates of households where there is a sufferer from tuberculosis are kept under special observation. By the aid of the press and distribution of pamphlets the Department has endeavoured to educate the public as to the early symptoms of tuberculosis and measures as to its prevention.

Cancer.

The death-rate of 9·63 per 10,000 of living persons is a slight improvement on the preceding year. Wide publicity has been given through suitable leaflets and the aid of the press as to the early signs and symptoms of the disease, so as to educate the public as to the necessity of early medical advice.

Infectious Diseases.

With the exception of scarlet fever of a mild type, which was epidemic throughout the year, other notifiable diseases, such as diphtheria, enteric fever, and pneumonic influenza, show a much lower incidence.

Maternal Mortality.

Dr. McKibbin in his report covers important phases of the difficult problem relating to deaths associated with childbirth. In spite of the very active campaign for the reduction of these deaths, the rate of 4·91 per 1,000 live births represents an increased rate on the preceding year. The marked increase of deaths from puerperal septicæmia is somewhat disturbing, particularly the distinct rise from this cause in the Auckland District, which is at present being made the subject of a special investigation. On the other hand, it is encouraging to note the fall in the deaths from other puerperal causes, probably arising in part from improvements in ante-natal supervision and our midwifery service. In this connection the reports of Dr. Henry Jellett and Dr. Paget will be read with interest. Dr. Jellett's observations on the administration and medical aspects of maternal welfare work are worthy of special attention, as also his appeal on behalf of the obstetrical department of our only Medical School.

The New Zealand Obstetrical Society, formed by the New Zealand Branch of the British Medical Association will, I am sure, be of distinct value in improving the standard of obstetrical practice in the Dominion. Its advice and assistance will be much valued by the officers of the Department, who realize that the problem of maternal mortality can be best approached by co-operation between all branches of the medical profession.

Hospitals.

The past two years have been somewhat strenuous ones, for during that period I have visited almost every part of the Dominion. Unfortunately, I have brought upon myself much criticism, for I have ventured to comment on the extraordinary increase in expenditure. The time has certainly come when, in my opinion, a halt, and a very crisp halt, should be called in hospital expenditure.

Might I say that I am very proud of our New Zealand hospitals and the work of the Hospital Boards controlling them. Without the help of these Boards it would have been impossible to build and otherwise develop the hospitals we now have. But there is reason in all things, and, personally, I am appalled at our hospital expenditure, actual and proposed, especially in certain districts ; but I do not blame the Boards entirely for this. If it were possible for members of Hospital Boards of this Dominion to visit the Old Land—aye, and other countries, including, mark you, the United States of America—they would come back to this Dominion very pleased and very proud not only of our hospitals, but of our public institutions as a whole. They would think, I am sure, that for a population of barely one and a half million souls we have done not so badly, but extremely well—and all that in about the lifetime of some of our very aged pioneers.

Information with regard to hospitals and institutions under the control of Boards will be given in the Appendix of this report to be issued after the Secretaries' returns come to hand.

Publicity and Propaganda.

The Department has continued to spread the principles of health through the aid of the press, lectures, exhibitions, general advice by officers attached to the many branches of the Department's activities, and circulation of numerous pamphlets.

Medical Research.

This important function of the Department has received close attention. Dr. Hector's review is included in the Appendix to this report, and outlines the result of certain inquiries conducted at the Otago University School. A special investigation was carried out by Dr. Shore, Medical Officer of Health, and Dr. Morgan, School Medical Officer, and Mr. Andrew, of the Dominion Laboratory staff, into the incidence of goitre in school-children in the Hutt Valley. A medical progress report by Dr. Shore appears in the Appendix on this investigation ; also studies of rheumatic diseases among Auckland school-children by Dr. Turbott and Dr. Wilkie. An abridged report on the health conditions and environment of certain rural school-children, by Dr. Henderson, appears in the Appendix. A summary of the school treatment of goitre will be found in the report of the Director, Division of School Hygiene. A laboratory investigation into the relationship of iodine-deficiency to goitre was undertaken by Mr. Cox, under the supervision of Professor Hercus of the Otago Medical School. Arrangements are in train for the initiation by Dr. Hector of an inquiry into still-births and first-month mortality of infants.

League of Nations.

During the year, at the invitation of the League of Nations, Dr. Hughes, Medical Officer of Health, Auckland, visited India and made a study of the systems of health administration in vogue in that important part of the British Empire. The Medical Department of the League of Nations was, on the request of that body, furnished with a handbook on the New Zealand health organization.

Co-operation with Overseas Organizations.

The Department has tried, with some success, to co-operate with various overseas organizations in the latter's endeavour to foster the science and practice of preventive medicine.

Lieut.-Colonel James, M.D., of the Ministry of Health, Great Britain, a delegate representing the Dominion of New Zealand, on the permanent committee of the Office International d'Hygiene Publique, submitted a report on the 1927 session of this organization. For the proposed annual quarantine volume of that office the Department prepared a statement on quarantine organization in New Zealand. The Department's association with the International Union against Tuberculosis has enabled it to keep well advised of recent advances in the treatment and prevention of this disease.

The Ministry of Health, Great Britain, and the Health Committee of the League of Nations have been kept abreast of certain aspects of the cancer problem in New Zealand. In these matters the publications received from the Ministry of Health, Medical Research Council, and League of Nations have proved invaluable.

Legislation.

With the passing of the Dangerous Drugs Act last session in order to carry out New Zealand's obligations under the Geneva convention, additional duties in this connection devolve upon the Department. Regulations necessary to give effect to the provisions of the Act are in course of preparation. While it is not considered that illicit traffic in drugs of a habit-forming nature is an appreciable factor in New Zealand at the present time, the machinery now provided should be effective in preventing any development of the traffic which, has already shown itself in more heavily populated countries.

School Hygiene.

Under the direction of Dr. Ada Paterson this Division carries on most valuable work on behalf of the health of our school-children. Attention is drawn to the report on the result of the school treatment of goitre. A short résumé is also given of important measures taken in the prevention of tuberculosis amongst our school-children.

Dental Hygiene.

The report of Mr. T. A. Hunter shows the extent of the work accomplished by his Division, engaged in a most important sphere of preventive medicine. The total of 390,038 dental operations having been performed since 1923 by dental nurses in the field affords distinct evidence as to the needs of their service and the extent to which they are used. The highly satisfactory results of the examination of the dental nurses indicates the high standard of the service rendered by the instructional officers.

Nursing.

Miss Bicknell's report rightly acknowledges the support given to the Department in the introduction of the post-graduate course for nurses.

Maori Hygiene.

I regret to report that in the early part of this year the Department lost the services of Dr. Te Rangi Hiroa (Dr. Buck), who was naturally tempted to take up work in which he has ever shown an absorbing interest by accepting a position under the Anthropological Branch of the Rockefeller Foundation. Dr. Ellison bids fair to make an excellent successor to Dr. Te Rangi Hiroa.

New Health District.

The scheme outlined in my last annual report, in the establishment of the new health district for the major portion of the Taranaki Provincial District, has proved satisfactory. A new health district on the same basis is being formed for the East Cape district of the North Island, with a Medical Officer to be stationed at Gisborne.

Board of Health.

Quarterly meetings of the Board were held during the year. Requisitions were served upon a number of local authorities as to the carrying-out of certain sanitary works. The Board also considered the question of medical research, concerning which a very interesting report was submitted by my colleague, Dr. Watt.

During the year the appointments of Sir Lindo Ferguson, Dr. J. S. Elliott, and Mr. Murdoch Fraser expired, and their places were taken by Professor A. M. Drennan, Dr. W. Irving, and Mr. C. M. Luke.

The Department is much indebted to the members of the Board for their valuable help.

Medical Practitioners Act, 1914.

Four meetings of the Medical Council 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 :—

——	1923.	1924.	1925.	1926.	1927.
Number on register on 1st January	1,073	1,138	1,204	1,211	1,283
Number added during year	77*	85†	78‡	94§	54‖
Number removed during year	12	19	71	22	17
Number on register at end of year	1,138	1,204	1,211	1,283	1,320

* Includes 59 with New Zealand qualifications. † Includes 67 with New Zealand qualifications. ‡ Includes 59 with New Zealand qualifications. § Includes 69 with New Zealand qualifications. ‖ Includes 38 with New Zealand qualifications.

The work of the Medical Council 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.

Plumbers Registration Act, 1912.

Two meetings of the Plumbers Board constituted under this Act were held during the year. Examinations under the Act were held in June and October. A total of 434 candidates presented themselves for examination, the results being that eighty-nine passed in the theoretical part and ninety-three in the practical; sixty-four qualified or completed in both parts of the examination and were duly granted registration. The *Gazette* notice for 1927 contains the names of 1,390 plumbers.

Masseurs Registration Board.

During the year the Board met four times.

Overseas Candidates.—Amended regulations were gazetted to allow the Board more latitude with regard to the registration of overseas candidates, principally providing for candidates who have partly qualified in the United Kingdom to complete their examinations after additional training at the Otago Massage School.

Inspection of Massage-parlours.—The inspection of massage-parlours, &c., has been maintained steadily during the year by the district staffs of the Department of Health, and the reports have been received and considered regularly by the Massage Board.

Reciprocity with the Chartered Society of Massage and Medical Gymnastics, England.—Arrangements have been made whereby registered masseurs or masseuses who have trained at the Otago University, on application in England, are granted membership in the Chartered Society without further examination.

Examinations.—The usual examinations were conducted during the year and twenty-three candidates registered.

Post-graduate Course for Masseuses.—Arrangements were made with certain of the Hospital Boards of the Dominion whereby masseuses qualifying in the State examination after training at the Otago Massage School are given positions for twelve months in hospital at a reduced salary to enable them to obtain practical hospital experience before commencing private practice.

Staff.

It is with deep regret that I have to record the deaths of the following officers who in their particular spheres rendered faithful service to the Department: Dr. H. G. H. Monk, one of our Medical Officers of Health, who had retired from the Service; Mr. J. H. Anderson, who for many years was the Department's consulting engineer; Mr. Charles Eccles, my valued secretary, and Secretary to the Plumbers Registration Board; Mr. W. Keeble, a most promising accountancy officer; Miss J. M. Jarrett, a fine type of district nurse to the Maoris; and two steadfast Inspectors of Health, Mr. R. J. McKenzie and Mr. A. E. Skynner.

I cannot conclude this report without referring to the very excellent and faithful service which was rendered by officers of the Department. I have especially to thank Dr. Watt, my very able colleague, also Mr. Killick for his valuable services as Secretary of the Department.

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

PART II.—PUBLIC HYGIENE.

I have the honour to submit my annual report for the year ended 31st March, 1928.

SECTION I.—VITAL STATISTICS.

POPULATION.

The mean population of the Dominion for 1927 (exclusive of Maoris) was estimated to be 1,374,439. This total represents an increase over the corresponding figure for the previous year of 21,512, or a percentage increase of population of 1·59.

BIRTHS.

The births of 27,881 living children were registered in the Dominion during 1927, as against 28,473 in 1926. The birthrate for 1927 was thus 20·29 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, 1918–27.

Year.	Total Number of Births registered.	Birth-rate per 1,000 of Mean Population.
1918	25,860	23·44
1919	24,483	21·42
1920	29,921	25·09
1921	28,567	23·34
1922	29,006	23·17
1923	27,967	21·94
1924	28,014	21·57
1925	28,153	21·17
1926	28,473	21·05
1927	27,881	20·29

The birth-rate for 1927 is the lowest ever recorded in the Dominion. This steady decline of the birth-rate in New Zealand has been partially compensated for by a decrease in the death-rate. Nevertheless, as has been pointed out by the Government Statistician, the rate of *natural* increase of population has fallen from 31·19 per 1,000 of mean population in 1870 to 12·31 in 1926.

Still-births.—Still-births, which are defined by the Births and Deaths Registration Act of 1924 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 1923–27.

Still-births (Number and Rate) in New Zealand, 1923–27.

Year.	Total Number of Still-births registered.	Rate of Still-births per 1,000 Live Births.
1923	894	32·0
1924	855	30·5
1925	861	30·6
1926	886	31·1
1927	878	31·5

A noticeable feature of the table is the continued high 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 total number of deaths (11,613) registered during the year 1927, as compared with 11,819 in 1926 for a smaller population, gives a reduced general death-rate.

Crude Death-rates.

Year.	Crude Death-rate per 1,000 Mean Population.	Year.	Crude Death-rate per 1,000 Mean Population.
1901	9·81	1924	8·29
1911	9·39	1925	8·29
1921	8·73	1926	8·74
1922	8·77	1927	8·45
1923	9·03		

INFANT MORTALITY.

The infant-mortality rate for 1927 was 38·74 per 1,000 births. The achievement of such a phenomenally low infant-death rate stands as a record for New Zealand and also for the world.

Infant Mortality in New Zealand, 1900–27 (per 1,000 Live Births).

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	1914	28·9	28·5	51·4
1901	29·8	41·6	71·4	1915	29·2	20·8	50·0
1902	32·2	50·7	82·9	1916	27·0	23·7	50·7
1903	31·7	49·4	81·1	1917	27·9	20·3	48·2
1904	29·4	41·6	71·0	1918	26·7	21·7	48·4
1905	30·1	37·4	67·5	1919	28·4	16·9	45·3
1906	29·6	32·5	62·1	1920	30·8	19·7	50·5
1907	30·4	58·4	88·8	1921	30·7	17·1	47·8
1908	31·2	36·7	67·9	1922	27·2	14·7	41·9
1909	29·9	31·7	61·6	1923	29·1	14·7	43·8
1910	30·2	37·5	67·7	1924	24·0	16·3	40·3
1911	28·5	27·8	56·3	1925	26·4	13·5	39·9
1912	30·1	21·1	51·2	1926	25·46	14·3	39·76
1913	29·7	29·5	59·2	1927	25·83	12·91	38·74

It will be seen from the above table that the decline in the infant-death rate again applies to infants aged one month and over and not to the new-born.

Analysis of Deaths of Infants under One Month of Age, 1927.

The following table gives the causes of these deaths during the year :—

Cause of Death.	Under One Day.	One Day and under One Week.	One Week and under Two Weeks.	Two Weeks and under Three Weeks.	Three Weeks and under One Month.	Total.
Influenza	..	..	3	..	1	4
Syphilis	..	..	..	1	..	1
Meningitis	..	..	..	..	1	1
Convulsions	2	11	4	1	2	20
Bronchitis	..	..	..	..	1	1
Broncho-pneumonia	..	1	2	3	3	9
Pneumonia	..	1	..	1	1	3
Diarrhœa and enteritis	..	..	2	3	2	7
Congenital malformations	10	54	19	10	9	102
Congenital debility	18	36	8	9	9	80
Injury at birth	18	33	4	..	1	56
Premature birth	148	118	24	12	5	307
Other diseases	23	45	14	4	2	88
Accidental mechanical suffocation.. ..	1	1	..	..	..	2
Other causes	4	16	11	4	4	39
Total	224	316	91	48	41	720

It will be seen from this table that 540 of a total of 720 infant deaths in the first month of life occurred during the first week, and may be regarded as mainly due to pre-natal influences. It is also of interest to record that exactly half of the infant deaths (in the first twelve months of life) occurred in this first week—*i.e.*, 540 in a total of 1,080.

Maternal Mortality.

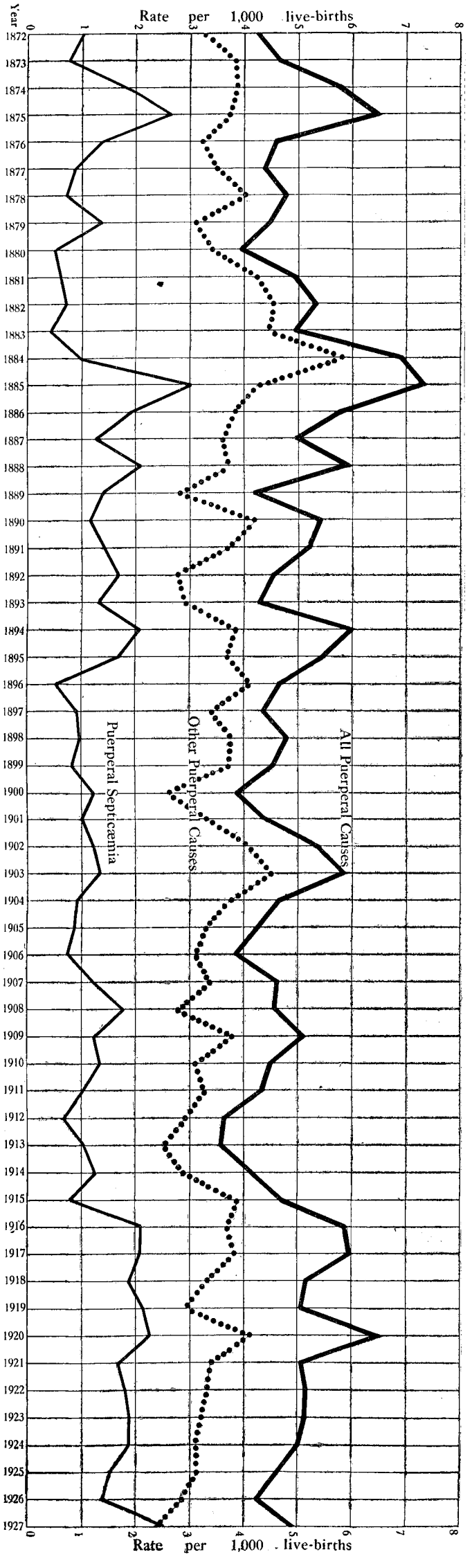
The following table shows the number of deaths from puerperal causes, and the rate of such deaths per 1,000 births, for the five-yearly period 1923–27 :—

Deaths from all Puerperal Causes, 1923–27.

Year.	Number of Deaths from			Death-rate per 1,000 Live Births from		
	Puerperal Septicæmia.	Other Puerperal Causes.	All Puerperal Causes.	Puerperal Septicæmia.	Other Puerperal Causes.	All Puerperal Causes.
1923	52	91	143	1·86	3·25	5·11
1924	52	88	140	1·86	3·14	5·00
1925	42	89	131	1·49	3·16	4·65
1926	39	81	120	1·37	2·88	4·25
1927	70	67	137	2·51	2·40	4·91

There has been a marked increase in the death-rate from puerperal septicæmia in 1927, but a reduction in that from other purperal causes, such as puerperal albuminurea and convulsions, puerperal hæmorrhage, accidents of labour, &c. This increase in the death-rate from puerperal septicæmia demands investigation. In last year's report I referred to the fact that the death-rate from all puerperal causes has shown remarkable periodic variations.

I am indebted to the Government Statistician for the preparation of the graph which I submit hereunder, showing from 1872 to 1927 (inclusive) the annual death-rates from "all puerperal causes" and from "puerperal septicæmia" and "other puerperal causes," which jointly make up the total rate for all puerperal causes.


Year
Rate per 1,000 live-births
0
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1924
1925
1926
1927
Puerperal Septicæmia
Other Puerperal Causes
All Puerperal Causes
Rate per 1,000 live-births

The graph presents certain interesting features. The top line, indicating the death-rate from all puerperal causes, shows extreme peaks in the years 1875, 1885, 1894, 1903, 1916–17, 1920, and now in 1927 the rate is showing a rise. The high and narrow peak of 1920 is of peculiar interest. In that year there occurred an undue proportion of first births, the result of returned-soldier marriages. Statisticians regard first births as more fatal than subsequent births, and it is thus possible the Great War temporarily influenced New Zealand's puerperal death-rate. With this exception it may be said the puerperal death-rate has shown a tendency to reach a high extreme every nine or ten years.

Since 1916 there has been on the part of the Government Statistician and his staff a closer scrutiny of death certificates than in former years, and probably the more sustained high level from 1916 onwards is from that cause.

A glance at the puerperal septicæmia line (bottom) shows that increases in deaths from that disease accounted in considerable measure for the high rates of 1875, 1885, 1894, 1916–17, less so in 1920, and markedly so last year.

The death-rate from other puerperal causes, however (middle line), appears to have been the main factor in the high puerperal death-rates of 1903 and 1920, and to have joined issue with puerperal septicæmia in accounting for the high rates of 1884–85.

One cannot be certain, particularly in the earlier years, that all puerperal-septicæmia deaths were registered as such. Before the close scrutiny of death-certificates and the questionnaires of the Government Statistician there would be a tendency for such deaths to be recorded as puerperal deaths, but not to be defined as due to puerperal septicæmia.

Local Distribution of Puerperal Septicæmia Deaths in 1927.

The following table gives the actual number of deaths from puerperal septicæmia in each hospital district during the years 1926 and 1927 :—

Hospital District.	Puerperal Septicæmia.		Hospital District.	Puerperal Septicæmia.	
	1926.	1927.		1926.	1927.
North Island.			*North Island*—continued.		
Mangonui	..	..	Wellington	4	4
Whangaroa	..	..	Wairarapa	1	1
Hokianga	..	1			
Bay of Islands	..	..		26	51
Kaipara	..	..	*South Island.*		
Whangarei	..	..	Wairau	..	..
Auckland	13	25	Picton	..	..
Waikato	5	3	Nelson	..	1
Taumarunui	..	..	Buller	..	..
Thames	1	..	Inangahua	..	..
Waihi	..	1	Grey	..	1
Coromandel	..	..	Westland	..	..
Tauranga	..	1	North Canterbury	7	6
Bay of Plenty	..	..	Ashburton	2	1
Opotiki	..	1	South Canterbury	..	1
Cook	..	1	Waitaki	..	..
Wairoa	..	..	Otago	1	5
Hawke's Bay	..	4	South Otago	..	..
Waipawa	..	2	Vincent	..	..
Dannevirke	1	..	Maniototo	..	..
Taranaki	1	2	Southland	2	4
Stratford	..	2	Wallace and Fiord	1	..
Hawera	..	1			
Patea	..	..		13	19
Wanganui	..	1			
Palmerston North	..	1	Total for New Zealand	39	70

It will be seen that last year a marked increase occurred in the Auckland Hospital District, but also that there was a fairly general though less marked increase in fully half the hospital districts both Islands.

International List.

The following table gives the death-rate from puerperal causes in various countries (a quinquennial average—such an average discounts annual extremes).

Country.	Period.	Death-rate per 1,000 Births from		
		Puerperal Septicæmia.	Other Puerperal Causes.	All Puerperal Causes.
Denmark	1920–24	1·10	1·16	2·26
Netherlands	1921–25	0·72	1·72	2·44
Sweden	1918–22	1·28	1·40	2·68
Italy	1920–24	1·08	1·73	2·81
Uruguay	1919–23	1·75	1·13	2·88
Japan	1921–25	1·21	2·07	3·28
Hungary	1918–22	1·52	1·90	3·42
England and Wales	1921–25	1·40	2·50	3·90
Northern Ireland	1921–25	1·55	3·21	4·76
Spain	1920–24	2·99	1·80	4·79
New Zealand	**1923–27**	**1·82**	**2·97**	**4·79**
Irish Free State	1921–25	2·10	2·88	4·98
Germany	1920–24	2·77	2·27	5·04
Jamaica	1921–25	1·09	4·10	5·19
Australia	1922–26	1·70	3·51	5·21
Switzerland	1918–22	2·82	2·60	5·42
Canada*	1921–25	1·46	4·09	5·55
Belgium	1920–24	2·65	3·11	5·76
Scotland	1921–25	1·86	4·41	6·27
United States†	1920–24	2·54	4·36	6·90
Chile	1919–23	2·24	6·00	8·24
Trinidad	1923–25	3·58	5·68	9·26
British Guiana	1922–25	2·68	11·55	14·23
Ceylon	1921–25	8·15	11·94	20·09

* Exclusive of Quebec. † Registration area.

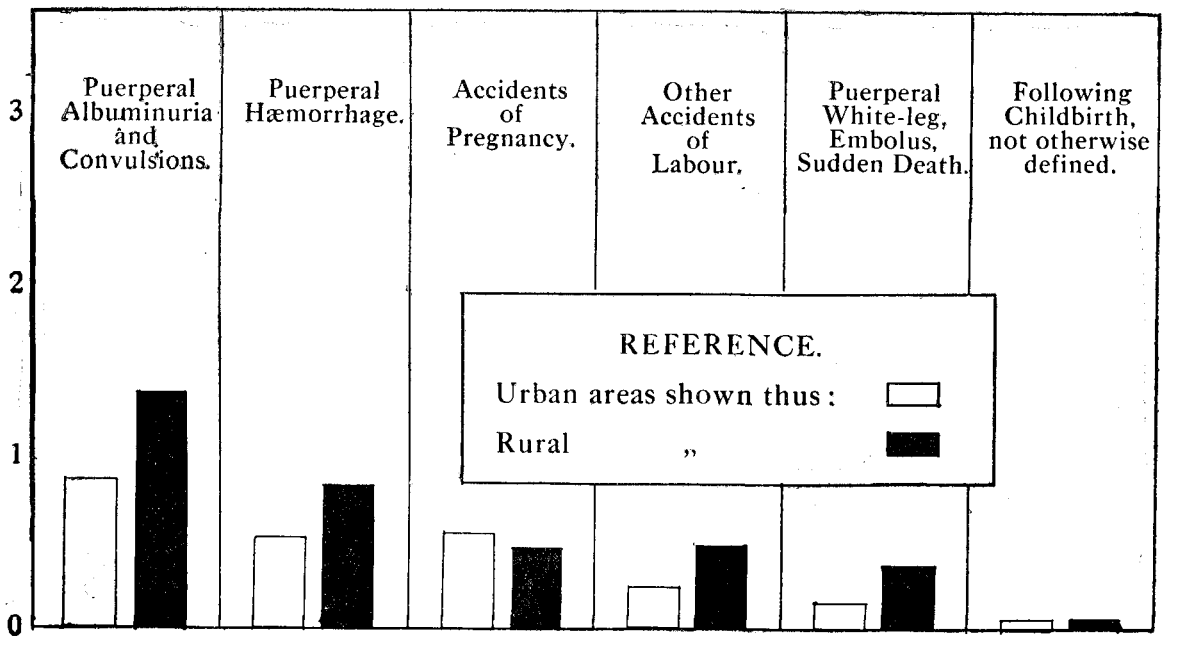
It will be seen from this that New Zealand's puerperal death-rate, unlike her general death-rate, is still relatively high, due less to puerperal-septicæmia deaths than to deaths from other puerperal causes, such as puerperal albuminuria and convulsions, puerperal hæmorrhage, and other accidents of labour. It will be seen also that several other countries, believed to possess skilled midwifery service, which show a relatively high rate also owe their relatively high rate more to these other puerperal causes than to puerperal septicæmia. I instance Northern Ireland, Australia, Canada, Scotland, and the United States of America.

Causes other than Puerperal Septicæmia.—A Comparison of Death-rates of (1) the Fourteen Urban Centres, and (2) the Rest of the Dominion.

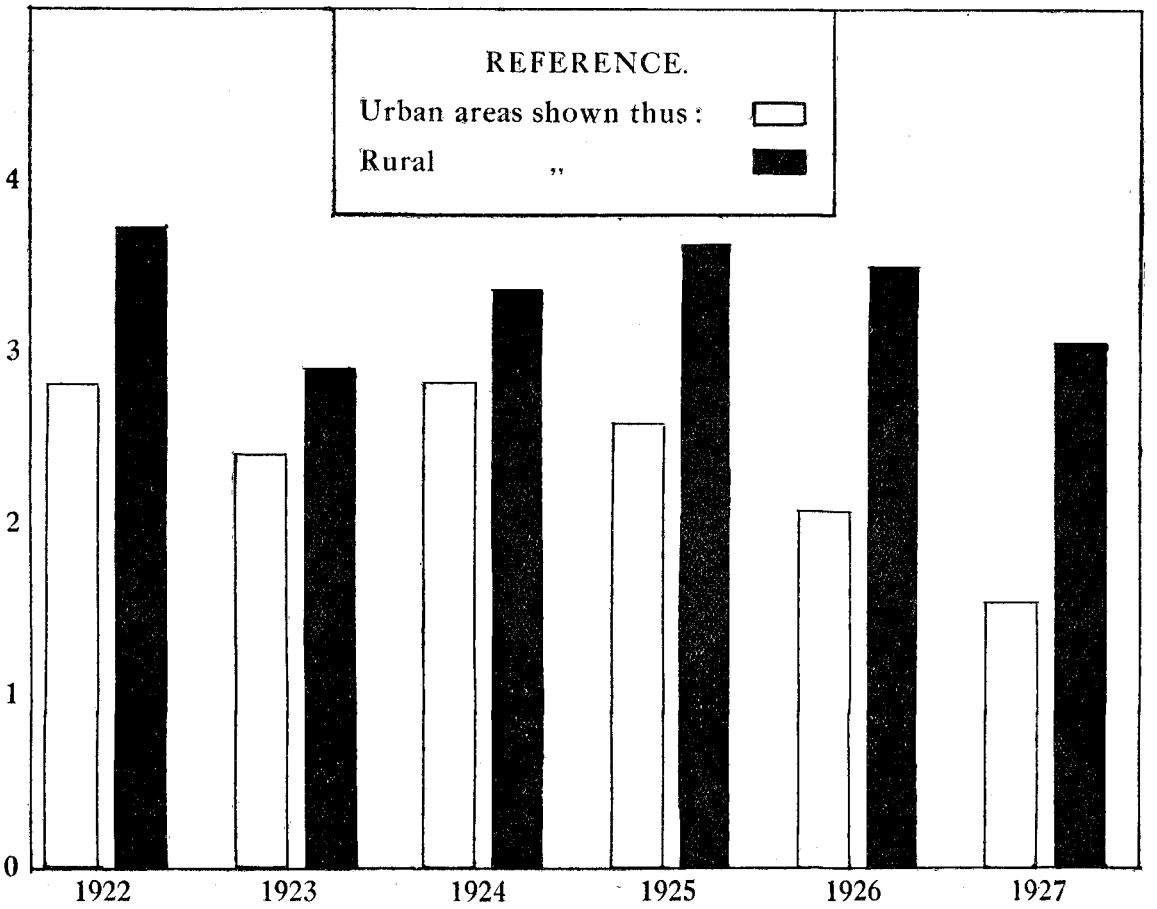
Since 1922 corrected statistics have been available giving separately the death-rates for (1) the fourteen urban centres, which jointly include slightly more than half of the population of the Dominion, and for (2) the rest of the Dominion.

I present hereunder two columnar graphs.

Graph A.—*Puerperal Death-rates per 1,000 Live Births—Each cause, excluding Puerperal Septicæmia: Average for Years 1922–27.*



GRAPH B.—*Puerperal Death-rates per 1,000 Live Births—All causes combined, excluding Puerperal Septicæmia: Average for Years 1922–27.*



Graph A depicts the average death-rate from 1922 to 1927 (inclusive) from each of these causes. Graph B shows the death-rate in each year from these causes combined.

It will be seen the death-rate per 1,000 births is greater in the rest of the Dominion than in the fourteen urban areas, and has remained so for the whole period. It is specially noticeable with puerperal albuminuria and convulsions, puerperal hæmorrhage, and accidents of labour. It does not hold good for deaths from accidents of pregnancy, which include deaths from abortions.

Since these deaths in New Zealand occur less frequently with urban dwellers than with those residing in the country districts and the smaller towns, it is possible that not only in New Zealand, but also in the several other countries to which I have referred, this higher death-rate is due not to lack of skill, but to scattered distribution of population rendering ante-natal care and the procurement of skilled midwifery service more difficult of attainment. That is to say, we in New Zealand can considerably reduce our puerperal death-rate, but the distribution of our population makes that task more difficult.

Summary.

In comparison with other countries, New Zealand occupies a median position as regards her maternal death-rate from all causes. The fact that, while showing the lowest general death-rate in the world, she occupies a less favourable position in respect of maternal mortality is shown by the quinquennial averages presented year after year to be due more to deaths from other puerperal causes than to deaths from puerperal septicæmia. These other puerperal causes are less fatal to women residing in the fourteen principal urban areas than to women in the rest of the Dominion. For the last two years there has been a reduction in the Dominion death-rate from these other puerperal causes. This may be due to better midwifery service and increased ante-natal supervision, more particularly in the rural areas. Hospital Boards have established a number of well-equipped maternity hospitals, the Department has been active in its supervision of midwifery, and the medical profession is alive to the importance of skilled midwifery.

Every few years there is a marked and as yet unexplained increase in the death-rate from puerperal septicæmia, which disease usually is responsible for approximately one-third of the maternal deaths. This increase recurred last year. Investigation will be made to ascertain how many of the puerperal-septicæmia cases which occurred last year were secondary and preventable; but it is obvious that such septicæmia waves occur periodically, and when this happens our experience has been that the prevention of the spread of this disease is difficult. The bacteriology of puerperal septicæmia is not yet fully understood in any country. It may be said that, while we may limit its spread in any given year, the cause of periodic waves of increase has not yet been ascertained.

Puerperal Death-rates per 1,000 Live Births in New Zealand.

(Prepared by the Census and Statistics Office.)

Cause.	Urban Areas.							Rest of Dominion.						
	1922.	1923.	1924.	1925.	1926.	1927.	Total.	1922.	1923.	1924.	1925.	1926.	1927.	Total.
Puerperal septicæmia ..	1·95	2·01	1·02	1·41	1·28	2·99	1·78	1·65	1·73	2·55	1·57	1·45	2·09	1·84
Puerperal albuminuria and convulsions	1·35	0·73	0·95	1·02	0·53	0·61	0·86	1·08	1·61	1·57	1·23	1·59	1·21	1·38
Puerperal hæmorrhage ..	0·45	0·65	0·63	1·18	0·07	0·23	0·53	1·02	1·16	0·72	0·58	0·53	0·94	0·83
Accidents of pregnancy ..	0·68	0·64	0·71	0·08	0·82	0·31	0·54	0·25	0·58	0·39	0·58	0·59	0·20	0·44
Other accidents of labour ..	0·22	0·08	0·08	0·08	0·30	0·31	0·18	0·63	0·19	0·32	0·39	0·33	0·41	0·38
Puerperal white-leg, embolus, sudden death	0·15	0·32	0·39	0·08	0·30	0·07	0·22	0·63	0·26	0·39	0·84	0·46	0·34	0·49
Following childbirth, not otherwise defined	..	..	0·08	0·16	0·07	..	0·05	0·13	0·13	..	..	..	0·07	0·05
Total	4·80	4·43	3·86	4·01	3·37	4·52	4·16	5·39	5·66	5·94	5·19	4·95	5·26	5·41

SECTION 2.—NOTIFIABLE DISEASES.

Scarlet Fever.

The course of scarlet fever in New Zealand during the last five years is briefly shown in the table below. This disease has been epidemic throughout the year, and has continued so since 31st December, 1927, when the figures were compiled. Fortunately, the virulence is mild, the deaths per 100 cases notified producing a case-mortality rate of only 0·7 per cent. Staffs have been kept busy in effecting isolation measures, and in some districts—particularly Christchurch—all available public-hospital beds for infectious cases have been occupied.

Scarlet Fever in New Zealand, 1923–27.

Year.	Notifications.		Deaths.	
	Number.	Rate per 10,000 of Mean Population.	Number.	Rate per 10,000 of Mean Population.
1923	1,201	9·42	13	0·10
1924	1,176	9·05	13	0·10
1925	1,025	7·71	7	0·05
1926	1,583	11·70	8	0·06
1927	2,185	15·89	16	0·12

Diphtheria.

Diphtheria in New Zealand, 1923–27.

Year.	Notifications.		Deaths.*	
	Number.	Rate per 10,000 of Mean Population.	Number.	Rate per 10,000 of Mean Population.
1923	1,951	15·31	68	0·53
1924	2,717	20·84	82	0·63
1925	1,518	11·42	52	0·40
1926	1,975	14·59	66	0·49
1927	1,446	10·52	58	0·42

* Figures include deaths from croup.

The above table shows reduced incidence and death-rate. Certain American States have attributed reductions in death-rate from this disease to immunization with diphtheria toxin-antitoxin; but an even greater reduction has taken place in New Zealand under the ordinary isolation and

disinfection routine. In the light of the few tragedies at Bundaberg and elsewhere it is open to doubt whether, particularly in New Zealand, immunization with toxin-antitoxin should be recommended pending full explanation of the causes of these occasional disasters and the institution of safeguards against their possible occurrence.

Enteric Fever.

The position as regards this disease for the period 1923–27 is shown in the table below :—

Enteric Fever in New Zealand, 1923–27.

Year.	Notifications.		Deaths.	
	Number.	Rate per 10,000 of Mean Population.	Number.	Rate per 10,000 of Mean Population.
1923	276	2·17	23	0·18
1924	354	2·73	19	0·15
1925	278	2·09	16	0·12
1926	302	2·23	19	0·14
1927	270	1·96	11	0·08

The great and gradual reduction in the death-rate from this disease from 1923 to the remarkably low rate of 0·08 last year testifies to the value of good, if expensive, municipal sanitation, isolation measures, and, as regards the Maoris in particular, inoculation with preventive vaccine.

Pneumonic Influenza.

The table appended illustrates the course of this disease for the quinquennial period 1923–27.

Pneumonic Influenza in New Zealand, 1923–27.

Year.	Notifications.		Deaths.	
	Number.	Rate per 10,000 of Mean Population.	Number.	Rate per 10,000 of Mean Population.
1923	1,144	8·98	223	1·75
1924	180	1·39	32	0·25
1925	69	0·52	23	0·17
1926	641	4·73	132	0·98
1927	176	1·28	43	0·31

General.

New Zealand, with her natural advantages and with a general public who support disease-prevention, has registered for several years past the lowest general infantile and tuberculosis death-rates in the world, and with regard to the common infectious diseases they are much milder in type and less deadly than is the case in most other countries.

Time was, before the statutory control of infectious diseases and of sanitation generally, that the population of even civilized countries, particularly those with large overcrowded and insanitary cities, was greatly reduced by the ravages of infectious diseases. In most civilized countries there has been a consistent and great reduction in the death-rate from the common notifiable infectious diseases.

Whether or not there are, as is said to be the case, epidemiological factors little understood and at present beyond our control, which will in future years cause a recurrence of high death-rates from this cause, the fact remains that year after year the Department has reported reductions in these death-rates, and now these diseases are a minor factor in public health in so far as the deaths they cause is concerned.

With regard also to infant deaths in New Zealand, the number has now been reduced to 1,080 in the first year of life ; and, of these, 540, or exactly half the number, occurred in the first week—that is to say, they were associated not only with birth itself, but intra-uterine life and the parents.

The proportion of actual still-births to live births continues apparently to rise slowly, and is now 31·5 per 1,000 live births ; but allowance should be made for increasing registration of these still-births with changing conditions, at one time their registration was exceptional.

The actual number of deaths of mothers last year in New Zealand in association with childbirth was 136.

It has always been recognized that pregnancy and birth are events dangerous to both mother and child—*i.e.*, we can and should reduce the risks to the minimum ; but our intended efforts to this end cannot reduce the Dominion's general death-rate to any great extent.

SECTION 3.—THE PRINCIPAL CAUSES OF DEATH.

That there are other and even more promising points for attack upon the principal causes of deaths in New Zealand is shown by the following table, which gives the main causes of deaths last year in their order of magnitude, and the actual number of deaths therefrom :—

TOTAL DEATHS IN NEW ZEALAND IN 1927, 11,819.

Causes.		Actual Deaths.
Heart-disease (all forms)		2,150
Cancer		1,324
Violence		877
Common chest-diseases—		
Pneumonia	313	
Broncho-pneumonia	207	
Bronchitis	303	
		823
Senility		806
Apoplexy or cerebral hæmorrhage		771
Tuberculosis (all forms)		668
		7,419

These six main causes, with senility, account for 7,419, or approximately two-thirds of the total; and that proportion has been fairly constant for several years past.

Remaining Principal Causes.

Infant deaths (under one year)	1,080
Kidney or Bright's disease	409
Diabetes	188
Disease of the arteries	179
Diseases and accidents of childbirth	137
Hernia and intestinal obstruction	109
Appendicitis	92
Diarrhœa and enteritis	91
Meningitis (all forms)	63
Epilepsy	40

Common Infectious Diseases.

Influenza	131
Diphtheria	58
Whooping-cough	41
Measles	29
Scarlet fever	16
Typhoid fever	11

From the numerical standpoint special consideration should perhaps be given to the afore-stated six principal causes. Obviously, with some of them—*e.g.*, tuberculosis, the common chest-diseases, some forms of heart-disease, and apoplexy—habits of life and environment are important factors. The correction of faulty habits, where applicable, and the improvement of the environment of an unfortunate or careless minority of the New Zealand public would reduce these deaths, and the numbers are such as to offer a margin of gain worth the effort.

HEART-DISEASES (ALL FORMS), 2,150.

The 2,150 deaths annually from all forms of heart-disease in a Dominion total of 11,819 merit consideration. While a large proportion are probably instances of a failing pumping-organ in a generally diseased or worn-out body, it is evident that some of these deaths are preventable. Recent investigation has shown, for example, that some cases of heart-disease are bacterial in nature.

As regards child-life, attention has been drawn by the dental and medical professions to the importance of correct diet in the prevention of carious teeth. Bad diet, particularly if associated with the overcrowding of children in houses and a sunless environment, will cause carious teeth, followed later by septic tonsils, and in some instances inflammation of the lining of the heart of bacterial origin.

The prevalence, too, of rheumatic fever, which sometimes involves the heart, is reduced by good habits and environment.

Some cases of acute disease of the heart in adults, too, are bacterial in nature. A septic focus elsewhere in the body, followed by invasion of the general blood-stream, may affect the heart.

With regard to sedentary adults indulging in overeating, sudden physical strain damages the heart. "Eat sparingly and keep constantly fit" is a good heart maximum, and the fact that the world's healthiest country loses 2,150 persons annually from heart-disease indicates that all do not keep constantly fit.

Syphilis, when it develops, often causes disease of the circulatory organs, such as heart-disease, aneurism, or apoplexy. New Zealand has special regulations designed to ensure prompt and efficient treatment for this malady, and to prevent its spread. By means of the co-operation of medical practitioners some success has been achieved in controlling the disease, but we can all increase our efforts in this direction.

Cancer, 1,324.

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, 1918–27.

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.
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
1923	1,115	11,511	8·75	9·69
1924	1,245	10,767	9·59	11·56
1925	1,207	11,026	9·08	10·95
1926	1,341	11,819	9·91	11·35
1927	1,324	11,613	9·63	11·40

We know not the cause of cancer. It is increasing in prevalence at a slow, not rapid, rate. Being a disease of late life, and having in the past often missed detection or registration, its apparent increase is in considerable measure accounted for by our longer span of life and greater skill in diagnosis. The real increase is slight, and can be checked if advice and treatment be sought early in the disease. Recent results show that the proportion of acutal cures from the treatment of early cancer is very high indeed.

It has always been an important cause of death, but results show that nowadays submission to skilled treatment at an early stage is worth while. Particularly after the age of thirty-five we should seek medical examination for any unusual condition which might be cancer.

Violence, 877.

Regarding the 877 deaths last year from violence, of which 656 were due to accident, 199 to suicide, and 22 to homicide, it is noteworthy that in the last seven years, whereas the death-rates from suicide and homicide have shown little variation, that from accident has increased considerably.

In an interesting analysis of these accidental deaths the Government Statistician has shown in the Official Year-book that this increase is due mainly to motor-vehicle accidents. From and including 1921 to 1923 the annual deaths from this cause averaged about sixty-four, whereas from and including 1925 to 1927 the average was 132.

The Common Chest-diseases, 823.

Disease.	Number of Deaths in 1927.
Pneumonia	313
Broncho-pneumonia	207
Bronchitis	303
	823

Many additional deaths from these three causes are recorded annually as secondary to influenza, whooping-cough, and measles—*e.g.*, in 1927 103 and in 1926 240 additional deaths from these three chest-conditions were registered in association with influenza, measles, and whooping-cough.

There is reason to believe that many of these deaths could be prevented. In some countries the experiment has been tried of making every pneumonia case compulsory notifiable and attempting isolation. Apparently the results achieved have not justified the expense and trouble thereby involved, but the fact remains that probably a large proportion of these illnesses are infectious. All associated with epidemics of influenza, measles, whooping-cough, or diphtheria certainly are. Again, when in the absence of a recognized outbreak of such common infectious diseases groups of pneumonia or broncho-pneumonia cases occur in a community, affecting in considerable measure virile young adults, adolescents, and children of which it can be said the infecting agent is virulent, then measures can be taken which give promise of considerably reducing the death-rate from these lung-ailments. Such measures are complete case isolation to be practised by doctor and nurse, and convalescents to be restrained from close contact with other persons, attendance at indoor public gatherings, &c., until they have completely recovered.

Senility, 806.

A death-certificate of senility means that no other cause of death could be assigned. The age-group figures for 1927 are not yet avilable, but it is of interest to note from the annual report of the Government Statistician that in 1926, of 887 deaths from senility, 10 occurred under the age of sixty-five years, 52 under seventy, 156 under seventy-five, while 24 reached the ripe age of ninty-five years or over.

APOPLEXY OR CEREBRAL HÆMORRHAGE, 771.

A death from this cause implies disease of the brain-arteries, associated sometimes with high blood-pressure, and the actual hæmorrhage may be caused by sudden physical or mental effort. Of 764 deaths from this cause in 1926, 5 occurred in infancy, 34 occurred in persons under the age of forty years, 75 under fifty years, 183 under sixty years, and 379, or approximately half the total, under seventy years of age.

TUBERCULOSIS.

Tuberculosis (all Forms) in New Zealand, 1872–27.

Year.	Number of Deaths from Tuberculosis.	Death-rate from Tuberculosis per 10,000 of Mean Population.	Year.	Number of Deaths from Tuberculosis.	Death-rate from Tuberculosis per 10,000 of Mean Population.
1872 ..	346	12·66	1900 ..	752	9·85
1873 ..	296	10·50	1901 ..	775	9·96
1874 ..	391	12·26	1902 ..	802	10·05
1875 ..	561	15·63	1903 ..	769	9·38
1876 ..	488	12·59	1904 ..	799	9·46
1877 ..	512	12·68	1905 ..	678	7·79
1878 ..	513	12·20	1906 ..	720	8·04
1879 ..	587	13·10	1907 ..	856	9·31
1880 ..	645	13·60	1908 ..	840	8·89
1881 ..	680	13·80	1909 ..	803	8·26
1882 ..	611	12·00	1910 ..	731	7·36
1883 ..	700	13·23	1911 ..	733	7·27
1884 ..	718	12·99	1912 ..	716	6·89
1885 ..	698	12·25	1913 ..	812	7·60
1886 ..	705	12·11	1914 ..	728	6·67
1887 ..	734	12·31	1915 ..	793	6·30
1888 ..	647	10·69	1916 ..	742	6·74
1889 ..	649	10·61	1917 ..	755	6·87
1890 ..	650	10·47	1918 ..	832	7·54
1891 ..	663	10·53	1919 ..	762	6·71
1892 ..	700	10·90	1920 ..	851	7·21
1893 ..	729	11·02	1921 ..	793	6·48
1894 ..	752	11·07	1922 ..	821	6·56
1895 ..	761	10·99	1923 ..	792	6·21
1896 ..	680	9·62	1924 ..	736	5·67
1897 ..	763	10·57	1925 ..	684	5·14
1898 ..	769	10·44	1926 ..	727	5·37
1899 ..	795	10·60	1927 ..	668	4·86

New Zealand has the lowest death-rate from tuberculosis in the world, and the rate per 10,000 of mean population has reduced from 7·54 in 1918 to 4·86 last year.

Of the total of 668 deaths in 1927, 533 were assigned to pulmonary tuberculosis, showing a considerable reduction from 592 recorded in 1926. There were 135 deaths from other forms of this disease, comprising tuberculous-meningitis and peritonitis, and tuberculosis of the bones, joints, glands, &c. A small proportion only of these latter deaths, particularly those of children, are deemed by recognized authorities to be possibly due to infection from the cow, and bacteriological tests of milk-supplies in some New Zealand cities have shown the milk-supply to be remarkably free from bovine tubercle. The majority of these latter deaths and all, or nearly all, deaths from pulmonary tuberculosis are regarded as due to the human type of tubercle, presumably conveyed from human sources.

Although the death-rate from tuberculosis is reducing, it still takes sixth place as a cause of death in New Zealand and disables temporarily or permanently many more than it kills.

Probably New Zealand owes her comparatively low tuberculosis death-rate to healthy home, school, and workplace environment, nourishing food, an excellent sunny climate, and the rarity of overcrowding. But there are exceptional instances of bad habits and environment which should not exist. Given good food and cleanly habits if everyone slept and lived with wide-open windows in ample cubic space there would soon be a marked reduction in the tuberculosis death-rate. When a case of consumption is treated in a dwelling it is specially necessary for all inmates to live the open-air life. That is the practice in sanatoria. Most persons contract tuberculosis and recover. It is only the specially weak or those with bad living habits who succumb.

Pulmonary Tuberculosis.

Pulmonary tuberculosis is the only variety of the disease which is compulsorily notifiable. It cannot be said, however, that all cases of this disease are notified. The number of notifications for 1925 was 1,247 ; for 1926, 1,318 ; and for 1927, 1,343. It is satisfactory to note a larger proportion of cases is being notified, while the death-rate is steadily reducing.

Distribution of Deaths from Pulmonary Tuberculosis.—During the last two years the death-rate per 10,000 of mean population was—

	1927.	1926.
North Island	3·82	4·3
South Island	3·98	4·5

The difference is slight.

It would seem that attention to the six principal causes of death offers the main chance of appreciably reducing the general death-rate of the Dominion, which is already comparatively low. Scientific discovery may further aid us in reducing the deaths from these six and other principal causes. Meantime it is only by the willing co-operation of the public, the medical practitioners, and the Department of Health in disease-prevention in the home, school, and workplace environment of the people that great reductions in our death-rate will be made. It is particularly necessary to correct bad living habits, to treat disease in its early stages, and, wherever possible, to prevent the spread of any infectious illness.

TABLE A.—NOTIFIABLE DISEASES IN NEW ZEALAND, 1927, SHOWING DISTRIBUTION BY MONTHS.

Month.	Scarlet Fever.	Diphtheria.	Enteric Fever.	Tuberculosis.	Cerebro-spinal Meningitis.	Poliomyelitis.	Pneumonic Influenza.	Pneumonia.	Erysipelas.	Puerperal Fever.	Septic Abortion.	Eclampsia.	Tetanus.	Hydatids.	Trachoma.	Ophthalmia Neonatorum.	Lethargic Encephalitis.	Food-poisoning.	Dysentery.	Beriberi.	Actinomycosis.	Anthrax.	Lead-poisoning.	Total.
January	75	105	21	86	3	3	7	43	12	28	7	5	3	5	2	3	2	1	1	..	..	..	..	412
February	91	59	17	91	2	5	7	27	13	13	8	7	..	9	1	5	3	3	..	..	..	..	..	361
March	163	154	53	113	2	5	11	41	9	26	7	10	..	4	2	2	..	..	..	..	1	1	..	603
April	160	147	26	86	2	4	8	44	15	19	3	6	..	3	..	2	2	1	..	..	..	..	..	528
May	213	147	15	100	1	4	6	52	14	19	8	8	..	..	2	3	3	..	1	2	..	..	..	599
June	222	172	33	91	2	2	19	77	23	22	7	9	3	3	..	3	..	52	..	..	..	..	..	740
July	237	140	19	122	2	2	13	141	28	22	4	6	..	6	3	1	3	1	..	..	..	..	..	750
August	225	147	20	113	1	..	20	139	36	29	9	8	2	3	2	2	3	1	1	..	..	..	..	761
September	218	91	10	144	7	..	21	80	26	14	7	4	5	4	1	2	3	2	..	..	..	..	..	639
October	200	123	11	143	..	..	21	81	21	22	12	8	3	11	..	3	4	..	..	..	..	..	..	663
November	175	74	18	142	..	2	14	91	20	12	5	2	5	5	..	5	4	6	..	..	1	..	..	581
December	206	87	27	112	..	2	29	92	27	18	7	3	1	3	2	7	4	25	..	..	..	..	1	653
Totals, 1927	2,185	1,446	270	1,343	22	29	176	908	244	244	84	76	22	56	15	38	31	92	3	2	2	1	1	7,290
Totals, 1926	1,583	1,975	302	1,318	35	22	641	880	233	190	107	54	16	67	10	32	42	26	21	..	3	..	6	7,563

Table B.—Notifications of Cases of Notifiable Diseases for Year ended 31st December, 1927.

Name of Disease.	North Auckland.	Central Auckland.	South Auckland.	Coromandel-Opotiki.	Taranaki-Horowhenua	Taranaki.	Wanganui-Horowhenua.	Wairarapa-East Cape.	Central Wellington.	Nelson-Marlborough.	West Coast.	Canterbury.	Otago.	Southland.	Totals.
Scarlet fever	34	112	77	37	99	51	237	269	637	29	19	429	84	71	2,185
Diphtheria	53	293	73	127	91	56	133	214	189	10	53	111	29	14	1,446
Enteric fever	45	13	63	25	12	6	5	76	2	1	3	16	..	3	270
Tuberculosis	57	139	100	59	21	29	40	106	84	12	14	428	191	63	1,343
Cerebro-spinal meningitis	3	1	1	..	2	..	2	4	3	1	1	1	2	1	22
Poliomyelitis	4	4	2	1	3	2	..	4	4	3	..	2	..	..	29
Influenza (pneumonic, &c.)	11	30	11	7	8	14	8	5	3	1	2	56	18	2	176
Pneumonia	53	120	111	49	16	104	106	67	51	6	6	145	68	6	908
Erysipelas	12	42	18	7	5	4	17	29	40	..	37	27	6	5	244
Puerperal fever—															
Ordinary	17	43	17	9	12	9	10	29	27	4	3	41	15	8	244
Following abortion or miscarriage	2	42	1	3	2	2	2	9	5	..	..	15	1	..	84
Eclampsia	3	16	6	2	3	6	2	11	1	1	1	11	10	3	76
Tetanus	..	3	3	2	..	4	..	3	..	..	..	3	3	1	22
Hydatids	1	2	3	1	4	4	..	9	..	1	1	18	10	2	56
Trachoma	..	2	8	1	1	..	1	1	..	..	..	1	..	..	15
Ophthalmia neonatorum	5	10	3	..	1	1	2	1	6	..	..	8	1	..	38
Lethargic encephalitis	1	..	..	1	2	1	..	7	3	..	..	10	6	..	31
Food poisoning	..	9	..	25	..	..	..	..	1	..	..	57	..	..	92
Chronic lead poisoning	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1
Dysentery	..	2	1	..	..	..	..	..	..	..	..	..	..	..	3
Beriberi	..	2	..	..	..	..	..	..	..	..	..	..	..	..	2
Actinomycosis	..	..	..	1	..	..	..	..	..	..	..	..	1	..	2
Anthrax	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1
Totals	301	886	498	357	282	392	565	844	1,056	69	103	1,390	466	180	7,290

Note.—Taranaki-Horowhenua figures are for four months only. Taranaki and Wanganui-Horowhenua figures are for eight months only.

TABLE C.—NOTIFIABLE DISEASES IN NEW ZEALAND, 1927, 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	5	6	210	232	348	472	133	239	51	106	28	90	25	69	13	61	16	30	9	9	9	10	1	4	1	1	2	3	..	1	..	..	..	1	..	..	851	1,334
Diphtheria	7	6	198	173	240	274	88	125	16	74	20	55	13	40	15	28	11	17	7	13	3	6	1	2	1	4	..	1	..	..	..	1	..	..	..	..	620	819
Enteric fever	..	..	12	3	26	28	20	17	21	18	18	36	9	4	8	12	7	8	3	4	6	4	1	1	3	..	..	1	..	..	..	..	..	..	..	..	134	136
Tuberculosis	..	2	7	2	16	8	33	50	73	102	100	165	108	138	90	86	75	49	52	37	40	16	28	11	22	7	9	5	8	2	3	4	1	..	1	..	666	684
Cerebro-spinal meningitis	1	..	10	1	..	1	2	2	..	2	2	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	16	6
Poliomyelitis	1	..	6	1	8	4	4	1	1	..	2	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	23	6
Puerperal fever	..	..	..	..	..	..	..	..	..	21	..	76	..	69	..	39	..	27	..	8	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	243
Septic abortion	..	..	..	..	..	..	..	..	..	8	..	18	..	22	..	22	..	11	..	4	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	86
Eclampsia	..	..	..	..	..	..	..	..	..	9	..	18	..	26	..	7	..	11	..	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	76
Erysipelas	4	6	4	2	5	2	2	1	3	7	5	6	9	16	5	15	9	13	11	14	14	18	8	11	5	15	7	7	3	..	4	6	1	5	..	1	99	145
Opthalmia neonatorum	29	9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	29	9
Pneumonic influenza	1	2	2	..	4	5	11	7	6	4	6	5	11	7	8	4	11	6	11	5	18	3	8	5	5	1	2	5	1	3	2	4	..	..	1	2	108	68
Pneumonia	21	24	93	72	115	61	40	33	45	19	34	13	37	17	28	19	31	18	31	14	28	9	18	8	12	4	9	6	8	7	9	8	8	3	8	1	572	336
Hydatids	..	..	..	1	3	1	3	4	..	1	4	2	5	..	4	..	5	4	..	..	5	2	1	3	3	1	..	1	..	..	..	1	1	..	..	..	34	21
Tetanus	1	..	4	1	3	1	5	..	2	..	1	..	..	..	..	..	2	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	20	2
Lethargic encephalitis	..	..	..	..	3	1	..	1	..	1	1	..	1	4	1	..	..	4	3	5	..	2	1	..	..	..	1	..	..	..	..	..	..	..	..	..	11	18
Trachoma	..	..	..	..	..	1	..	..	1	..	2	1	1	..	3	..	..	1	..	1	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	9	4
Dysentery	..	..	1	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1
Actinomycosis	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Food poisoning	..	..	4	2	3	10	1	21	3	17	..	2	2	4	..	2	..	5	..	6	..	2	2	..	1	..	..	4	..	1	..	1	..	..	..	..	16	77
Lead poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..
Anthrax	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..
Beriberi	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	2	..
Totals	70	55	551	491	774	869	342	501	222	389	223	487	225	416	175	295	167	205	128	125	125	76	73	45	54	33	30	33	20	14	18	25	11	9	10	4	3,218	4,072

TABLE D.—VENEREAL CLINICS.—CASES TREATED DURING THE YEAR ENDED 31ST DECEMBER, 1927.

Reference.	Auckland.		Wellington.		Christchurch.		Dunedin.		Totals.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Number of persons dealt with at or in connection with the out-patient clinic for the first time and found to be suffering from—										
Syphilis	58	20	67	16	32	16	26	10	183	62
Soft sore	3	..	..	..	11	..	..	..	14	..
Gonorrhœa	575	80	424	45	299	68	77	16	1,375	209
No venereal disease	69	26	215	92	28	8	11	..	323	126
Total attendance of all persons at the out-patient clinics who were suffering from—										
Syphilis	837	294	2,504	601	2,324	874	964	388	6,629	2,157
Soft sore	14	..	..	..	71	..	..	..	85	..
Gonorrhœa	17,591	868	31,322	507	9,084	2,317	1,384	178	59,381	..
No venereal disease	158	60	372	158	95	8	17	..	642	226
Aggregate number of in-patients' days of treatment given to persons suffering from—										
Syphilis	276	110	1,388	..	..	..	39	43	1,703	153
Gonorrhœa	1,459	309	5,886	..	..	..	223	184	7,568	493

SECTION 4.—NUMBER OF VESSELS INSPECTED DURING THE YEAR ENDED 31ST DECEMBER, 1927.

Port.	Number of Vessels inspected.	Prohibited Immigrants.	Infectious-disease Cases.	V.D. Cases.	Mental Defective Cases.
Auckland Health District—					
Auckland	341	78	4	..	..
Dargaville	1	..	..	..	..
Taranaki Health District—					
New Plymouth	23	..	..	..	..
Wellington Health District—					
Wanganui	16	..	..	..	..
Gisborne	5	..	..	..	..
Napier	6	..	..	..	..
Wellington	149	30	17	8	1
Picton	2	..	..	..	..
Canterbury Health District—					
Lyttelton	26	..	1	1	..
Westport	5	..	..	..	..
Greymouth	2	..	..	..	..
Otago Health District—					
Oamaru	2	..	..	..	..
Port Chalmers	21	..	..	..	..
Bluff	40	..	..	..	..
Totals	639	108	22	9	1

SECTION 5.—WORKING OF THE SALE OF FOOD AND DRUGS ACT.

TABLE 1.—SHOWING SAMPLES RESPECTIVELY OF MILK AND OTHER FOODSTUFFS TAKEN AND DEALT WITH DURING THE YEAR ENDED 31ST DECEMBER, 1927.

Health District.	Number of Samples taken.		Number of Vendors.		Samples not complying.					
					Number of Samples.		Number of Warnings issued.		Number of Prosecutions recommended.	
	Milk.	Other.	Milk.	Other.	Milk.	Other.	Milk.	Other.	Milk.	Other.
North Auckland ..	211	37	196	37	17	6	6	3	7	3
Central Auckland ..	1,137	217	1,131	168	73	46	71	25	1	18
South Auckland ..	191	93	189	88	6	21	5	6	1	6
Coromandel–Opotiki	42	17	41	17	4	2	3	1	1	1
Taranaki–Horowhenua	33	74	33	12	..	2	..	1	..	1
Taranaki	100	29	76	25	6	..	..	..	6	..
Wanganui–Horowhenua	116	36	114	31	7	2	3	..	4	5
Wairarapa – East Cape	368	82	362	62	9	5	5	4	5	..
Central Wellington ..	1,603	66	1,577	82	31	12	11	3	19	9
Nelson–Marlborough	200	61	187	48	10	5	5	1	5	2
Westland	147	27	104	27	11	11	9	5	2	6
Canterbury ..	1,634	166	1,525	141	129	52	64	37	55	23
Otago	408	67	211	58	61	18	32	11	8	5
Southland	209	32	117	31	31	21	13	18	3	3
Totals, 1927 ..	6,399	1,004	5,863	827	395	203	227	115	117	82
Totals, 1926 ..	5,833	667	5,239	531	383	130	236	59	114	54

NOTE.—Taranaki–Horowhenua figures are for four months only. Taranaki and Wanganui–Horowhenua figures are for eight months only.

TABLE 2.—SHOWING THE RESULTS OF WEIGHING OF BREAD, BUTTER, AND OTHER FOODSTUFFS RESPECTIVELY DURING THE YEAR ENDED 31ST DECEMBER, 1927.

Health District.	Samples weighed.						Samples not complying.								
	Number of Samples.			Number of Vendors.			Number of Samples.			Number of Warnings issued.			Number of Prosecutions recommended.		
	Bread.	Butter.	Other.	Bread.	Butter.	Other.	Bread.	Butter.	Other.	Bread.	Butter.	Other.	Bread.	Butter.	Other.
North Auckland..	58	66	..	6	11	..	6	13	..	1	2	..	..	..	..
Central Auckland	102	..	..	9	..	..	12	..	..	2	..	..	..	..	..
South Auckland..	289	24	..	26	3	..	35	4	..	1	..	..	1	..	..
Coromandel–Opotiki	24	30	..	3	3	..	..	..	..	..	..	..	..	..	..
Taranaki – Horowhenua	61	..	..	5	..	..	..	..	..	..	..	..	..	..	..
Taranaki ..	70	..	..	7	..	..	..	..	..	..	..	..	..	..	..
Wanganui – Horowhenua	50	..	..	5	..	..	..	..	..	..	..	..	..	..	..
Wairarapa – East Cape	207	..	..	24	..	..	9	..	..	..	..	..	3	..	..
Central Wellington	194	..	70	21	..	..	..	..	..	..	..	..	..	..	..
Nelson – Marlborough	382	2	..	48	..	..	12	..	..	1	..	..	1	..	..
Canterbury ..	12	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Westland ..	18	6	22	1	1	4	..	..	..	..	..	..	..	..	..
Otago	160	..	..	11	..	..	..	..	..	..	..	..	..	..	..
Southland ..	3	..	..	3	..	..	..	..	..	..	.	..	..	..	..
Totals, 1927 ..	1,630	128	92	170	18	4	74	17	..	5	2	..	5	..	..
Totals, 1926 ..	6,564	4,466	314	687	480	55	463	430	3	29	27	..	9	11	..

NOTE.—Taranaki–Horowhenua figures are for four months only. Taranaki and Wanganui–Horowhenua figures are for eight months only.

The weighing of bread, butter, and other foodstuffs was taken over by the Department of Labour as from the 1st July, 1927.

TABLE 3.—SHOWING INSPECTION OF PREMISES ENGAGED IN SELLING OR MANUFACTURING FOODSTUFFS DURING THE YEAR ENDED 31ST DECEMBER, 1927.

Health District.	Number of Premises inspected engaged in the Selling or Manufacture of Foodstuffs.	Number of Instances Articles were "Seized" or "Destroyed."	Number of such Food Premises requiring Sanitary Alteration.	Health District.	Number of Premises inspected engaged in the Selling or Manufacture of Foodstuffs.	Number of Instances Articles were "Seized" or "Destroyed."	Number of such Food Premises requiring Sanitary Alteration.
North Auckland ..	1,973	15	252	Nelson–Marlborough	726	39	154
Central Auckland ..	2,206	97	304	Canterbury ..	717	2	84
South Auckland ..	3,129	6	333	Westland	607	10	62
Coromandel–Opotiki	1,132	374	2	Otago	1,661	53	197
Taranaki–Horowhenua	116	13	3	Southland ..	1,142	3	42
Taranaki	376	7	91				
Wanganui–Horowhenua	245	13	27	Totals, 1927 ..	15,227	670	1,761
Wairarapa–East Cape	926	20	185	Totals, 1926 ..	16,552	179	2,448
Central Wellington ..	271	18	25				

NOTE.—Taranaki–Horowhenua figures are for four months only. Taranaki and Wanganui–Horowhenua figures are for eight months only.

TABLE 4.—LEGAL PROCEEDINGS FOR YEAR 1927.

	Number of Prosecutions.	Amount. £ s. d.
Adulterated milk	72	473 19 3
Short-weight bread	6	31 7 9
Butter under standard	8	27 14 5
Improper labelling	8	32 14 7
Whiskey—		
Adulterated	4	54 4 6
Improper labelling	1	27 1 6
Rebottling spirits	5	225 14 0
Beer under standard	2	21 12 0
Cordials under standard	14	52 1 6
Hop-beer under standard	1	3 0 6
Breach of Regulation H. 125	8	30 11 0
Drainage nuisance	1	2 13 0
Adulterated vanilla essence	1	10 9 0
Ice-cream	2	8 9 0
Iodine	3	21 15 0
Lime-water under standard	17	73 13 6
Breaches under sections 299 and 300 of Municipal Corporations Act and section 36 of Health Act	1	15 0 0
Wine	1	7 4 0
Breach of section 9, Food and Drugs Act Amendment ..	1	5 12 6
Pigs loose in slaughteryards	1	3 10 0
Breach of section 26 of Health Act	2	6 16 0
Preservative in bacon	14	50 18 0
	174	£1,186 1 0

PARTICULARS OF WORK CARRIED OUT AT THE GOVERNMENT VACCINE-STATION, WELLINGTON, DURING THE YEAR ENDING 31ST MARCH, 1928.

Dr. Lynch, the Acting-Director, reports as follows :—

Calves inoculated, 16 ; calves rejected, nil ; amount of vaccine lymph prepared sufficient for 24,300 tubes ; vaccine lymph issued in tubes, 7,200 ; vaccine lymph in stock equivalent to 15,000 tubes.

The preparation of vaccine lymph in England is now covered by regulations issued under the Therapeutic Substances Act, 1925. The vaccine lymph which is being supplied by the Department has been prepared strictly in accordance with these regulations.

Last year the purchase of a refrigerator costing about £90, was authorized. The storage of the vaccine lymph at low temperature has enabled the lymph to be stored for much longer periods without any loss of potency. By this means a great saving has been effected in manufacture.

New Vaccine-station.—During the year the old vaccine-station in Sydney Street was taken over by the Department of Scientific and Industrial Research. A sum of £1,500 was allocated for the building of a new vaccine-station. The Mental Hospital Department handed over a section of land at the rear of the Home for the Aged and Needy. Plans were prepared under my guidance by the Public Works Department, and in December the Department accepted a tender for the work, the amount being in the neighbourhood of £1,200. The building is now almost complete, and it is proposed to use the new station for the preparation of a further batch of vaccine towards the end of April. As all the persons concerned in the manufacture of lymph are connected with the hospital staff, the proximity of the new station to the hospital will effect considerable improvement in working.

During the year I have received every assistance from Messrs. Dore and Rollett of the Laboratory staff.

Some few weeks ago I had a request from the New South Wales Department of Health for a supply of vaccine lymph. This has been supplied, and I have asked them to advise me as to its potency.

SECTION 6.—GENERAL.

Extracts from the reports of the various Medical Officers of Health, which appear in another part or this report, show a progressive improvement in the sanitary conditions generally throughout the Dominion.

The policy of the local authorities as regards the installation of sanitary works, such as water-supplies and drainage, continues active. The occasions upon which requisitions from the Board of Health were sought to enforce such installations were few.

There are now three Medical Officers of Health stationed at Auckland, three in Wellington, two at Christchurch, two at Dunedin; and the newly-formed Health District of Taranaki, in which Dr. Mecredy combines the duties of Medical Officer of Health and School Medical Officer, is now firmly and satisfactorily established. Consideration is being given to repeating this experiment in the northern east-coast districts of the North Island, with the intention of effecting better health-control in that remote district difficult of access from both Wellington and Auckland.

During the year Dr. Hughes was granted leave of absence to attend a League of Nations exchange course in India, and during his absence Dr. Chesson ably performed the senior duties of the Auckland Health Districts.

Food and Drugs.—As regards the administration of the Sale of Food and Drugs Act during the year, thanks are due to the Comptroller of Customs and the Dominion Analyst and their officers for valuable assistance and advice. The sampling of foodstuffs has been well maintained. The weighing of foodstuffs was taken over in the early part of the year by the Department of Labour as part of its duties under the Weights and Measures Act.

Food-preservatives.—Following a recent decision of the Ministry of Health, England, to further prohibit the use of chemical preservatives in foodstuffs, steps have been taken during the year to enforce the regulations already extant prohibiting the use of boric acid in the preservation of bacon and ham. In consonance with recent American practice provision has been made by regulation for the adoption of the "nitrite" cure for meats, including bacon, as an alternative to the older but less accurate saltpetre method. Again following recent practice, the New Zealand regulations controlling the preparation and sale of butter have been amended to prohibit the use of boric acid as a butter-preservative.

Dangerous Drugs.—To comply with the provisions of the Dangerous Drugs Act of 1927, appropriate regulations controlling the importation, sale, and use of specified dangerous drugs have been prepared, and will shortly be submitted to the Hon. the Minister.

Scarlet Fever.—It will be seen from the statistical tables and comments thereon that, generally speaking, the incidence and death-rates from infectious diseases were low. Scarlet fever, however, fortunately of mild type, was prevalent, and measures to combat its spread entailed additional work and expense in some health districts, particularly Wellington and Christchurch. During the year 2,185 cases were notified, and there were sixteen deaths, a very low case mortality. The prevalence has continued since December, 1927—still with a very low case mortality—and now the notifications are reducing in number.

I desire to record my appreciation of the continued loyal and able co-operation of the Medical Officers of Health and their staffs.

T. McKibbin,
Director, Division of Public Hygiene.

PART III.—SCHOOL HYGIENE.

I have the honour to report on the work of the Division of School Hygiene for the year ended 31st March, 1928.

Staff.

The permanent staff consists at present of a Director, twelve School Medical Officers, and thirty-one school nurses. In addition to this staff, Dr. Helen Dougall has been appointed as a junior School Medical Officer for the term of one year.

During the year, Dr. Phillipps, School Medical Officer, Canterbury, obtained eight months' leave for the purpose of visiting Great Britain, where he took the opportunity to observe various phases of school medical work. Dr. Clark, School Medical Officer, Hawke's Bay, resigned after several years of good service, his place being filled by Dr. Elaine Gurr. There have been during the year several resignations and fresh appointments in the School Nursing Service.

During the year a separate health unit was created in Taranaki, in charge of Dr. Mecredy, who acts as both Medical Officer of Health and School Medical Officer. A special arrangement was made with the local Red Cross organization by which the Department of Health pays half the salaries of two Red Cross nurses in Taranaki and obtains half-time control of their services. Miss Inglis, school

nurse under the Department, acts in the district as a whole-time school nurse. By this arrangement it is hoped to obtain better co-ordination of health activities in the district and closer co-operation with the work of voluntary societies.

Figures relating to Work accomplished.

The following summary serves to indicate the extent of work accomplished during the year :—

Schools inspected—		
Of roll under 100	669	
Of roll 100 to 500	316	
Of roll over 500	152	
		1,137
Children examined—		
Complete examinations	62,750	
Partial examinations	42,114	
		104,864
Number of notifications sent to parents		34,251
Number of addresses to school-children		748
Number of parents interviewed		11,507
Number of lectures or addresses to parents		25
The figures for the work of the school nurses are as follows :—		
Number of days assisted Medical Officer in schools		1,496½
Number of days engaged wholly in clerical work		1,721½
Number of children examined for medical schedule (H. 529)		88,275
Number of children re-examined after Medical Officer's inspection		35,280
Number of visits to homes in—		
Large towns	7,274	
Small country towns	1,767	
Scattered districts	1,405	
		10,446
Number of children taken personally to hospital		301
Number of children taken personally to dental clinic		567

Complete Examinations.

Total number of children examined	60,275	Nose and throat—	
Percentage found to have defects	82·92	Nasal obstruction	3·54
Percentage with defects other than dental	50·89	Enlarged tonsils	18·53
Percentage of children showing evidence of—		Enlarged glands	11·33
Subnormal nutrition	7·14	Goitre—	
Pediculosis	1·88	All degrees	18·57
Uncleanliness	1·68	Incipient	14·66
Skin—		Small	3·32
Impetigo	1·46	Medium	0·54
Scabies	1·26	Large	0·05
Ringworm	1·18	Eye—	
Other skin-diseases	1·00	External eye-disease	1·65
Non-vaccination	58·06	Total defective vision	3·19
Heart—		Corrected	1·51
Organic disease	0·63	Uncorrected	1·68
Functional disturbance	0·44	Ear—	
Respiratory disease	0·74	Otorrhœa	0·24
Total deformities of trunk and chest	17·16	Defective hearing	0·43
Mouth—		Defective speech	0·64
Deformity of jaw or palate, including irregularity	6·75	Mental—	
Dental caries	55·12	Feeble-mindedness	0·38
Extractions of permanent teeth	7·96	Epilepsy	0·03
Fillings	27·19	Other nervous defects	0·17
Perfect sets of teeth	3·72	Tuberculosis—	
		Total	0·10
		Pulmonary	0·04
		Other tissues	0·06

Figures giving the result of 2,025 complete examinations and of 850 partial examinations by Dr. Mecredy in Taranaki, and of the result of the examination of 450 pre-school children by Dr. Gunn in Wanganui, came to hand later and are therefore not shown in the above return. The total number of children completely or partially examined last year therefore approximates 108,000.

Routine work has proceeded satisfactorily and the figures given serve to show our findings resulting therefrom. Available statistics show that New Zealand children compare favourably with those of other countries with regard to growth and physique, and there is no doubt but that in general health and freedom from defect also they occupy a good position. I propose to use the space at my disposal to comment on one or two special aspects of the work rather than to repeat observations made in previous reports and equally applicable this year.

Health Camps.

The yearly health camp for under-nourished children in the Wanganui District was held for five weeks at Turakina, 112 children being taken into camp. The success of this camp was once more convincingly demonstrated.

Sixty-three pupils of the special classes for mentally backward children in the Wellington District attended a health camp on the Central Development Farm, Levin, of twenty-eight days' duration. Thirty children of the special classes in Napier and Hastings, Hawke's Bay, attended a health camp for two weeks at Puketiritiri, on the ranges thirty-five miles from Napier. Exact observations on the physical and mental condition of the children concerned left no room for doubt as to the benefit obtained.

Nutrition Classes.

Owing to the unavoidable interference with the school routine necessitated by the establishment of a nutrition class, it has not been possible to arrange for these very extensively. At the Auckland Normal School, however, the health class under Miss Earl is being continued. In Wanganui Dr. Gunn reported that excellent results were obtained by the establishment of health classes including two hundred children. An extra milk ration was provided and a general improvement in health and growth was observed. The Wellington Rotary Club generously arranged for a supply of milk to a city school for six months of the year, a period during which unemployment was unusually extensive. About fifty to sixty children benefited by this gift, each receiving half a pint of milk, with a whole-meal biscuit in the middle of the morning. The general health of the group was definitely improved. The secretary of the Red Cross Society organized a plan for providing hot lunches for forty-three of the poorer children at a city school during the winter term. This effort on the part of the Red Cross at a time when unemployment was acute and poverty prevalent was welcomed and much appreciated.

Examination of Pre-School Children.

Children attending the free kindergartens in various centres have been examined by School Medical Officers. In Wanganui Dr. Gunn reports considerable extension of the examination of pre-school children. Parents are now developing a habit of bringing these children for regular examination to the centre. The result of this work shows that the examination of pre-school children is essential if we wish to obtain a higher standard in the physical condition of children entering the elementary schools.

Native Schools.

The extent to which medical inspection of Native schools is carried out varies in different districts according to existing facilities. A conference of Native-school teachers was held in Auckland in January. This was attended by the Director of Maori Hygiene and the Director of School Hygiene. Interesting discussions took place. It is evident that improvement in the Maori race will be most readily obtained by the education and training of its children. An arrangement was made for the supply of Native schools with health literature, and the teachers were encouraged to apply for advice on all health problems. A common source of difficulty is the large proportion of Maori children suffering from septic sores and neglected scabies. In some districts these skin-conditions may be said to be almost endemic, and nothing short of heroic effort is needed to secure their elimination. Another problem is that of obtaining adequate precautionary measures in households where an inmate suffers from tuberculosis. Actively phthisical children are not infrequently found attending school and living under very adverse conditions at home.

Immunization against Diphtheria.

The work of preventive inoculation against diphtheria was extended last year. Figures for all districts are not available, but Dr. Collier reports that to date there have been in the Southland District alone approximately 3,500 children protected from diphtheria. Unfortunately, it was found advisable to suspend this work pending the report of the Royal Commission of Inquiry into the cause of the Bundaberg fatalities. We are glad to be able to report that there have been no undesirable results other than of a slight and transient nature following on the inoculation of New Zealand school-children with toxin anti-toxin. In this connection it may be noted that it is our custom to use fresh supplies of toxin anti-toxin mixture each day and not to carry over from day to day partially used stock. Again New Zealand is fortunately free from such climatic extremes as might prejudicially affect toxin anti-toxin mixtures.

Medical Examination of Teachers.

During the year the examination has been carried out of secondary-school pupils who intend entering the teaching profession at the end of their school career. The object of this is to give such of them as are physically unfit for the teaching profession an opportunity of preparing themselves during their school life for some other occupation. The following is an extract from a report of Dr. Bakewell's on the medical examination of teachers: "Few seem to realize the value of eyesight in everyday life. Numbers learn too late that a higher leaving certificate or a University scholarship may be obtained at too dear a price. Of seventy candidates 22 per cent. had eye-defect. Even though in the majority of cases a favourable enough specialist's report was given, one feels that the heavy strain of the next three years, which includes teaching as well as training-college and University work at the critical period of seventeen to twenty-one years, is going to make severe demands upon a delicate and already damaged organ, and consequently is bound to reflect upon the general mental and physical health of the individual."

Dr. Gunn reports on the examination of 208 candidates for entrance into the teaching profession. Among this number were twenty-four suffering from defective eyesight, twenty-six with dental caries; posture was poor in sixty-four, other defects also being found.

Dr. Keith, Nelson, reports on the examination of thirty-seven candidates as probationers (thirty-two girls and five boys). Fourteen were classified as excellent, sixteen average, one fair, and one was deferred for twelve months. Twenty-eight had good teeth; four of the girls had defective vision, two of them were wearing glasses. One girl showed a slight mitral systolic murmur. Of the boys, two were classified excellent and three average. One had dental caries, and two slight nasal obstruction.

The high percentage of secondary-school pupils showing remediable defect furnishes a strong argument in favour of routine medical inspection of secondary schools.

Tuberculosis: New Zealand School-children.

Incidence.—The total incidence of tuberculosis in 60,275 children examined by School Medical Officers in the year 1927 was 0·1 per cent., of which 0·04 per cent. was pulmonary and 0·06 per cent. tuberculosis of other tissues than pulmonary. This percentage is in accordance with that found in previous years. School medical reports from abroad show that tuberculosis (in a diagnosable form) is rarely found during the routine examination of school-children. The annual report of the County Medical Officer of Health and School Medical Officer, London County Council, for the year 1926, says, "Pulmonary tuberculosis was detected in only 102 children (0·1 per cent.) and other forms of tuberculosis in 126 children. It is thus now quite rare to find tuberculosis at routine medical inspection in schools. It is satisfactory to note that children suffering from more serious diseases, such as tuberculosis, are detected and dealt with as they arise, and do not remain overlooked in school waiting until the time comes for their routine inspections in the age groups." The report of the Principal School Medical Officer, Education Department, Victoria (year 1925–26), states, "In 1923, at the request of the Director-General of the Commonwealth Health Department, every School Medical Officer was asked for six months to keep careful notes of all cases of tuberculosis or cases of suspicious tuberculosis. Even when carefully looked for, only two cases of apparently tubercular glands and five cases of chest conditions, probably tuberculous, were found among 7,000 children, but no case of tuberculous joint-disease was amongst this number."

In our annual report for 1927 the percentage of children showing evidence of subnormal nutrition is given as 7·14. This is consistent with the findings of other years. In view of the modern opinion that tubercular infection is almost universal before adolescence, it appears certain that a considerable percentage of school-children now classified by School Medical Officers as of subnormal nutrition have latent tuberculosis. A special investigation, therefore, was carried out into the incidence of tuberculosis in New Zealand school-children in the year 1926 by Dr. Mary Champtaloup, Wellington, and Dr. Baker-McLaglan, Canterbury. The results of this investigation were embodied in a paper given by Dr. Champtaloup at a meeting of the Australasian Medical Association in Dunedin, 1927, and quoted in last year's report. The investigation consisted of a general medical examination, supplemented, where indicated, by special expert methods of diagnosis—*e.g.*, X ray examination, examination by tuberculosis specialist. Moro's inunction test was used as an aid to diagnosis. The following is a quotation from Dr. Champtaloup's paper, "Observations on Incidence":—

"Of the whole group tested, 14·1 per cent. gave a positive reaction . . . only 8·3 per cent. of European country children were positive, as against 15·8 per cent. in town—nearly double. Maori figures were much higher: 25 per cent. of these—all of whom lived in the country—gave a positive reaction. . . . A study of other data for New Zealand shows that the figures so obtained are trustworthy. In 1913–14, 383 hospital children, each under fifteen years, were given the Von Pirquet test, 24 per cent. being positive. This figure is doubtless higher than in the case of healthy children. New Zealand post-mortem records for the past ten years have been carefully studied with a view to ascertaining the amount of tuberculosis. For children between five and fifteen—that is the age group used in the Moro tests—the total incidence of tuberculosis was 28·2 per cent. Excluding deaths directly due to tuberculosis, the figure was 14·1 per cent. This figure represents tubercular lesions in children dying of other causes, and corresponds to the amount of tuberculosis one expects to find in the supposedly non-tubercular school-child. It is interesting to note that this figure—14·1 per cent.—is exactly equal to that indicated by the Moro test for the whole group of children tested. Analysing the lesions shown in post-mortem in those dying of other causes, 94 per cent. had tubercular glands—abdominal, thoracic, or cervical. Of those dying of tuberculosis, 70 per cent. showed mainly an acute or subacute illness associated with caseating or calcifying glands. Hence the obvious importance of taking these school-children with their very probable glandular lesions and so treating them as to obviate any further development of disease."

Further Findings: Dr. Baker-McLaglan.—The group of children found to give a positive Moro reaction in Christchurch during the investigation of 1926 has been kept under continuous observation by Dr. Baker-McLaglan ever since. Definite tuberculosis of the lungs was found in two cases, but twelve have chests which are to be "watched carefully." A regular process of inunction with Moro ointment was carried out for the Moro positive group of children with the object of obtaining immunization. The group diminished in size somewhat during the year owing to the usual custom of New Zealand children of wandering from place to place. There remained, however, a group of twenty-five boys and twenty-eight girls who received regular inunction with the Moro ointment. Regular physical examinations, including height and weight measurements of these children, were observed. Dr. Baker-McLaglan's conclusions are as follows: "Thus with both boys and girls in group 1 (standard weight for height) and group 2 (above the standard) progress is satisfactory or excellent, but in groups 3 and 4 (the lower standard) progress, with few exceptions, is unsatisfactory." Dr. Baker-McLaglan gathers from this that children who are above or of equal standard weight for height will probably continue satisfactorily; children below standard weight for height, even only a few points, will for the most part do but passably at best; while those 10 per cent. below standard weight for height one may expect to get worse. It

would thus appear that nutrition affords a safe basis for prophecy as to the ultimate success of the individual in escaping tuberculosis.

Moro Test.—Dr. Baker-McLaglan remarks, " I am not clear yet whether one is to regard positive reaction as a reaction of infection or as a reaction of resistance to an infection. The children to detect and worry about are the infected children whose resistance is too feeble to give a positive reaction." Dr. Champtaloup remarks, " One doubts whether there is any great value in continuing the operation of giving the Moro test to these children. It has, of course, a certain statistical value and gives an interesting comparison of results, but does not seem to add to the effectiveness of the work. It certainly shows us that the child has received some infection, but leaves us in doubt as to whether it indicates a desirable state of immunity or a latent focus."

NOTE.—As there is no routine medical examination of secondary schools, few data are available regarding incidence of tuberculosis during adolescence. The physical condition of applicants for entrance into the teaching profession and of training-college students, however, indicates the necessity for better medical supervision during their secondary-school period. The comparatively high mortality from tuberculosis in early manhood and womanhood is another argument for medical examination of secondary schools.

Protection of Children exposed to Risk of Tubercular Infection.—From consideration of the modern view that tuberculosis in adult life originates from infection in childhood, it is essential that every precaution be taken to safeguard the children of households where an inmate suffers from tuberculosis. A scheme was outlined, therefore, for keeping these children under the regular supervision of a School Medical Officer. A school nurse was instructed to visit the homes and advise as to general measures for nutrition and hygiene. Printed recommendations were given to parents, outlining the procedure necessary for the protection of their children. It is intended that children requiring it be recommended for examination by the family medical practitioner or by the tuberculosis officer at the hospital. The object of keeping this group under observation is to ensure that they receive timely attention where necessary.

Dr. Champtaloup's report (27/9/27) from Dunedin: " One hundred and twelve tuberculosis contacts have been included in this scheme. Of these, nineteen refused the tuberculin test. Of the ninety-three tested, 63·4 per cent. gave a positive reaction. The nutrition of these children—*i.e.*, the whole group of contacts—was slightly below the average for New Zealand. I do not think any definite conclusions can be argued from this fact, however, since a much larger group of children last year showed no impairment of nutrition. . . . The positive cases again showed a lower nutrition than the negatives. In the age-group 10–14 the average height was 1 in. shorter and the average weight 4–5 lb. less. Again more extensive observations need to be made before placing reliance on any deductions."

It is too early to give a definite pronouncement as to the adequacy of the result obtained by following up children who are contacts of cases of tuberculosis. Already, however, it has become evident that closer supervision of the individuals composing this group enables us to select at an early stage of the disease children who would undoubtedly become victims to tuberculosis.

Arrangements have been made for the treatment at local dental clinics of all children who are tuberculosis contacts.

Means to be adopted for the Prevention of Tuberculosis in School-children.—Generally speaking, these must include the provision of a healthy environment at home or at school. They must include the education of parents as to the value of a suitable dietary, airy sleeping-accommodation, long rest, &c. School Medical Officers, therefore, interview as many parents as possible. The inspection of the home by the school nurse gives her an opportunity of making suggestions for the best use of available sleeping-accommodation and of suggesting other hygienic measures. From the constant supervision of these children, we are able to define the following groups: (1) Children requiring special care, but for whom satisfactory attention in their own homes may be obtained; (2) children who would benefit from residence in a convalescent holiday or home; (3) children selected for health camps; (4) children requiring residence in a sanatorium. It is to be understood that in all cases the co-operation of the family medical practitioner is desired.

Health camps have been already referred to in a previous section of this report.

Open-air schools: There has been in recent years increasing advocacy of open-air schools. In this connection it should be stated that the type of building erected in recent years by the New Zealand Education Department would, according to American standards, be classified as " open-air." The " Fendalton " plan of open-air school has been especially popular in Canterbury. In Dunedin the Sarah Ann Cohen Memorial School has been erected according to the Fendalton plan. Children attending this school are those showing definite premonitory signs of tuberculosis. A special school curriculum is provided, allowing rest periods, milk ration in the morning; a hot mid-day meal is obtained at the convalescent home adjoining. The benefit to the children has been amply demonstrated.

Nutrition classes: See previous reference in this report.

In all measures taken for the welfare of these children lack of financial resources soon becomes evident. Whether it is a question for providing extra milk for a nutrition class, of arranging a health camp for the under-nourished, or for sending a child to a convalescent home, one is invariably brought up against the problem of " no funds." For a large group of these children their main hope lies in removal from their present environment for a time at least. The results of health camps have amply demonstrated what can be done by a simple regime permitting adequate rest, fresh air, sunshine, proper feeding.

Reports from School Medical Officers show that it is often impossible to make adequate provision in the home itself. There is, of course, no disease where good nutrition is more imperative, both from the preventive and curative aspect, than tuberculosis; but where it is found hand-in-hand with poverty good nurture is impossible. While not advocating the wholesale removal of " contact children " from their homes, one is entering safe grounds in stressing the need for better provision in the way of

holiday homes, health camps, &c. Under present conditions much energy is expended in raising funds for this purpose. A great economy of effort and wider benefit would result if it were possible to place on a more permanent financial basis these means of affording timely care for debilitated children.

Goitre: New Zealand School-children.

The following is an outline of observations made by School Medical Officers, and in no way professes to be a comprehensive statement of the goitre problem among New Zealand school-children. A systematic classification of goitre in school-children was initiated in 1921. The classification adopted was that suggested by Drs. Hercus and Baker-McLaglan as a result of their work on the school-children of Canterbury. It was as follows: Incipient—Slight bulging of the skin over the trachea, just discernable on inspection, particularly during deglutition, and indicating on palpation a slight thickening or widening of the isthmus or palpable lateral lobes which communicate a sense of fullness. Slight—Definite bulging of the neck and corresponding enlargement on palpation. Medium—Marked deformity, bulging; palpation unnecessary. Large—With excessive deformity.

From this classification it is evident that a very strict standard is observed, and that a large number of goitres classified as "incipient" would by a slightly less rigid standard be not classified as goitres at all.

Incidence.—Figures showing incidence are given below. Those quoted are the findings of Dr. Baker-McLaglan, who made a tour throughout the Dominion for the purpose of acquiring a uniform standard of classification and record. The "incipient" group bulk from one-third to one-half in the returns of School Medical Officers, so that if small, medium, and large groups alone be considered to be goitre New Zealand's percentage incidence will be markedly decreased. It does not appear certain as yet that we have arrived at an answer to the question, What is a normal thyroid?

Dr. Baker-McLaglan's findings showed that at five years old some enlargement of the thyroid is as frequent in boys as in girls, but drops in boys at adolescence. In girls, on the other hand, as is well known, frequency rises rapidly till adolescence, decreasing a little among University girls. With the rise in frequency the general severity of the cases rises also.

Goitre is found among Maoris, but in what extent is not yet defined.

Dr. Baker-McLaglan's returns were utilized by Dr. Hercus for the purpose of his report, "Endemic Goitre in New Zealand and its Relation to Soil Iodine"; Dr. Hercus, working in conjunction with Dr. Benson and Mr. Carter, of the Otago University, finding a definite relationship between goitre incidence and low iodine content of soil.

No.	District.	Number of Medical Examinations of Children.	Recognition of Goitrous Condition.	Percentage Incidence of Goitre.
1	Steward Island	..	..	..
2	Bluff	280	59	21
3	Inverca gill and Southland	2,960	1,049	35
4	Waimea Plains	1,025	324	32
5	Clutha Valley	2,947	1,197	41
6	Taieri Valley and Milton	1,366	406	30
7	Dunedin	8,413	1,573	19
8	North Otago	895	155	17
..	Southland and Otago	17,886	4,763	27
9	South Canterbury	5,206	3,228	62
10	Christchurch	5,548	3,548	64
11	Banks Peninsula	1,293	397	31
12	North Canterbury	2,782	1,608	59
13	Marlborough	700	263	38
14	Nelson	929	273	29
15	West Coast	1,675	889	53
..	Canterbury, Marlborough, and Nelson ..	18,133	10,206	56
16	Wellington	2,633	657	25
17	Hutt Valley	2,343	968	41
18	Wairarapa and Dannevirke	5,684	1,596	28
19	Hawke's Bay	2,513	912	36
20	Gisborne	1,257	427	34
21	Horowhenua	1,111	137	12
22	Palmerston	8,829	2,910	33
23	Wanganui	5,397	2,422	45
24	Taranaki	5,493	381	7
25	Main Trunk	2,570	611	24
26	Taumarunui	359	132	34
27	West Coast and Te Kuiti	574	65	11
28	Waikato and Piako Valleys	2,973	896	30
29	Taupo and Rotorua	280	78	28
30	Bay of Plenty	2,000	625	31
31	Cape Colville Peninsula	220	33	15
32	Auckland	7,598	821	11
33	North Auckland	4,950	247	5

Endemic Areas.—Definite endemic areas have been established throughout the Dominion. It is interesting to note that in some cases these are actually on the sea-coast, where the soil is continually drenched with sea-spray—*e.g.*, Petone and the delta of the Clutha River. The marked endemic areas appear frequently to follow the course of the large rivers — *e.g.*, the Clutha, Mataura, Wanganui, and the Buller. Dr. Baker-McLaglan found that all along the course of the Waikato there is goitre, yet north of it is an almost goitre-free region. She noted also that in the largest area of limestone country in New Zealand—the King-country—goitre incidence is comparatively light. Pumice country shows a high incidence, but some other volcanic soils show lightest of all.

Water-supply.—With regard to water-supply in goitrous areas, various notes have been made by School Medical Officers. Christchurch and Blenheim, both of which have artesian water-supply, are marked endemic areas. Of two areas with high endemicity, South Canterbury is supplied by snow-fed-river water while the North Canterbury water-supply is largely rain-water. The contrast has been worked out between the children of the Hutt Valley and Wellington City. The Hutt Valley, which terminates in Petone, has a much higher goitre incidence: 41 per cent. as against Wellington City 25 per cent. Three schools of Wellington City were chosen. At Karori (Wellington City), where rain-water has been used until recently, the percentage for goitre for the whole school was 19 per cent. At Newtown (Wellington City), where the town supply from Wainui-o-Mata was used, the percentage was 25 per cent., the average for Wellington. The Terrace School district (Wellington City), is supplied by water from the Karori Reservoir—that is, upland surface supply—but, as the number of children at the school who live in the district is small, the percentage of goitre is not very reliable: 16 per cent. of the 176 children who live in the district had goitre. Most of the goitre at these schools was incipient: 1·5 per cent. of all the children examined had goitre larger than incipient. In the Hutt Valley a large part of the water-supply is artesian.

Length of Residence in the District.—Incidence appears to increase with the length of residence in the district. Of 48 men in the Civil Service who have lived in Wellington since childhood, 14 had incipient goitre and 1 small—total incidence, 31 per cent. Of 126 women who had lived in Wellington since childhood, 47 had incipient goitre, 13 small, and 2 medium, giving a total of 49 per cent. Those living in the Hutt Valley since childhood: Of 15 men, 4 had incipient, 3 small, and 1 medium—total, 53 per cent.; of 17 women, 11 had incipient, 2 small, and 1 medium—total 82 per cent.

Relationship to Focal Infection.—An effort was made to determine the relationship between incidence of goitre and focal infection, and for this purpose schools in the Hutt Valley were examined by Dr. Morgan. The results of the investigation were inconclusive. The figures for the separate age groups gave contradictory results, but the combined figures show that the proportion of septic tonsils and teeth is the same in children with no goitre as in those with incipient goitre. In the groups with small, medium, and large goitres, the percentages of unhealthy tonsils and teeth are higher. (Enlarged tonsils, 25·7 per cent the goitrous compared with 14·5 per cent. in the normal thyroid group; dental caries, 31·4 per cent. compared with 25·6 per cent. (age 11 to 14).) In two of the schools with the highest percentage of dental caries, however, there was the lowest of goitre. In children whose goitres had improved under treatment there was the average amount of dental caries and enlarged tonsils.

School Treatment of Goitre.—School treatment for goitre was placed on a definite basis in 1923. The treatment consisted of the administration of 1 grain of potassium iodide for ten weeks of three school terms—that is, 30 grains of potassium iodide per annum. The result of the treatment of a group of 3,000 goitrous children has been recently summarized. This showed 45 per cent. decrease, 34 per cent. stationary, and 20 per cent. increase. Of 1,000 goitrous children not under treatment, there was 12 per cent. decrease, 37 per cent. stationary, and 53 per cent. increase. The results of all School Medical Officers show an approximate decrease of 50 per cent. among goitrous children taking potassium-iodide treatment at school. Several make the statement that improvement is chiefly to be noted among the incipient cases. In the Wellington District greater improvement was noted among children who commenced it in the lower classes, especially those who had had three or four years' treatment. A definite number of cases develop goitre on prophylactic treatment. Dr. Wilkie, Auckland, found such cases to develop incipient and not marked goitre; but this finding may be due to too brief a period of observation. Our findings may be summarized thus: (1) Goitrous children taking potassium iodide (1 gr. per week for ten weeks of each of three school terms—*i.e.*, 30 gr. per annum) show a larger percentage of diminution and a smaller percentage of increase than goitrous children not under this treatment; (2) a definite percentage of goitrous children show increase when taking potassium iodide to extent outlined above; (3) a definite percentage of apparently normal children develop goitre when taking potassium iodide to extent outlined above.

A further illustration may be given by the following figures from Dr. McLaglan, Christchurch, giving result of treatment shown by several groups:—

——	Normal Thyroids.						Total of all Types of Goitrous Thyroids.							
	Actual Totals		Unchanged.		Increased.		Actual Number.		Unchanged.		Increased.		Decreased.	
	B.	G.	B.	G.	B.	G.	B.	G.	B.	G.	B.	G.	B.	G.
			%	%	%	%			%	%	%	%	%	%
Treated	102	130	87·2	76·1	12·7	23·9	51	95	39·2	44·2	11·7	21	49	34·7
Not treated ..	55	64	70·9	64·0	29·1	36·0	25	28	28·0	42·9	60·0	50	12	7·1

B = Boys; G = Girls.

The following shows result of sodium iodide in weekly doses amounting to 40 gr. to 120 gr. per annum for a period of six years in a group of Christchurch schools:—

——	Normal Thyroids.						Total of all Types of Goitrous Thyroids.							
	Actual Totals		Unchanged.		Increased.		Actual Number.		Unchanged.		Increased.		Decreased.	
	B.	G.	B.	G.	B.	G.	B.	G.	B.	G.	B.	G.	B.	G.
Treated—			%	%	%	%			%	%	%	%	%	%
Sydenham ..	92	98	82·2	79·2	17·8	20·8	54	113	51·8	43·3	9·2	11·4	38·4	45·2
Christchurch West and Waltham	50	35	94·0	100·0	6·0	..	54	62	25·7	30·6	5·5	8·0	68·5	61·3
Not treated—														
Sydenham ..	92	68	77·1	67·7	22·8	32·3	42	42	54·7	57·1	23·8	28·5	21·4	14·2
Christchurch West and Waltham	61	41	73·7	73·1	26·2	26·8	51	45	41·2	53·3	37·2	26·6	21·5	20·0

B = Boys; G = Girls.

Dr. Gunn, in the Wanganui District, began the school treatment of goitre in 1921 by giving sodium iodide in 2 gr. doses five days in the week for thirty weeks in the year, so that each child was getting 300 gr. of sodium iodide per annum. She saw no evidence of hyperthyroidism, nor were any children reported as having any symptoms with this dosage: Decrease, 50 per cent.; stationary, 42 per cent.; increase, 7 per cent. Controls—that is, goitrous children not taking treatment—showed decrease, 6 per cent.; stationary, 14 per cent.; increase, 80 per cent.

Dr. Gunn has now under observation two large infant schools, of which the majority of the pupils are taking the routine school treatment with potassium iodide. The object of this measure is, in the main, prophylactic, and it is intended to carry it on for some years in order to observe its influence in goitre-prevention.

The amount of work involved in keeping records, in the re-examination of children, and in the distribution of tablets at the schools is very great. For exact information of all cases under treatment much more time should be devoted to it than we have at our disposal. We consider that treatment has, as a rule, been carried out regularly in those schools in which it was instituted, though in a minority the distribution of tablets appears to have been somewhat casual. Two children only among ten thousand taking tablets were reported as suffering from hyperthyroidism, so that this risk is apparently negligible. In reviewing the position, it is evident that the result of treatment has been, generally speaking, beneficial. Nevertheless, the fact that 20 per cent. of the goitrous children showed increase under treatment and a definite percentage of non-goitrous developed goitre under treatment indicates that the goitre problem would not be solved, though its magnitude would be diminished, by continuing treatment as before. There is without doubt a considerable percentage of children (20 per cent. of goitrous) who require other measures than can be provided for them at school. They require also more frequent supervision than it is practicable to give them. Under present arrangements parents are led to believe that no further steps are necessary in order to secure improvement. Our facilities for extending treatment are inadequate; the attention which we are able to give certain individuals is inadequate. We therefore consider it impracticable to extend the scheme on its present basis.

We note the findings of the recent International Conference held at Berne, Switzerland (*Lancet*, 18th February, 1928). These are as follows: "It was agreed in general at the Berne Conference that in districts where goitre is endemic three measures are desirable: (1) The general use of a slightly iodized salt by the whole population in order to supply the physiological dose of iodine lacking in the food and drink; (2) goitres, when detected in the course of school inspections, require treatment with iodine under medical supervision; (3) care should be exercised to prevent the use of excessive doses of iodine in the treatment of adults."

Iodized salt is now on the market for use in the endemic areas. School Medical Officers in future will take every opportunity of recommending its use in those areas. Children suffering from goitre will be recommended to obtain treatment from the family physician. It may, however, be found practicable in the larger centres to establish treatment clinics of a size not so large as to prevent adequate supervision by the School Medical Officers.

Special Inquiries.

Reports on two investigations by School Medical Officers—(1) An inquiry into the condition of rural school-children, by Dr. Albert Henderson; (2) a short inquiry into rheumatic conditions in Auckland school-children, by Dr. Harriet Wilkie—will be found published in the Appendix.

Ada G. Paterson,
Director, Division of School Hygiene.

PART IV.—DENTAL HYGIENE.

In connection with the work of my Division I beg to submit a report for the year ending the 31st March, 1928.

SECTION 1.—STAFF, CLINICS, ETC.

Staff.—The allocation of the Staff of the Division is as follows: Wellington—Mr. J. L. Saunders, B.D.S., Deputy Director, Division of Dental Hygiene; Mr. R. D. Elliott, Inspecting Dental Officer; Mr. J. B. Bibby, Clinical Demonstrator; Mr. A. D. Brice, B.D.S., Clinical Demonstrator; Miss E. M. Haines, Senior Dental Nurse.

In the field ten dental officers and sixty-one dental nurses, stationed as follows: Dental officers—One at North Auckland, one at Edendale, one at Nelson, one at Motueka, one at Christchurch, one at Timaru, one at Hokitika, one at Oamaru, one at Dunedin, one at Rarotonga. Dental nurses—two at Auckland, one at Ponsonby, one at Avondale, two at Grey Lynn, one at Dargaville, one at Whangarei, one at Papakura, one at Paeroa, one at Tauranga, one at Huntly, two at Hamilton, one at Cambridge, one at Te Awamutu, one at Te Kuiti, one at Ohakune, one at Wanganui, two at Palmerston North, one at Dannevirke, two at New Plymouth, one at Eltham, one at Feilding, two at Napier, one at Gisborne, one at Waipukurau, one at Hastings, one at Hawera, one at Pahiatua, two at Masterton, one at Lower Hutt, one at Nelson, two at Blenheim, one at Christchurch, one at Beckenham, one at Christchurch East, one at Woolston, one at St. Albans, two at Westport, one at Greymouth, one at Temuka, one at Timaru, one at Ashburton, one at Oamaru, one at Mosgiel, one at Dunedin Central, one at Dunedin South, two at Invercargill, one at Balclutha, one at Gore, one at Tapanui, one at Clyde, one at Otautau.

Staff in Training.—There are at the 31st March, 1928, sixty-seven probationer dental nurses undergoing training at the Department's training-school in Wellington. Of these, thirty-two are in the second year of their training, and thirty-five are new appointees who have only recently taken up duty. Twenty-five dental nurses who completed their training during March have all been allocated to school dental clinics in various parts of the Dominion, and will have left the training-school within the next few weeks. In accordance with the usual custom, the final examination of these twenty-five dental nurses was conducted by an outside examiner, Mr. Millen Paulin, B.D.S., of Wellington, acting on this occasion. The examination was held on the 5th, 6th, and 7th March, That the standard of training is being maintained at a satisfactory level is shown by the following extract from the examiner's report: "Having acted in the capacity of examiner for the probationers at the Dental Clinic in their final year, I wish to put on record my appreciation of the very high standard of their work, especially so the practical side. Those responsible for so high a standard of excellence are to be congratulated."

The primary examination (first-year probationers) was held on the 16th and 17th November, 1927, Dr. M. H. Watt and Dr. Ada Paterson being the examiners. There were thirty-one candidates, of whom twenty-nine were successful. The remaining two have since passed a special examination.

New Clinics.—Since the 31st March, 1927, new clinics have been established at the following places: Grey Lynn, Paeroa, Tauranga, Cambridge, Te Kuiti, Eltham, Feilding, St. Albans, Ashburton Dunedin South, Otautau. During the next few weeks clinics will be opened at Henderson, Onehunga, Morrinsville, Thames, Marton, Greytown, New Brighton, Lyttelton, Waimate, Takaka, Reefton, Palmerston South, and Winton. The new clinics will be situated in buildings built or altered according to plans drawn up by the Education Department in consultation with this Division.

Treatment performed during 1927.—The following is a summary of the operations performed from the 1st January to the 31st December, 1927, by dental officers, dental nurses, and probationers in training: Fillings, 116,916; extractions, 66,523; minor operations, 76,656; total operations, 260,095. Of the above treatment the dental nurses in the field, now numbering sixty-one, have performed the following: Fillings, 79,517; extractions, 78,230; minor operations, 51,802: total operations, 179,549. The total treatment performed by dental nurses since first nurses qualified in May, 1923, is as follows: Fillings, 164,332; extractions, 106,309; minor operations, 119,397: total operations, 390,038.

SECTION 2.—PROPAGANDA, ETC.

I am pleased to be able to report that there are signs of good results accruing from our efforts in the past with regard to the above. From time to time letters are being received on the subject stating the benefit that has been derived from carrying out the Department's advice. Letters of inquiry, too, are being received, indicating that the public are becoming more alive to the question of prevention of disease. There is still much to be desired, however, in this direction, as the amount of recurrent treatment clearly indicates. There can be no doubt that the majority of parents do not sufficiently realize their responsibilities in this connection, and would seem to place the whole onus of caring for the teeth of their children on the State. The result of this, of course, means that the service cannot be extended so widely or so rapidly as it otherwise would. Along with myself, the members of the staff take every opportunity of addressing meetings of parents, School Committees, and other organizations, whilst the dental nurses are urged in the course of their daily work to impart to children and parents the elements of prevention.

Inspection.—I should like to record my appreciation of the manner in which Mr. Elliott, Inspecting Dental Officer, has carried out his arduous duties during the year.

Equipment.—During my visit to England I spent a considerable amount of time with manufacturers and dental-supply houses in an endeavour to standardize our equipment, and in this effort I was successful. I am pleased to be able to say that a considerable saving has been effected thereby.

Advantage was also taken by the High Commissioner's Office of my being in London at the time to select equipment to fill a large order for such that had arrived from New Zealand.

General.—I am pleased to be able to say that School Medical Officers continue to report good results from a general health point of view in schools where the children are receiving dental attention.

During the year my Division has been able to co-operate with the officers of the Ante-natal Branch, a dental officer attending at the Department's ante-natal clinic, Wellington, once every fortnight to give advice and afford any necessary treatment to expectant mothers.

I should like to place on record my appreciation of the services of Mr. Saunders, Deputy Director, and those engaged with him in the training of the nurses. I cannot speak too highly of the keenness displayed by these officers.

In conclusion, I would take this opportunity of expressing my appreciation of the ready assistance and co-operation generally of the Education Department, Education Boards, teachers, and members of committees, &c. There can be no doubt that without such co-operation we could not have met with that measure of success which it is admitted my Division has attained.

THOS. A. HUNTER,
Director, Division of Dental Hygiene.

PART V.—NURSING.

I beg to submit my annual report for the year ending the 31st March, 1928.

NURSES AND MIDWIVES REGISTRATION ACT, 1925.

At the two examinations held for the State registration of general nurses in June and December there were 311 candidates, of whom 272 were successful, while from countries oversea forty nurses were admitted to the register.

Examinations for the State registration of midwives and maternity nurses were held in January, June, and November. There were 103 midwifery candidates, ninety-six of whom were successful; and ten overseas midwives were also registered. Of 190 maternity-nurse candidates 179 passed, and twenty-one maternity nurses from overseas were admitted to the register.

There has been a large increase in the routine work of the Nursing Division owing to the additional number of examinations rendered necessary by the carrying-out of the provisions of the Nurses and Midwives Registration Act, 1925.

Where for many years there have been two State examinations for general nurses and two for midwives, held bi-annually in June and December, there are now eight examinations—three in December, one in June, and two in both April and August. These involve a considerable amount of correspondence and clerical work, and a fair proportion of the time is now taken up with arranging examinations and checking returns.

POST-GRADUTE COURSE FOR NURSES.

I am glad to be able to report that the post-graduate course of training for registered nurses is now firmly established. The response has been most encouraging, for, while for the first session it was thought better to limit the number to fifteen, there are actually seventeen students undergoing the training, ten of whom have been sent by Hospital Boards and one by the Mental Hospitals Department for the administration and teaching course, and six who are taking the public-health course. Of these latter, three are departmental officers representing the various nursing activities of the Health Department and three are taking the course on their own initiative. The direction of the course is in the hands of the two nurses who were sent abroad for special training. They are responsible, under the Department, for drawing up the plan of study and arranging the programme of lectures and practical work. In addition they have their own share of lecturing to do. By the courtesy of the Wellington Hospital Board a lecture-room and office have been set aside for the use of the students in the new administrative block of the Wellington Hospital, and here and at the Victoria College the greater part of the instruction is carried out.

Now that we shall have our own nurses trained to take administrative positions there will no longer be any necessity to send abroad for qualified "tutor-sisters," as has been done already in the case of two of our leading hospitals. Moreover, with tutor-sisters available it should be possible ere long to establish the preliminary training-school throughout the hospitals of the Dominion. It is already in existence in a modified form in the four larger centres, but the smaller institutions also require this means of preparing and testing before they enter the wards those who wish to undergo training as nurses. There are already a number of applicants for the 1929 course, which proves that the provision of this means of gaining additional knowledge is thoroughly appreciated by the nurses themselves and by the Hospital Boards who employ them.

I should like here to place on record the Department's deep appreciation of the great assistance rendered the students in their search for the practical experience necessary for their course. They have met with unfailing courtesy and ready co-operation from every one with whom they have come in contact, whether private individuals or public bodies. This sympathetic and helpful attitude has been a great encouragement to those responsible for directing their studies, as well as to the students themselves.

Nurses and Midwives Registration Board.

There were six meetings of the Board held during this year.

Training of Maternity Nurses and Midwives.—The whole question of training received full consideration, resulting in the issue of an amending schedule of practical work to be carried out by each trainee before becoming eligible to sit for the State examination.

Length of Course of Training for Midwives.—An alternative course was arranged so that, instead of a registered nurse desiring to train as a midwife having to train and sit for examination as a maternity nurse, she is enabled to take a straight-out course of eight months at one of the midwifery training-schools and then sit for the midwives examination.

Ante-natal Work.—It was decided that in the future the training course for midwives should include training in ante-natal duties, and each institution approved as a training-school for midwives was required to establish an ante-natal clinic for the purpose of supplying the necessary material.

Training-schools.—Provision was made to allow the Board to approve any institution which is not a training-school to give one year's training to a probationer nurse, such period to count as six months' training towards the full period of three years when such probationer enters an approved training-school for nurses.

Schedule of Training for Nurses.—The question of considerable amendment and alteration to the schedule of training and the instructional course for nurses has received consideration, with the result that during the coming year a new schedule and instructional course will be gazetted.

Reciprocity.—Considerable time has been spent in connection with establishing reciprocity with overseas countries, with the result that reciprocity has been arranged as under: For general trained nurses—England, Western Australia, Queensland, Victoria. For midwives—Western Australia, Queensland.

Registration.—The registration of applicants was carried out as shown under the first paragraph of my report headed "Nurses and Midwives Registration Act, 1925."

The following may be of interest as showing the effect of the new Act upon the training of midwives and maternity nurses:—

Registered midwives—31st December, 1925, 2,027: 31st December, 1927, 2,620.

Registered midwives qualified by examination—during 1925, 200 (untrained, 82; trained, 118); during 1926, 146 (untrained, 83; trained, 63): during 1927, 95 (untrained, 7; trained, 88).

Registered maternity nurses admitted on actual experience—31st December, 1925, nil: 31st December, 1927, 683.

Registered maternity nurses qualified by examination—During 1926, 64 (untrained, 4; trained, 60): during 1927, 180 (untrained, 67; trained, 113).

Registered midwives and maternity nurses qualified by examination—In 1926, 210; in 1927, 275.

Showing increase under new Act as under: 1925, 200; 1926, 210; 1927, 275.

Departmental Hospitals.

King George V Hospital, Rotorua.—There have been many changes here during the year. The conversion of one of the old military wards near the main building into an isolation ward has made the working of the institution very much simpler so far as the nursing of the patients is concerned. It has also made it possible to reduce the nursing staff. The installation of steam heating throughout the main building has added greatly to the convenience of working. Five nurses qualified by passing the State examination during the year.

Pukeora Sanatorium, Waipukurau.—Miss Thurston having resigned her position as Matron, Miss Lundon was appointed in her place.

Otaki Hospital and Sanatorium.—Miss Pownall, the Matron, left in February for England on extended leave, and Miss Davies, formerly Matron of Palmerston North Hospital, is Acting Matron during her absence. The two institutions are now self-contained so far as staffing is concerned, the hospital having now a Sister in Charge, with two registered nurses to assist her.

St. Helens Hospital.

Wellington.—Dr. Bennett reports that the morbidity rate is the best the hospital has yet been able to record. She attributes this satisfactory state of affairs to the better sterilizing-facilities and the larger trained staff to inculcate asepsis. She pays a high tribute to the Matron, Miss Newman, of whom she says, "She inculcates an atmosphere of good work, good discipline, and happiness that is not likely to be surpassed. Sister Boyce is a competent understudy, and I believe the year's work of the Hospital has been of a thoroughly good standard."

During the year there have been 2,188 visits to the ante-natal clinic connected with this institution. Of these, 180 were first visits from primiparæ and 368 first visits from multiparæ, while there were 1,640 return visits. In addition to these patients attended to at the hospital, 199 visits were made to cases outside who were either under treatment in their own homes or were unable to attend the clinic. Eighty-two patients were treated at the dental clinic. From these figures it will be seen that the importance of seeking pre-natal advice and treatment is being more and more recognized as time goes on. Of the two maternal deaths, one was due to eclampsia—a patient who refused ante-natal observation.

Auckland.—Of the twenty-eight morbidity cases in this hospital it is pointed out by the Medical Officer that twenty-six had septic teeth. There were two maternal deaths only—one from pulmonary

embolism, the other an emergency case admitted in a moribund condition. In addition one case died after transfer to the Public Hospital. There were thirteen infantile deaths, of which six were due to prematurity. Dr. Inglis states that the Matron, Miss Broadley, has not spared herself in carrying out her duties, and many of the good results are due to her care and treatment.

Christchurch.—The Matron, Miss Trotter, and her staff have done excellent work, and Dr. Lindsay recognizes this in his report. The year so far as the ante-natal clinic was concerned was a busy one, necessitating one extra full day a week. The visits to the clinic numbered 1,668, as against 1,541 during the previous year. In addition, seventy-two visits were paid to patients in their own homes.

Dunedin.—The number of births of living children at this institution has been greater this year than last. Dr. Siedeberg reports that there were no maternal deaths out of 177 deliveries, and two deaths of infants. There were thirteen babies born between seven and eight and a half months, and of these all lived except one, which was quite immature and weakly. Thirty-two patients were admitted to hospital for ante-natal care. Nearly every patient booked for admission has attended beforehand for constant supervision and treatment.

There have been important staff changes in this institution. Miss Holford, who had held the the position of Matron since its inception in 1905, retired on superannuation in November. Miss Holford's long service was marked by absolute devotion to duty. She has held a unique place in the respect and affection of patients and pupils alike, and her influence on the nursing profession not only with regard to her own special work, but also in connection with all that appertained to the welfare of nurses as a body of professional women, has been far-reaching. It is in a large measure due to Miss Holford's foresight and initiative that the nurses of the Dominion have been formed into an organized body—the New Zealand Trained Nurses' Association—capable of managing its own affairs and of expressing opinions on matters concerning the well-being of nurses generally. She bears with her into retirement the best wishes of the Department she has served so well.

Miss Gow, who as Sub-Matron was associated with Miss Holford for over twenty-one years, was obliged, on account of ill health, to apply for extended leave in November, so that the institution was deprived of its two principal controlling officers at the same time. It is hoped, however, that Miss Gow will be able later to return to the post which she has filled so faithfully and complete the full term of her official life among those who have so long benefited by her valuable advice and teaching. Miss V. Oppenheim succeeded Miss Holford as Matron, and Miss Sparkes is holding the position of Acting Sub-Matron pending Miss Gow's return.

Invercargill.—This hospital is increasing in popularity, and there were 237 admissions, compared with 190 in 1926. There were no maternal deaths. One baby died from congenital heart-disease. It was found necessary to increase the staff by one on account of the additional work due to the opening of an ante-natal clinic. Miss Yorks, the Matron, after a few months' service, broke down in health and was granted twelve months' sick-leave, the Sub-Matron, Miss Arnold, being promoted to the position of Acting-Matron during her absence.

Wanganui.—This hospital also shows an increase in the number of patients admitted. Dr. Wilson reports ante-natal work has greatly increased, with the result that the number of avoidable complications was diminished. There were no maternal and three infantile deaths in 153 deliveries.

Gisborne.—There were 165 births—an increase of eight over last year's figures. There were, in addition, seven women admitted for ante-natal treatment and discharged before confinement. Six babies were also admitted for treatment. There were no maternal or infantile deaths. An ante-natal clinic was established during the last three months of the year, and some thirty patients took advantage of it. As has been the case in all other institutions, this has necessitated an increase in the trained staff.

Dr. Williams, reporting upon the year's work, remarks: "The year has been a very successful one. Not only have a larger number of patients than ever before passed through the hospital, but also the percentage of mortality is low. A pleasing feature of the practice of this hospital is the increasing number of Maori patients who take advantage of it, and this constitutes a tribute to the kindness and tact of Matron Clark, which it would be difficult to exaggerate."

ST. HELENS HOSPITALS.—STATISTICS FOR 1927.

Town.	Births (Living Children).	Still-births.	Deaths of Mothers.	Deaths of Infants.	Outdoor Cases.	Pupil Midwives qualified.	Pupil Maternity Nurses qualified.
Wellington ..	543	13	2	13	78	12	18
Christchurch ..	334	6	1	15	191	6	14
Gisborne	165	1	..	1	6	3	8
Wanganui	153	2	..	3	16	5	8
Invercargill ..	233	5	..	1	18	3	6
Dunedin	171	5	..	4	55	5	7
Auckland	676	23	2	13	234	16	29
Totals, 1927 ..	2,275	55	5	50	598	50	90
Totals, 1926 ..	2,155	59	4	31	635	68	26

MATERNITY HOSPITALS UNDER BOARDS AND ASSOCIATIONS.

Hospital.	Births.	Still-births.	Deaths of Mothers.	Deaths of Infants.	Cases attended Outside.
Mangonui	..	..	..	..	..
Whangaroa	18	..	..	..	..
Kawakawa	80	3	..	..	1
Rawene	38	2	1	2	..
Whangarei	209	3	1	3	1
Waiuku	77	3	1	..	..
Warkworth	19	..	..	..	..
Huntly	15	1	..	1	..
Matamata	105	2	1	2	..
Otahuhu	42	2	..	..	..
Kawhia	12	..	..	..	..
Te Kuiti	32	..	..	..	..
Thames	90	4	..	2	..
Coromandel	5	..	..	..	..
Te Puke	63	2	..	2	..
Whakatane	88	4	..	4	..
Taumarunui	109	2	..	..	..
Tolaga Bay	25	2	..	2	..
McHardy Home, Napier	248	9	..	6	..
Rathbone Maternity Hospital, Waipawa	91	4	..	2	..
Opunake	52	3	1	1	..
Stratford	124	4	..	2	..
Raetihi	33	1	..	..	..
Masterton	93	3	..	1	..
Havelock	33	1	..	..	..
Wairau	166	5	..	1	..
Picton	40	2	..	1	..
Motueka	75	1	1	1	..
Denniston	45	3	..	..	..
Waiuta	12	..	..	..	..
Rewa	147	1	..	3	..
Kaikoura	42	..	..	2	..
Oxford	15	..	..	..	..
Akaroa	33	1	..	..	..
Essex Home, Linwood	144	6	..	10	..
Waikari	45	2	..	..	..
Leeston	50	3	..	2	..
Lyttelton	22	..	..	1	29
Rangiora	107	3	..	1	..
Malvern	134	6	..	4	1
Rakaia	43	..	..	3	..
Methven	34	1	..	2	1
Geraldine	37	1	..	..	..
Timaru	100	2	..	1	..
Fairlie	33	3	..	2	..
Tuapeka	38	..	..	1	..
Middlemarch	19	1	..	3	..
Batchelor	197	6	..	..	6
Roxburgh	27	2	..	..	..
Naseby	49	..	..	3	2
Cromwell	40	2	..	3*	..
Lumsden	25	..	..	..	..
Rotheram	17	..	..	1	..
Salvation Army.					
Maternity Home, Gisborne	65	..	..	3	..
Maternity Home, Dunedin	123	5	..	6	..
Maternity Home, Napier	69	6	..	2	..
Maternity Home, Wellington	73	1	..	1	2
Alexandra Home, Wellington	350	16	1	7	55
Totals	4,117	134	7	94	98

* Outside cases, two of which were twins.

District Nurses to Maoris.

There are now twenty-three district nurses to Maoris in the service of the Department or under Hospital Boards. The majority are doubly qualified, and among them are three of Maori blood. With a few exceptions, their salaries are paid by the Department, while the Hospital Board concerned is usually responsible for their accommodation and means of transport.

The Department deeply regrets to record the death of one of this splendid band of nurses, Miss M. Jarrett, who for some eleven or twelve years was a most devoted and enthusiastic worker in her own particular district. Her sudden death was a great blow to the people among whom she lived, and who will long remember her unselfishness and kindness. She never spared herself, and will be long remembered as an example of one of the finest types of the nursing profession.

J. Bicknell,
Director, Division of Nursing.

PART VI.—MAORI HYGIENE.

I have the honour to submit a brief annual report of the work done by the Division of Maori Hygiene for the year ended the 31st March, 1928.

General Health.

The general health of the Native people throughout the Dominion has, on the whole, been even better than the previous year. This has been brought about by the improvements in living-conditions generally and the continual supervision of the villages by our district nurses, Maori Council organizations, personal visits of myself and other officers of the Department. Another important factor is the younger and more enlightened Natives assuming control over affairs within the villages, and thus casting aside the ideas of their elders, who in the past have been content to carry on in the less up-to-date methods of local control. The education received by the younger people and their desire to Europeanize as far as possible their own people in matters of general health is being reflected in a marked degree, to the credit of those concerned and to the advantage and betterment of conditions amongst the people. The change of control to the younger Natives has been at all times advocated by the Division, believing it to be the basis of a better system whereby health conditions specially could be better cared for, and, in so far as the past year's work in this direction is concerned, the improvements so effected have certainly been most encouraging.

The continued individualization of Native lands by the Native Land Court is a decided factor to be considered in the general improvement of health conditions, as by these methods the overcrowding problem is gradually being overcome—a most important matter, expecially where Native people are concerned.

The installation of water-supplies by the Division has no doubt assisted greatly in the improved health conditions, and this branch of the work still continues to receive special attention; and, in this connection the Division has laid out supplies in the following Native settlements, at a total cost of (£1,850), to be met by subsidy and Native contributions: Waimiha, Waikato; Orakei, Auckland; Oruanui, Taupo; Te Kao, North Auckland; Te Hapua, North Auckland; Wairoa, Tauranga; Bethlehem, Tauranga; Whangara, East Coast.

Sanitary Improvements.

The improvements in the sanitary condition of the villages continues to progress in a very satisfactory manner. The erection of latrine accommodation is now recognized by the Natives to be essential in the interests of health, and in very rare instances is this not to be found. Not only are the communal meeting-houses provided with the necessary conveniences for both sexes, but many private homes also have their privy accommodation established. The Village Committees operating under the Maori Councils are largely responsible for this work, and they also insist upon the proper supervision and cleansing of these buildings. When *huis* or gatherings are in progress squads of men are detailed off to attend to all matters incidental thereto, and everything is attended to in a systematic manner. The refuse of gatherings is dealt with by burning or burial, and the sanitation of the villages becomes a routine matter. The improvements effected in this direction, to what it was a few years ago, are most marked, and reflect the greatest credit not only upon the Natives themselves, but the Department upon whose shoulders rests the responsibility and care of health matters of the Native race. Gatherings and *huis* a few years ago were looked upon with fear as a menace to the health of the populace generally: not so to-day. The advice of the Department is sought and carried into effect, and the improved conditions of the villages are portrayed in the lessened incidence of sickness and disease caused by the evil sanitary conditions of the past.

A drainage scheme has been laid out at the Te Kuiti Native Pa, which entails the extension of the borough sewer, the erection of six up-to-date w.c.s and latrine accommodation, and the drainage of all waste water from the cooking-houses, the total cost of which is estimated at £277. The Natives have agreed not only to contribute £100 in cash, but will supply labour equal to a further amount of £77, the balance of £100 to be asked for by way of subsidy. The matter at present is under further consideration. Such a scheme—the largest yet proposed—gives some indication of the desires of the Natives to improve the sanitary conditions within their villages, and is a decided forward movement to better the conditions of the past.

Epidemic Diseases.

As reported last year, there was no marked incidence of any of the usual epidemic diseases. I am pleased to again report of even better results for the year just closed. The most serious menace to Maori health is typhoid fever, and during the year the largest numbers affected in any one locality were fifteen, with an occasional case here and there throughout the Dominion. It is gratifying to know that the outbreak of the fifteen cases was not considered to be due to evil sanitary conditions, but probably to an infection from shell-fish carted there and consumed. Notwithstanding this occurrence and the fact that sporadic cases present themselves from time to time, there is little doubt but that the incidence of the disease is becoming less and less, these conditions being assisted by the improved sanitary methods being carried out, together with continued inoculation of the people.

Inoculations, like improved sanitary measures, are proceeding as a routine matter. We still meet with some opposition to inoculation, which in many instances can be traced to the followers of the Ratana movement; but in this respect, speaking generally, these objections are gradually being overcome, partly by persuasion of the departmental officers, and possibly by the waning of the Ratana teachings.

Maori Health Councils.

These bodies continue to do excellent work, more especially so in the direction of the improvement of sanitary conditions within the villages and financial assistance towards the installation of water-supplies. In addition to carrying out their ordinary routine duties as defined under the Maori Council Act and regulations made thereunder, they are ever ready and willing to co-operate with the Department in all matters relative to health conditions generally.

With our twenty Councils of seven members to each, and 260 Village Committees of five members, it will be observed that we have an organization of over 1,400 Natives ever ready to assist in any emergency or cause the Department may think necessary. Most of these bodies consist of the more enlightened Natives, and are a valuable asset, especially in dealing with any serious epidemic. The supervision and advice given by the Division is fairly heavy, and the office-work incidental thereto occupies a good deal of time and thought, but the results are reflected in the good work accomplished, and as such we cannot afford to lose their most valuable services.

In inoculation work the services of our Councils are given freely, and are of most valued help in the locating and rounding-up of those to be treated. In many instances conveyances of the Chairman or members have been placed at the disposal of departmental officers in pursuance of their duties, and their own personal assistance given gratis.

A good deal of opposition is still encountered by our Councils and their Village Committees by the continued attempts of the Ratana element to usurp the powers and functions of the Maori Councils Act. In many instances these Ratana committees operate much to the detriment of our legally constituted bodies. However, by the determination of our Chairman and members, these Ratana organizations are becoming less passive; but constant supervision is still necessary to keep them from becoming a real pest in the administration of the Act under which our Councils function. The Division continues its propaganda work amongst the people and by continued visits hopes to educate the misguided elements into departmental procedure in dealing with the Native people.

The Councils, with their organizations, spread as they are over the Dominion, are an enormous factor in the general uplift of the Maori people, as not only do they function as Maori local authorities, but exercise general supervision over the moral welfare of the race, provision for which has been made under the Act administered by our Councils. The Act and by-laws are at all times administered in a reasonable manner, but with sufficient authority to satisfy delinquents that the Maori Councils Act, like any other Act, must be strictly obeyed. The dictum of these bodies is respected, and it is on rare occasions they have to resort to the Magistrate's Court to enforce their decisions.

Registration of Births and Deaths.

The Division works in conjunction with the Registrar-General in this matter, and it is here where our Maori Council organizations render valuable service in seeking the necessary information and effecting registration.

Regarding the registration of deaths, many inquiries are submitted by the Registrar-General to this Division to ascertain the probable cause of death, as the information is rarely supplied at the time registration is effected, owing to a great number of the cases not being attended by a medical man. We are, as a rule, able to obtain sufficient information to permit of a tentative diagnosis acceptable for registration purposes; but, reliable though the information gathered may be, I am compelled to state that such a system is one that is far from satisfactory. I am in agreement with my predecessor in office when he stated in last year's report "Where any Native died without being attended by a medical man or a departmental nurse an inquest should be held," believing it to be the only solution of safeguarding the Native people against the treatment of unqualified persons and tohungas. The expense entailed may in many cases be prohibitive; but if this procedure were known to the Natives I believe the matter of calling in either a medical man or a departmental nurse would soon be given effect to, knowing how abhorrent to the Maori mind an inquest is, and especially a post-mortem examination upon the dead.

The isolation of many of the villages has now been removed by the opening-up of the country by improved roading-facilities, and thus medical aid is more easily obtained. Cases of neglect to seek medical or nursing advice that have ended fatally continue to be revealed, and in a very great number of instances were from the misguided elements of the Ratana following. Compulsory registration will and does not solve the question. I am of opinion the cause of death should be demanded before burial, and where no medical advice has been given, then an inquest is the only means available for judging

the accuracy of the cause of death. There are large numbers of the Maoris who do seek medical aid, but there are, unfortunately, followers of various cults who will not avail themselves, although aware of the facilities offered by the Department for nursing service and free medical attention, if necessary, and it is regarding this element that my remarks are specially directed.

A system of registration of births and deaths is in force under the Registration of Births and Deaths, Act, and for the six years ending 1926 I submit particulars as follows :—

Year.	Births.		Deaths.	
	Number.	Rate per 1,000.	Number.	Rate per 1,000.
1921	1,056	18·7	842	14·5
1922	1,442	24·7	913	15·7
1923	1,181	19·8	762	12·8
1924	1,246	20·4	773	12·7
1925	1,716	27·5	818	13·1
1926	1,593	25·0	902	14·2

The increase in the births recorded in 1925 is probably due more to late registration than to any sudden accession to the annual number of births occurring.

General.

Population.—The Maori population, according to the latest figures available (April, 1927), totals 64,234, composed of 33,564 males and 30,670 females, of which 26,179 are children under the age of fifteen years. Although these figures show an increase of 11,483 over the figures of 1921, it does not follow that the Maori will continue to exist as a distinct full-blooded race. In the year 1891 there were 14·9 Europeans to 1 Maori. This has steadily increased until 1927, when the proportion was 21·4 Europeans to 1 Maori. This external dilution must be considered as an enormous factor in affecting the distinctive culture of the Maori, and with improved education and conditions generally lead to internal dilution of the race through increasing intermarriage.

Population under Fifteen Years of Age.—In 1891 the percentage of children under fifteen years of age to the total population was 34·1. In the year 1921 this had increased to 40 per cent., and, according to the latest figures available, in 1927 had risen to 40·76.

Proportion of Sexes.—In 1891 the number of females per 1,000 males was 832 ; in 1921 the figures reached 890, and in 1927 had increased to 914. These figures reveal that an excessive preponderance of males does not exist amongst the Native people, and therefore race-extinction based on these ideas need cause no apprehension.

Miscegenation.—The latest figures available in 1927 give the percentage of miscegenation at 15·4 to the total Maori population, as against 12·7 on the figures of 1916—an increase of 2·7 in eleven years. This, however, is not altogether a true criterion of the amount of miscegenation that is taking place, as all half-castes, according to the latest figures, were included as Maoris, whereas in the previous returns half-castes living as Maoris and fractions of European blood less than half were included ; nevertheless, it gives some indication of the amount of miscegenation that has taken place, and, although proceeding slowly, must ultimately lead to the absorption of the race.

Conclusion.

I wish to express my appreciation to the officers under my control, who have at all times assisted to further the work of the Division.

To the Directors of other Divisions, Medical Officers of Health, and their staffs, I am also indebted for the valuable assistance rendered in the co-ordination of their services with those of my Division.

E. P. Ellison,
Director, Division of Maori Hygiene.

PART VII.—MATERNAL WELFARE.

SECTION I.—REPORT OF THE CONSULTING OBSTETRICIAN, HENRY JELLETT, M.D. (Dubl.).

I have the honour to present my annual report as Consulting Obstetrician to the Department of Health.

The work done in obstetrics by the Department has very greatly increased during the past year. Amongst my duties the following are the most important :—

(1) The inspection of such maternity hospitals as are recognized for the training of midwives.
(2) The consideration with the Medical Faculty of Otago University of the training of medical students in midwifery.
(3) The recasting of the existing scheme for the training of midwives and maternity nurses.

(4) The inquiry into certain cases of serious obstetrical operations, or of maternal deaths, as reported in the monthly returns from maternity hospitals.
(5) The preparation of new forms (*a*) for the notification of eclampsia and of maternity cases in general hospitals, (*b*) for the annual reports of St. Helens Hospitals, and (*c*) in conjunction with Dr. Paget, for the quarterly summaries by Medical Officers of Health of puerperal-pyrexia notifications, and also of ante-natal clinics.

In the coming year I hope further to be able to relieve Dr. Paget of the duty of examining and reporting on the returns grouped in paragraph (5), as in consequence of his other duties it is impossible for him to find time to deal adequately with them. I hope that in my next annual report I may be able to produce such information from these returns as will enable you to form an opinion of the value of the changes which have been made and of the direction in which further work should trend.

The inspection of maternity hospitals and the revision of the nurses' curriculum are closely associated.

The Selection of Training-schools for Midwives.

This is a matter which may again come up for consideration, so I should like to suggest the conditions that should, I think, be fulfilled before a hospital is authorized to do such work. These conditions are as follows: (1) The permanent nursing staff should be sufficient and efficient; (2) The Medical Officer should be able and willing to give the necessary instruction; (3) The number of patients admitted yearly should be ample to provide the necessary experience.

Furthermore, in deciding how many midwives may be trained at the same time, it is essential to take into consideration the number of the permanent nursing staff as well as the number of conductions available. When this staff is limited to a Matron and an assistant Matron I do not think that pupil midwives can get the instruction required. Further, I think the strain thrown on the Matron is unjustifiable, particularly as such strain has been greatly increased by the necessary institution of ante-natal clinics. It also seems unwise to recognize small hospitals if by so doing other hospitals which are capable of giving a better training are left short of candidates.

The Status of Maternity Nurses.

I find that there is a general tendency to regard the maternity nurses as a half-trained woman, who is of an inferior class to the woman who holds a midwifery certificate. This tendency has been explained in three ways: First, by saying that medical men will not employ maternity nurses because they are not taught to make vaginal examinations; secondly, by the fact that Hospital Boards give preference in making staff appointments to women who hold a midwifery certificate, even though there is no prospect of their having to carry out the duties of a midwife; thirdly, by the fact that the Trained Nurses' Association is closed to maternity nurses, although in the past it has been open to nurses trained under the old system and for the same period as is the present maternity nurse.

It is obvious that the maternity nurse is now better equipped to carry out the work of attending patients with a medical practitioner than was the former midwife, and that the prime object of the extra teaching of the midwife is to enable her to conduct normal cases without medical aid, and to teach others.

I do not think that it is any part of a nurse's duty when attending cases with a medical man to diagnose either the course of labour or the presence of complications by vaginal examinations, nor do I think that medical practitioners should ask her to undertake what is their own responsibility. Further, I think that it is unnecessary and unwise to insist that staff nurses in general hospitals should hold midwifery certificates, unless their duties involve the teaching of midwifery or the care of maternity patients. The holding of a maternity certificate, on the other hand, is very necessary.

The New Nursing Curriculum.

It has been suggested in some quarters that the new requirements of the Nurses and Midwives Registration Board are too exacting, and that it is not always possible to comply with them. I have just completed my second inspection of the hospitals which train midwives in the South Island, and in each hospital the Matron has told me that she has no difficulty in giving her nurses the prescribed course. In the North Island two institutions have found a difficulty in carrying out one requirement. It is, however, a matter which can readily be adjusted.

The Training of Medical Students in Midwifery.

The training of medical students and the limitations forced by circumstances on the Medical School at Dunedin have been under the consideration of the Department and of the Medical Faculty of the school for some years. I am glad to say that practical steps are now being taken to overcome the difficulties of giving a sufficient training.

In November last, in accordance with your instructions, I accepted the invitation of the Medical Faculty of the School of Medicine, Dunedin University, to meet them to discuss the present position of medical training in that school, and the best methods of improving it. I found that the faculty thoroughly recognize the inadequacy of the present methods—an inadequacy which is in no way due to want of effort on the part of the teachers, but rather to want of adequate clinical material and of the necessary funds. I think I may say that they also recognize that when the new regulations for the training of midwives have begun to bear fruit the midwife will be better equipped in the art and practice of midwifery than will the medical practitioner. This is a very serious state of affairs, because the midwife's training is only designed to make her capable of conducting a normal labour and lying-in, and for all abnormal cases she must look to the medical practitioner. If the education of the latter is insufficient, then he is unable to deal with emergencies, and to help him out of them he will, amongst

other mistakes, be led to fall back on radical surgical procedures because of his ignorance of the milder obstetrical procedures which would have better served his purpose. The effect of this on the rate of maternal mortality is obvious. I think it may be taken as a fact that, in at least 80 per cent. of confinements, the attendance of a medical practitioner is not essential, and that in the remaining 20 per cent. it is either desirable or essential. On the other hand, it is also a fact that it is not always possible to distinguish beforehand into which group a patient will fall. Therefore it is advisable—or, at all events, customary—that wherever possible a medical practitioner is present in all cases, lest a need for his services should arise. If his education is insufficient to enable him to satisfy this need, then the principal reason for his presence is lost, and, in fact, it would probably be better that he should not be present. The removal of the difficulties under which the Medical Faculty at Dunedin works in obstetrical matters is consequently very closely bound up with the whole problem of the lowering of the rate of maternal mortality in this country.

The Plunket Society has received support and encouragement both from the Government and from the general public. Scholarships have been founded, and hospitals and other institutions have been provided to help it to carry out its most worthy and necessary work. It helps and advises the mother during pregnancy; it cares for the infant during its first year of life. It deserves and receives the greatest credit for so doing. On the other hand, the obstetrical department of the Medical School at Dunedin, which trains those who will later be responsible for the care of the mother when she most needs it, and without whose skill there would often be no infant for the Plunket Society to tend, is left in the same financial position that it occupied many years ago. This department plays one of the most important parts in medical education, and yet it has no professor at its head, no suitable hospital at which to educate its students, and insufficient funds adequately to remunerate its teachers. I suggest that the general public are in ignorance of the needs of the University in this respect, and I think it is probable that they are also in ignorance of the very close connection that exists between the fulfilment of these needs and the reduction of maternal mortality. It is impossible to lower the latter without improved medical education. It is impossible to provide that education with the resources at present available in the national Medical School of the country. It is impossible materially to improve these resources without considerable financial assistance from without. Presumably, the provision of such assistance is primarily a matter for the Government, and in the present financial position of the country it may be a difficult matter. There must, however, be many wealthy individuals or corporations who are both willing and able to assist in such matters if the necessity for assistance was brought home to them. Up to the present I fancy this has not been done. It does not become a University to hang out the reversed flag of financial distress. It is more suitable that would-be benefactors should go to her and learn her needs. Here is one of them. Mainly by private benefactions the Faculty of Medicine has available annually for the payment of its staff the sum of £1,600. From similar sources the Faculty of Surgery has a similar sum. The corresponding sum available for the Faculty of Obstetrics is £530, which it is proposed to reduce by £75 at the end of this year; and yet midwifery is one of the most urgently important subjects of the medical curriculum.

During the past twenty years benefactions to the extent of £16,000 have been received by the departments of medicine and surgery. During the same period the department of obstetrics has received nothing, but a little more than twenty years ago it received a benefaction of £425 13s. 6d. as a special donation towards the foundation of the Batchelor Hospital. I suggest, sir, that this Department can help to remedy this state of affairs in an indirect but none the less effective manner, and that manner is by making a public demonstration of the needs of the obstetrical department of the Medical School at Dunedin a part of its propaganda for the reduction of maternal mortality. The Department can give the present situation the necessary publicity, and, if this is done, I think the needs of the University would receive the same relief that the needs of the Plunket Society have received in the past.

Eclampsia.

There are next a couple of subjects of clinical interest on which I should like to say a few words. The first is eclampsia. I have gone carefully over the notifications for the past year with the following result: Total notifications returned, 63. Ante-partum eclampsia (conservative treatment): 28 patients lived; one died of meningitis on the twentieth day. *Accouchement forcé:* 1 lived, 2 died. Induction of labour: 5 lived, 2 died. Cæsarean section: 5 lived, 4 died. Post-partum eclampsia (*i.e.*, cases in which the convulsions began after the birth of the infant): 10 lived, 5 died.

These figures do not offer any help to those who regard the emptying of the uterus as an effective method of stopping the attack. It will be noted that out of thirty-four cases in which the uterus was already empty (*i.e.*, cases of post-partum eclampsia), or in which it was emptied by operation, fourteen women died.

The new report form which was adopted last year, when properly filled up, gives valuable information which was wholly lacking in the older form. It would, however, be a great advantage if medical practitioners would not notify deaths as due to "toxæmia," as such a term is obviously too loose to be of any value.

I also hope that in future the notification of eclampsia which, it will be remembered, was suggested by the British Medical Association will be carried out in every case. That this is not done at present is very obvious in view of the fact that the total notifications for 1927 numbered sixty-three plus four cases of pre-eclamptic toxæmia, while in the public and private maternity hospitals alone seventy-one cases of eclampsia occurred.

I hope these figures taken in conjunction with the considered opinion of practically all obstetricians of importance will finally stop the adoption of *accouchement forcé* as a mode of treatment of eclampsia by New Zealand practitioners. I further hope that the operation of Cæsarean section will be reserved for the small proportion of cases in which its use is undoubtedly justified.

The Excessive Use of the Midwifery Forceps.

The second subject of clinical interest is the abuse of the midwifery forceps. That any gross abuse is far from general is shown by the following table, in which is given the percentage rates of application for the past three years in the different classes of hospital :—

Hospitals of	Number of Labours.			Percentage of Forceps Deliveries.		
	1925.	1926.	1927.	1925.	1926.	1927.
50 confinements and under ..	3,950	3,893	3,794	12·0	14·5	15·06
From 51 to 100 confinements ..	5,347	5,748	5,589	17·2	14·9	12·63
From 101 to 150 confinements ..	2,512	2,948	3,044	19·1	18·8	16·29
Over 151 confinements	3,556	4,024	4,229	8·7	8·02	7·35
All Hospitals	15,365	16,613	16,656	14·3	13·7	12·51

I think that 6 per cent. might not unfairly be regarded as the rate which ante-natal care and the proper management of the first and second stages of labour should render possible without causing unnecessary suffering or injury to mother or child. If so, then there is still room for a considerable reduction.

It will be noted that, while the rate in hospitals with less than fifty confinements in the year is steadily increasing, the rate in the other hospital groups is steadily falling. It is probable that the patients who are confined in the first group of hospitals are those who receive the least amount of ante-natal care and first-stage supervision.

There are various factors which suggest themselves to explain an unduly high rate. The first, and perhaps the most obvious, is lack of obstetrical experience. Then come such reasons as undue anxiety on the part of the medical attendant, undue pressure by the patient's relatives, unsatisfactory management of the first stage of labour, insufficient use of the various means of lessening pain during both the first and second stage. It will be noted that all the reasons given in the last sentence might have been grouped under the head of obstetrical inexperience, but unfortunately they also are to be found existing separately when lack of experience should have ceased to exist. It is possible to suggest a remedy in such cases if the medical practitioners concerned will adopt it. Where actual inexperience is present it is more difficult to do so.

I think that a quotation from a recently published report of the Louise Margaret Hospital at Aldershot by Lieut.-Colonel P. C. T. Davy, C.M.G., R.A.M.C., is pertinent to the matter under discussion. "That institutional midwifery is of immense advantage to the woman admits of little argument, but one is inclined to think that perhaps its most incalculable benefit lies (or should lie) in saving her from the obstetrical forceps. Removed from anxious relatives, under the constant observation of a staff to whom time is no object, and in the atmosphere of calm routine which prevails, Nature, who after all, is not a bad midwife, is allowed a hand. The ultimate good to the woman lies undoubtedly in patience. This counsel of perfection, of course, breaks down too often in other circumstances, but conscientious ante-natal examination should do much to preserve it." (Jour. of the R.A.M.C., Jan., 1928, p. 19.) Colonel Davy deals with 2,200 confinements, and the average rate of forceps application was 4 per cent.

With the assistance of the different Medical Officers of Health through the country I have recently approached medical practitioners in whose practice very gross excess forceps application occurs. In the case of all hospitals in which the rate exceeded 40 per cent., the Medical Officer of Health has written to ask if any special reason or circumstances can be suggested for such excess. In most cases an answer has been received, some of which could not be regarded as satisfactory, whilst others showed that the medical practitioners believed they were really doing the best for their patients. I have written a short note on each answer, as well as a general note suggesting the lines of treatment which usually make instrumental interference unnecessary. As I have said, I have only considered this year instances of very gross excess. Next year I hope to consider all cases in which the percentage exceeds 30.

I have always considered it to be my duty to draw your attention to any matter of nursing or medical education or practice which seems to increase the dangers of women in childbirth, and perhaps I have failed to emphasize equally the fact that there are other factors, for which medical practitioners and nurses have no responsibility. Such an omission is unfortunate because of the tendency of the lay press and the public to throw on the medical and nursing professions blame for happenings for which the latter are not responsible and which they are powerless to prevent. A single medical practitioner can give a patient advice which may save her life or health ; fifty practitioners cannot make her take it if her mental equipment is insufficient to enable her to appreciate its importance. Again, a medical practitioner single-handed can, if left unhampered, bring his patient successfully through a very difficult labour. If, on the other hand, his plans are obstructed and his mind confused by the injudicious interference of relatives and friends he can easily convert a normal case into a calamity. It is therefore very necessary that the public should remember that to the unavoidable consequences of disease and deformity, and of the sometimes avoidable consequences due to insufficient medical or nursing education, there must be added the wholly avoidable misfortunes resulting from misguided and clamorous relations, neglected advice, and unsuitable surroundings.

It is usually customary to pay for services rendered according to the time and skill spent on them. I doubt very much if the public recognizes that the fees paid for midwifery practice hardly compensate for the former and wholly neglect the latter. If it could recognize this fact perhaps it would be more ready to leave criticism to those who are competent to criticize, and to devote the time saved to efforts to understand and to carry out the advice it receives. Along such lines the lay press, too, can give the more useful help.

MISCELLANEOUS.

I have continued the work I began in 1926 of obtaining special reports of maternal deaths and of cases of Cæsarean section, &c., which came under my notice in the monthly returns from maternity hospitals. Whenever such a course seemed of value I have written a note on the case, which the Medical Officer of Health transmits to the medical practitioner concerned. I hope that the criticisms and suggestions made in such notes may have been of some little value.

I am afraid that there are some practitioners who object to my asking for the necessary information in these cases. I think such objections are unwise, for the following reason: In 1924 the National Council of Women in New Zealand asked that all maternal deaths should be the subject of a Coroner's inquiry. Further, in February of this year a very large conference of women in London passed, amongst other resolutions, the following: "That steps should be taken to obtain a medical inquiry into any maternal death during childbirth." Although it is most improbable that the suggestion of the National Council would benefit mothers, it is possible that an attempt might be made to force such a regulation on the country. If so, the fact that a medical inquiry was already being held under the directions of the Department of Health would be the surest way of checking it, especially in view of the resolution which was adopted at the London conference, and which has received the support of Sir George Newman, Chief Medical Officer, Ministry of Health, Great Britain.

I have for a long time been anxious to get particulars of all maternal deaths. This, however has proved to be a very difficult matter. The number of deaths which occur in maternity hospitals is small—*i.e.*, 0·22 per 1,000 in 1927—as the greater number of patients who are dangerously ill are transferred to other hospitals. Now, however, it has been arranged that Medical Superintendents of general hospitals shall send a report on maternity cases admitted to their wards, and this will bring information regarding deaths which otherwise would have passed unnoticed. The Registrar-General has also kindly undertaken to send a quarterly list of deaths directly associated with pregnant or puerperal women.

There are certain matters in the campaign to lessen maternal mortality which are still in an unsatisfactory state. Two of these I have mentioned—first, the incomplete notification and occasional unsatisfactory treatment of eclampsia, and, secondly, the insufficient education of medical students in obstetrics. A third matter is the failure to provide the means by which the general practitioner can carry out the principles of asepsis—that is to say, the failure to provide sterilized dressings which can easily be obtained by all practitioners in all cases. Thanks to the efforts of Dr. Paget, nurses in training are taught how to prepare and use these dressings. If nurses who are engaged in practice could be similarly taught it would be a great step forward. Still, even assuming this to have been done, the provision of sterilized dressings is also necessary, and until measures have been adopted to provide them at a very small cost it cannot be considered that due arrangements have been made for the practise of asepsis in midwifery. I am sure that if packets of dressings were thus available the number of medical practitioners who would not use them would be very small.

Ante-natal clinics have been placed on a firm footing in the larger towns, but, so far there has been no definite effort to establish them in the smaller towns; yet they are as necessary in one as in the other. I suggest that one way in which a start might be made in this direction is by making ante-natal work part of the curriculum for maternity nurses. The latter get ante-natal instruction at hospitals recognized for training midwives, and it is time that the maternity training-schools should also provide it, both for the good of their pupils and for the benefit of the pregnant women in their neighbourhood.

Again, it is most necessary that the existing ante-natal clinics in hospitals should be widened so as to include post-natal work—*i.e.*, the examination of the patient before she leaves the hospital. While such an examination is hardly a means of reducing maternal mortality, it is one of the most essential methods of ensuring the future health and comfort of the patient, and, in many cases, of avoiding operations which would otherwise have been necessary. It is the regular practice in some of the St. Helens Hospitals, and I think it would be a step forward if it was introduced in all maternity hospitals.

The records of maternal morbidity and of puerperal pyrexia in the monthly returns furnished by maternity hospitals continue to be valueless. This fact is very disappointing in view of the efforts which the Department has made to make clear to the licensees and matrons of maternity hospitals how such records are to be kept. Moreover, Dr. Paget in the course of his inspection has done his utmost to prevent incorrect entries. In spite of all this, I find it recorded that in hospitals of between 101 and 150 beds in the Wellington District there are more cases of puerperal pyrexia than of puerperal morbidity. Every case of puerperal pyrexia is primarily a case of puerperal morbidity, and to make the former exceed the latter is akin to saying that there were forty-one cases of forceps extraction of which fifty-four were associated with perinæal laceration. I think that Nurse Inspectors ought to be able to arrange that these very simple statistics are kept correctly. Further, the statistics are, in my mind, very much too favourable. The percentage of puerperal morbidity for the whole country, as shown in the monthly returns, is less than 2 per cent., a figure which in practice I think it is very hard to reach. Further, while the percentage for hospitals with more than 150 confinements annually is 2·27, the percentage for hospitals with less than fifty confinements is only 1·63. It is very necessary that reliable statistics should be available.

I have particularly to thank Dr. Watt, the Deputy Director-General, for the manner in which he has invited and received my suggestions and has tried to bring them into general adoption. I must also thank Dr. Paget, Inspector of Hospitals, for the practical support he has given me in the course of his official duties. I am also deeply indebted to the Medical Officers of Health through the country, without whose assistance much of the work I have tried to do would have been impossible.

Lastly, perhaps I may be allowed to congratulate you, sir, on the success of your efforts to obtain the new St. Helens Hospital which has been so badly wanted at Christchurch for so many years. If later a similar course is found possible at Dunedin it will prove to be of inestimable value to the cause of medical education.

ADDENDUM.

In my report for 1927 I wrote as follows: "From 1896 to 1910 the gross mortality of the Rotunda Hospital was 3·4 per cent.; from 1910 to 1925 it was 6 per cent." The words "per cent." were accidentally used instead of "per thousand" and escaped correction in the proofs.

SECTION 2.—REPORT OF THE INSPECTOR OF HOSPITALS, T. L. PAGET, L.R.C.P. (LOND.), M.R.C.S. (ENG.).

I have the honour to submit my fourth annual report on the licensed hospitals and maternity hospitals of the Dominion for the year ended 31st March, 1928.

Inspection of Hospitals.—There are 387 which it is part of my duties to inspect. Of these, seven are St. Helens Hospitals, fifty-three public maternity hospitals, sixty-three licensed private medical and surgical hospitals, forty-eight licensed private medical, surgical, and maternity hospitals, and 216 licensed private maternity hospitals.

Since my last report I have inspected all the public and State maternity hospitals, and the private hospitals in the South Island and the majority of those in the North Island. Considerable improvements have been made in most of these hospitals with regard to equipment, and in the majority the buildings, equipment, and conduct are such that a reasonable standard is maintained. A small number still fall short of a desirable standard, and in most instances this is due to economic conditions which are gradually being overcome. It has been found necessary to close one hospital, which no efforts on the part of the Department were able to bring up to the requisite standard, and others have closed voluntarily. The increase in the number of small public maternity hospitals established by Hospital Boards is tending to improve the general standard of maternity work, as they are in many instances replacing institutions which, owing to lack of funds, were not maintained in such a way as to give satisfactory services. There is room for many more of these hospitals in New Zealand, and the gradual extension of Hospital Board activities in maternity work will prove of great benefit.

My efforts to make cheap and efficient equipment available for hospitals, so that sterilizing can be carried out completely, have, I think, been successful. A comparison with the cost of the necessary equipment a few years ago and the cost to-day shows that it has been about halved. Even in these circumstances it is difficult to get sufficient equipment provided in some instances, due to the low scale of payment for hospital attendance on maternity cases as compared with the much higher scale of payment in medical and surgical hospitals.

I wish to repeat what I said last year with regard to this: that the majority of licensed hospitals, both as to buildings and equipment, supply those essentials necessary for efficient work, but not, I regret to say, those conveniences which are so desirable, in that they turn irksome effort into pleasurable work.

Summary of Returns of Work in Maternity Hospitals.—The number of women confined in 1927 was 28,419. Of these, 16,656 were confined in either State, public, or licensed private hospitals—an increase of 255 over last year. The remaining 11,763 were confined in their own homes or in one-bed maternity homes, which, though not licensed, are kept under supervision by the Nurse Inspectors and must be conducted by registered maternity nurses or midwives.

Table I gives some of the results of this work in hospitals which are grouped according to the number of cases confined per annum. The percentage of morbidities is not shown as, for reasons explained last year, I consider them valueless for statistical purposes. This also applies to the maternal mortality occurring in connection with these hospitals, as, almost without exception, death from sepsis does not occur in the hospital where the patient was confined, but in the public or private surgical hospital to which the patient has been removed for isolation. Measures will be taken next year to get these returns.

Table I.

Hospitals.	Number of Confinements.	Instrumental Deliveries.		Post-partum Hæmorrhages.		Puerperal Pyrexias and Sepsis.		Deaths of Infant in First Few Weeks of Life.		Still-births.	
		Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.
Group 1 (up to 50 cases per annum)	3,794	571	15·06	62	1·63	47	1·24	84	2·21	136	3·5
Group 2 (51–100 cases per annum)	5,589	706	12·63	70	1·25	61	1·09	109	1·95	152	2·12
Group 3 (101–150 cases per annum)	3,044	496	16·29	32	1·05	34	1·12	75	2·46	93	2·06
Group 4 (151 cases and over per annum)	4,229	311	7·35	70	1·66	67	1·58	67	1·58	111	2·62

Table II gives the results in each of the St. Helens Hospitals; also the total results of these institutions and the results of 598 patients attended by the maternity nurses and midwives of St. Helens Hospitals as out-patients, many of these being attended in conjunction with private practitioners.

Table II.

—	Number of Confinements.	Instrumental Deliveries.		Post-partum Hæmorrhages.		Puerperal Pyrexias and Sepsis.		Deaths of Infants in First Few Weeks of Life.		Still-births.	
		Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.
Auckland	690	20	2·90	18	2·61	25	3·62	13	1·88	23	3·33
Wellington	554	22	3·97	8	1·44	5	0·90	12	2·17	13	2·35
Christchurch	334	6	1·79	6	1·79	5	1·48	7	2·10	6	1·79
Invercargill	236	9	3·81	1	0·42	2	0·85	2	0·85	5	2·12
Dunedin	174	7	4·02	10	5·74	2	1·15	2	1·15	5	2·87
Gisborne	163	9	5·52	3	1·84	1	0·61	3	1·84	1	0·61
Wanganui	152	7	4·61	7	4·61	2	1·32	4	2·63	2	1·32
All St. Helens Hospitals	2,293	74	3·23	50	2·18	42	1·83	43	1·88	55	2·40
St. Helens out-patients	598	53	9·86	16	2·67	..	0·45	10	1·67	15	2·51

Table III gives the results and percentages of 14,363 cases attended in all hospitals other than St. Helens Hospitals.

Table III.

—	Number of Confinements.	Instrumental Deliveries.		Post-partum Hæmorrhages.		Puerperal Pyrexias and Sepsis.		Deaths of Infants in First Few Weeks of Life.		Still-births.	
		Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.	Number.	Per Cent.
All other hospitals ..	14,363	2,010	13·99	184	1·28	167	1·16	286	1·99	437	3·04

The figures in the above tables can only be regarded as a basis for further inquiry as to the influence of practice upon results—firstly, because the numbers are small, and consequently a few cases of a particular abnormality make a considerable difference one way or another in the percentages; secondly, because the figures from which the percentages are calculated are not always recorded as accurately in one case as another. This particularly applies to cases of puerperal pyrexia, since a reduction of from 100·4 to 100·2 may remove a case from the class of pyrexia to one of morbidity; consequently the better-conducted hospital may, on figures, suffer by comparison with a less-well-conducted institution. Also, there can be no doubt that many cases which are correctly classed as mild cases of puerperal sepsis by one observer are considered to be due to influenza or some other cause by another. It is hoped, however, that these figures will give occasion for serious thought, and, if recorded every year, may lead to useful conclusions as to the bearing of certain practices upon maternal welfare.

Ante-natal Clinics.—Though ante-natal clinics are not inspected by me, I have been asked to report as far as possible upon them.

The returns from all clinics are not available, and in some instances only nine months' work has been given; consequently the figures shown hereunder have had to be corrected as near as possible, but I believe are substantially accurate.

Table IV.—Results of St. Helens Hospital, Alexandra Home, Salvation Army, and Plunket Clinics.

—	New Cases attending Ante-natal Clinic.				Total Attendances.				Number of Maternity Outfits Sterilized.		
	1925.	1926.	1927.	Increase per Twelve Months.	1925.	1926.	1927.	Increase per Twelve Months.	1926.	1927.	Increase per Twelve Months.
Wellington Health District	975	1,257	1,615	358	3,531	5,152	6,917	1,765	122	139	17
Auckland City	517	1,105	1,237	132	1,603	4,295	4,971	676	119	202	83
Christchurch City	797	876	1,067	191	2,682	3,107	3,518	411	160	174	14
All the above clinics	2,289	3,238	3,919	681	7,816	12,544	15,406	2,852	401	515	114

It will be noticed that the average number of attendances at each clinic per patient approximately is four. This shows that many patients did not attend sufficiently often to get the best results possible. Many serious symptoms, especially pre-eclamptic, occur with great suddenness, and if women have not sufficient knowledge to observe the warning the abnormality is apt to be detected too late and the best results possible are not obtained.

A new edition of the pamphlet, "Suggestions to Expectant Mothers," containing more detailed information, has been published, and will be supplied to all clinics and maternal-welfare societies for distribution free of cost. It is hoped in this way to gradually educate the expectant mother to take

the steps so necessary for her own safeguard. The difficulty in this matter is considerable. Though most women approach labour with a certain amount of anxiety, and some with quite an undue dread, there is a general tendency in this, as with all remote dangers, to consider, whatever may happen to others, everything will be all right in her own case. If she could say, "It will be all right because I have co-operated with my attendants to give them the necessary facilities to properly attend me," it would be exceedingly desirable.

The general education of the expectant mother and of the public can best be promoted through the formation of ante-natal clinics, and it is to be regretted that so few clinics have been started outside the four centres and the midwives' training schools. I am still in hopes that the Plunket Society, with its many branches and nurses, its considerable income derived by subscriptions from the public and subsidy from the State through the Health Department, will become as active in its efforts to save the mother from illness and death as it has been to save the baby. There can be no doubt that the greatest safeguard to the baby is a healthy mother, and that the main hope of reducing the number of still-births and deaths of infants in the first few weeks of life, which so far have resisted all efforts, is by the widespread establishment of ante-natal clinics to give instruction and the necessary systematic ante-natal attention to the mother. The excellent results of the Plunket Societies' ante-natal clinics in Auckland, Wellington, and Christchurch are most encouraging, and I cannot help feeling that an inquiry by the Plunket Society would convince them that without detriment to the infant-welfare work, of which they are justly proud, they might devote a still larger portion of their time, energy, and funds to the equally important work, which they have so admirably begun, of helping to save the mothers and reduce that class of infant mortality which up to the present has not been affected.

Maternal Mortality.—Maternal-mortality returns for the past year are not pleasing to contemplate. The total maternal mortality per 1,000 live deaths has gone up from 4·25 per 1,000 last year to 4·91 per 1,000 for 1927. Puerperal sepsis is mainly responsible for this increase.

It is probable that some of this increase may be due to the fact that a considerable number of cases of phlegmasia albadolens, formerly reported as such and entered under another heading, are now recorded as puerperal sepsis, to which they properly belong. Taking the notifications of puerperal sepsis (exclusive of septic abortion) for the past three years, Table V shows the percentage of deaths and cases.

Table V.

1925–26—Average number of cases of puerperal sepsis, 207; average number of deaths, 29.
1927—Number of cases of puerperal sepsis, 244; percentage of increase of cases, 14·92. Number of deaths, 56; percentage increase of deaths, 48·21.

It will be seen that the percentage of deaths to cases in 1927 is considerably higher than the percentage for the two previous years. The increase of deaths of cases in 1927 over the average for 1925–26 was 48·21 per cent., while the increase in the number of cases reported was only 14·92 per cent. of the average for the two previous years. It therefore appears (presuming that all cases are reported) that either the virulence of the infection in 1927 was greater than usual or that resistance of the subject was lower. A gratifying feature is that there was an absence of any epidemics in licensed maternity hospitals which are subject to the regulations, showing that the regulations, which were redrawn in 1924 and which were specially designed to prevent the occurrence of these distressing epidemics, are effecting their object.

This is confirmed by consideration of the returns of puerperal sepsis from the Auckland District, the only ones at present available, but which may probably be taken as substantially accurate and as representative of the returns for the Dominion for this year.

In the Central and South Auckland Health Districts fifty-eight cases of sepsis occurred. Of these, thirty-four, or 58·6 per cent., occurred in private houses, while twenty-four, or 41·4 per cent. occurred in public or licensed hospitals. The returns for the Dominion show that 41·5 per cent. of confinements occurred in private houses and 58·5 per cent. in hospitals. It therefore appears that for some reasons the risk of puerpural sepsis to women attended in private houses in this district and year was 34 per cent. greater than those attended in hospitals. It will be interesting to note whether next year's figures support it.

It is an accepted fact that the accumulation of a large number of cases in any institution (other conditions being the same) increases the risk of sepsis, on account of the liability of uninfected cases being infected by one septic case which may be admitted. That this risk can be, and in our hospitals has been, greatly reduced is supported by the above figures, and I have no doubt the reason is that the frequent inspection and control of hospitals, and the effective regulations designed particularly to prevent the spread of sepsis if such occurs, have been most effective. It is probable that instrumental deliveries are also more frequent in private practice.

I submit that the lesson to be learnt fron this is that if the same standard of asepsis were maintained in private practice as is maintained under the regulations in hospitals puerperal-sepsis rates for the Dominion would greatly diminish. How soon this is accomplished depends mainly upon the insistence of the medical practitioner upon asepsis being carried out by himself and the nurses employed, and, as has been pointed out again and again, but it will bear repetition, this can not be done by the medical practitioner alone, but by the co-operation of the patient and nurses with him. It certainly would not be sound to argue that, owing to the lesser risk under present conditions of sepsis in hospitals, as shown by this year's figures for the Auckland District, all women should be confined in hospital. The correct conclusion is that the standard of nursing and asepsis for private cases should be brought up to the highest possible standard.

The improved training of maternity nurses and midwives is slowly working an improvement on the conditions governing asepsis; but there is still a great deal to be done in this direction, particularly in private practice. One must recognize the magnitude of the task of teaching the principles and practice of asepsis to all nurses ngaged in maternity practice, especially as the original training of most of these nurses did not include the teaching of asepsis. A useful lesson can be learnt by considering what had to be done some forty years ago when the practice of asepsis was first introduced into surgery. Within my own knowledge, which goes back over forty years, the general adoption of asepsis in surgery, and the perfecting of it to its present degree, took at least fifteen years; and the teaching of the nurses, who had not been originally trained in asepsis was at first carried out by the surgeons in actual practice, beginning with those surgeons whose enthusiasm and convictions of its benefits finally caused it to be generally adopted. To any one with a knowledge of the subject it must be obvious that it is quite impossible to withdraw hundreds of maternity nurses and midwives every year from practice and give them a refresher course in asepsis. The cost would be enormous and the consequent dislocation of the nursing service disastrous. The obvious conclusion is that the training of maternity nurses in asepsis can only be accomplished in a reasonable time, when every medical practitioner feels it his duty to his patient and to himself to see that the practice of asepsis in maternity work is carried out completely and that the principles of surgical asepsis are efficiently applied to obstetrics. As long as the practitioner is forced or is content to accept nurses untrained in asepsis and not to practise asepsis himself, so long will his work be incomplete and unsatisfactory, and not in the best interests of the patient. Unfortunately, the ignorance of the patient and her nurse as to what is required of them often forces the medical attendant to accept conditions which he disapproves.

It is of the utmost importance that the expectant mother should be well instructed as to what her duties to herself and to her medical attendant are in order that full precautions against sepsis may be made. If sepsis is to be practically excluded, the patient herself must be made to recognize the importance of asepsis, and to take her medical man's advice upon the selection of a trained maternity nurse who understands asepsis and to provide a sterilized maternity outfit for the benefit and use of her attendants. That at present she does not recognize this necessity is shown by the returns of the ante-natal clinics. Out of 3,919 new cases attending the clinics, only 515 of these patients availed themselves of the opportunity of providing themselves with these necessary outfits. Allowing that the ordinary proportion of these cases were attended in private hospitals which provide sterilized outfits, approximately 1,900 outfits should have been provided.

It cannot be said that there is any economic difficulty in providing these outfits. As has been pointed out before, practically the whole of the outfit, if made of new material, is convertible at the end of the lying-in period into babies' napkins, the cost of the material being approximately £1 5s. If, however, it is made of old sheeting the cost to the woman is the value of the old sheets, plus approximately 2s. 6d. for cotton-wool and tow and 2s. 6d. for sterilizing.

Full details with regard to these outfits have been embodied in the new edition of "Suggestions to Expectant Mothers," and model outfits have been distributed to all training-schools, Nurse Inspectors, and those clinics which have applied for them, and I hope by this means to bring home to those interested the necessity of providing this safeguard against infection.

It is interesting to note that during last year the provision of maternity outfits through the ante-natal clinics, which was initiated in New Zealand some years ago, was strongly advocated by Professor Beckwith Whitehouse, Royal Society of Medicine, as an important means of preventing puerperal sepsis, and that he considered the ante-natal clinic was the best means of distributing these outfits. He also states that "an experimental clinic with a team headed by a sister *who really knew her job*" (the italics are mine) had been started in connection with a maternity hospital at Birmingham, and that in the first thousand cases the morbidity rate was only 2 per cent., and only one woman in one thousand died, and that she had not had full ante-natal supervision. It is, however, obvious that there is little difference of opinion as to what should be done, and the difficulty of getting it done is found to exist in most countries.

In my opinion, the key to the solution of the problem of promoting maternal welfare is co-operation between the expectant mother and her husband, a well-trained ante-natal clinic nurse, an alert and efficiently trained medical attendant, and well-trained maternity nurse or midwife, and the Hospital Board's services, which latter can provide maternity hospitals for those cases requiring hospital attendance and services for sterilizing outfits for all patients. Of these the most important factor is a medical attendant determined in ensuring aseptic conditions.

The most useful work that the Health Department can do is in organizing these forces so that they work harmoniously together to promote maternal welfare.

Having satisfied myself that a reasonable standard of efficiency exists in the majority of the hospitals under my inspection, I intend to devote more time to organizing-work to promote the desirable co-operation indicated above.

In conclusion, I wish to express my thanks for and appreciation of the help cordially extended to me by many members of the medical and nursing profession, and, like Oliver Twist, to ask for more, particularly from the Obstetrical Society and the Plunket Society; also to yourself and my fellow officers of the Health Department, particularly to Dr. Jellett, Consulting Obstetrician, for his invaluable advice on many points, and to the Medical Officers of Health and their Nurse Inspector, with whom my work is most closely associated and to whom any credit for the result achieved in bringing to a fairly satisfactory uniform standard the 387 private maternity hospitals in New Zealand is mainly due.

PART VIII.—HEALTH DISTRICTS.—EXTRACTS FROM ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

SECTION 1.—CENTRAL AND SOUTH AUCKLAND HEALTH DISTRICTS.

Dr. HUGHES, Medical Officer of Health; Dr. BOYD, Medical Officer of Health; Dr. TURBOTT, Assistant Medical Officer of Health.

Part I.

INFECTIOUS DISEASES.

The general position regarding infectious diseases may be regarded as satisfactory, inasmuch as there have been no large outbreaks of disease, and the districts have been very free from pneumonic influenza of epidemic type, and also from infantile paralysis and cerebro-spinal meningitis. With the exception of diphtheria, enteric fever, and puerperal fever, the other diseases have run a normal incidence, and there is little worthy of comment, except that the School Medical Division is now co-operating in the supervision of children, contacts of tuberculosis cases, visits of inspection being made to the homes and systematic records being kept regarding the children whenever possible.

Small outbreaks of diphtheria occurred at Papatoetoe, East Tamaki, Mount Albert, Richmond, and, in the South Auckland District, at Otorohanga, the greatest number of cases (28) being notified from Papatoetoe. Most of the cases occurred amongst school-children, and extensive swabbing of contacts resulted in the discovery of quite a number of "carriers," who were promptly isolated and treated until clear of infection. Diphtheria toxin anti-toxin immunization treatment was also made available to children at these schools, and parents took advantage of this treatment fairly extensively.

In the South Auckland District two small outbreaks of enteric fever were experienced. One of these occurred in the sawmilling district around Kakahi, just south of Taumarunui, and the other at Oruanui, near Taupo. Most of these cases occurred amongst Natives, and whenever it was possible patients were moved to hospital and contacts inoculated.

Cases of puerperal fever (ordinary) notified were: Central Auckland, forty-one, of which number twenty-four occurred in private houses, nine in licensed private hospitals, and eight in public institutions; and South Auckland, seventeen—nine in private houses, five in licensed private hospitals, two in public institutions, and one was a Maori confinement without skilled attention.

GENERAL ADMINISTRATION.

In connection with the general sanitation of the two districts many visits of inspection have been made by the Medical Officer of Health, and, in addition, the usual supervision has been exercised by the Inspectors of Health in their respective districts.

Considerable improvement has been effected in the sanitation of the two districts, and local authorities generally show a desire to co-operate in effecting improvements. Sanitary matters which have been dealt with include the control of rubbish-tips, nightsoil-dumps, sanitary services, drainage schemes, insanitary buildings, and the administration of offensive trades. Other matters dealt with include the supervision of Native health, food and drugs works, water-supplies, cemeteries, and the inspection of hotels.

The following is a résumé of various improvements which have been made during the year:—

Auckland City.—With the exception of the flooding and consequent sewerage nuisance experienced in the Kimberley Road area at Epsom, which proved rather difficult to deal with, the general sanitary condition of the city is satisfactory, drainage systems have been extended to new areas during the year.

Hamilton.—This borough employs its own sanitary inspector, and its sanitary condition is good. A refuse-tip is maintained by the Council and is in good order, a new tip having been opened during the year; but no refuse-collecting service is carried out, and this should be made available in the future. Good progress has been made with the drainage scheme, and the closer settled parts of the borough are well reticulated, while the more scattered parts are being rapidly connected up.

Rotorua.—A reorganization of the nightsoil and refuse removal systems have been made, and these are now run on better lines. The advice of an expert is now being obtained by the Council on the sewerage question of the township. A great improvement has been effected in the sanitation of the Whaka Maori Settlement.

WATER-SUPPLIES.

The outstanding feature of the year in regard to water-supplies has been the special Commission of Inquiry which was held in Auckland during April and May in regard to the water-supplies of the city and suburbs, and also of certain of the Waikato towns.

The various water-supplies have been kept under constant supervision during the year, and numbers of samples have been obtained for chemical and bacteriological examination. The total number of samples so examined were: Central Auckland—Chemical examinations, 11; bacteriological, 41. South Auckland—Chemical examinations, 14; bacteriological, 18. Some of these examinations were made at the instigation and for the information of the Water Commission.

FOOD AND DRUGS.

A great deal of work has been done in connection with the supervision of food-sellers' premises, and the control of the sale of food and drugs. Whenever foodstuffs were found not to comply with the regulations warning notices were issued or legal proceedings instituted against the vendors. In the Central Auckland District it was necessary to institute fourteen prosecutions, the total fines and costs imposed being £65 18s. 1d., and in the South Auckland District eleven prosecutions, with fines and costs amounting to £45 17s. 10d.

Port Health and Anti-rat Work.

During the year the health inspection of all vessels entering the port has been the care of the Port Health Officer, Dr. Harke. He reports that 357 vessels were so examined, and that seventy-six prohibited or restricted immigrants were reported to the Customs Department.

The Shipping Inspector has exercised supervision over the sanitary conditions prevailing on all vessels in port and the fumigation of vessels. His report stresses the value of the refuse-removal system inaugurated by the Harbour Board, which is proving a boon not only in keeping the port clear of ships' refuse, but the barge also dumps fish-offal from the city, thus removing what was previously an almost constant source of complaint.

Constant war has been waged on the rat population on ships and the waterfront by the City Council and Harbour Board's rat officers, whose combined catches average about three hundred per week. The City Council also distributes rat-poison free to householders making application for it, and some one thousand baits per week were so distributed.

The inspection of overseas goods—*e.g.*, flock—and the disinfection of personal effects, and bristles and animal hair from the East have been carried out by the Departmental Inspectors.

General.

Co-operation has been effected with the Labour Department in the supervision of factories and food-sellers' premises, and certain inquiries were made in regard to occupational diseases, especially into the danger involved by workers in the "Duco" spraying process.

The control of cemeteries having recently passed into the hands of the Department, a great deal of work has been done in inspecting and arranging for necessary improvements in the condition and supervision of the various cemeteries and burial-grounds.

NORTH AUCKLAND AND COROMANDEL–OPOTIKI HEALTH DISTRICTS.

Dr. Chesson, Medical Officer of Health.

Part 2.

Infectious Diseases.

In reviewing the notifications of infectious disease recorded during the year, it is pleasing to note that no large outbreaks were experienced, and that the districts have been fairly free of influenza pneumonia, which disease accounted for a fairly large number of cases and deaths the preceding year. There were experienced small outbreaks of enteric fever in the Bay of Islands and Whangarei districts, of diphtheria at Tauranga, and of food poisoning at Te Puke, but apart from these the notifications of other diseases were normal and more or less of a sporadic nature.

The enteric-fever outbreak consisted of about twenty-five cases, the infection being traced to Natives who had been visiting at Ratana and who arrived home ill. Unfortunately, one of these Natives was admitted to the Whangarei District Hospital as a "chest" case, and before his case was diagnosed as positive enteric fever the infection had been carried to the nurses in the institution, six of whom contracted the disease, one case proving fatal. As the cases occurred they were removed to hospital for isolation, and inoculation of all the contacts was carried out by the district nurses to Natives. About half of the cases were European and half Natives.

A small diphtheria outbreak occurred in the Bay of Plenty district during May and June, the Borough of Tauranga being principally affected, twenty-seven cases being notified therefrom. As the majority of these were school-children, extensive swabbing of contacts was carried out, several carriers being thereby detected and isolated. The diphtheria toxin anti-toxin immunization treatment was made available to those children whose parents desired it, and some six hundred received this treatment at the hands of Dr. Wilson, School Medical Officer.

The food-poisoning outbreak occurred in Te Puke in December, twenty-five cases being notified. As these occurred during the Christmas period, when the mails were slow, it was not possible to obtain specimens from the patients, but the notifying practitioner forwarded one sample of fæces, from which the *Bacillus suipestifer* (hog-cholera bacillus) was isolated. It is considered that infection in these cases was conveyed by infected ice-cream, as all the patients had partaken of ice-cream supplied by the one vendor.

Notifications of puerperal fever (ordinary) recorded during the year numbered—North Auckland, seventeen, and Coromandel–Opotiki, seven. Of the former, five were Maori confinements without skilled attention, seven occurred in private houses, and five in maternity annexes; and of the latter two were Maoris, two occurred in private houses, one in a private hospital, and two in maternity annexes. All these cases were strictly investigated, and all necessary precautions to prevent the spread of infection to other maternity cases were carefully enforced.

General Administration.

A general improvement has been noted in regard to the sanitation of the two districts, and this matter has been directly under the supervision of the Medical Officer of Health, who has made many visits of inspection throughout the districts during the year. Matters which have been especially dealt with include drainage and sewage-disposal, nightsoil and rubbish removal services, water-supplies, food and drugs work, offensive trades, Native-health work, inspection of hotels, and the control of cemeteries, &c.

Some of the more important improvements effected during the year are as follows :—

In the sparsely settled country areas some sanitary improvements are noted, but these are mostly individual in character, though the application of regulations regarding food-sellers' premises and, to certain restricted areas, of the Plumbing and Drainage Regulations has made for considerable improvement in these matters.

Dargaville.—A daylight nightsoil-collection service has been put into operation during the year without complaints, which were frequent under the night regime.

Whangarei.—The sewerage system has been improved, and it is proposed shortly to extend the scheme of the whole of the town and to treat the sewage before discharge into the sea.

Helensville.—Sewerage scheme extended and a rubbish-dump opened under the supervision of the Town Board. Residents are required to remove refuse to the dump, but there is no public removal service.

Henderson.—Weekly nightsoil-removal, sealed-pan system, inaugurated.

New Lynn.—A drainage system with septic tank and effluent outfall to the Manukau Harbour is under construction.

Waitemata County.—Nightsoil-removal services have been instituted in the New Lynn and Waikumete portions of the county; also in the Takapuna Riding and for the settlements along the coast (Castor Bay, Murray's Bay, Brown's Bay, Deep Creek, &c.).

Northern Boroughs.—Devonport, Takapuna, and Northcote have combined to erect a common refuse-destructor, and considerable improvement may be expected in regard to rubbish-disposal in the future. Considerable improvements have been carried out in connection with the Northcote drainage scheme and septic tanks. Birkenhead has had a proposed sewerage scheme under consideration, but little immediate action is probable. Good progress has been made in regard to the Takapuna drainage scheme.

Thames.—Sewerage system extended and improvements effected to sanitary conditions.

Paeroa.—Steady progress made with sewerage reticulation.

Tauranga.—Several insanitary buildings condemned, and refuse-disposal system improved.

Water-supplies.

The supervision of water-supplies has been duly exercised, and bacteriological and chemical examinations have been made whenever necessary. In all, sixteen bacteriological and four chemical examinations were made. The following matters regarding various supplies are worthy of mention :—

Lake Takapuna.—Supplying the four northern boroughs has been given special attention, and the withholding of building permits on the watershed area has necessitated considerable correspondence and supervision.

Helensville.—A supplementary supply has been located and investigated.

Warkworth.—An area of 30 acres, with two springs, has been acquired for waterworks purposes.

Dargaville.—The whole of the catchment area has been obtained by the Council, and all buildings and stock removed therefrom. The fencing of the area (approximately seven miles in length) is being proceeded with.

Food and Drugs Work.

A considerable amount of work has been entailed in the supervision of the sale of foodstuffs, and a good number of samplings have been made. Good improvement has been effected in the condition of food-sellers' premises, due to frequent inspection and the enforcing of the regulations or by-laws governing these places. Minor breaches of the regulations have been dealt with by warning the vendor or manufacturer of the foodstuff concerned, but whenever necessary, presecutions were instituted, with successful results. These numbered—North Auckland District, seven, with fines and costs imposed totalling £67 6s. 4d.: and Coromandel–Opotiki, three; fines and costs, £7 6s. 6d. It is satisfactory to note a considerable decrease in these figures from last year's totals, indicating better compliance with the Regulations.

Native Health.

In co-operation with the Maori Hygiene Division good work has been done amongst the Native population by the district nurses to the Maoris and the Native Inspector, much of the work being preventive and educational.

General.

During the year a great deal of work has been done in connection with the inspection and supervision of cemeteries, and considerable improvement has been effected in this matter.

The standard of sanitation in the hotels inspected has been found fairly satisfactory, and improvements have been effected as required.

As there are no "ports of entry" in the districts, but few vessels from overseas have entered any of the ports, but such as have done so under special permit have been inspected and the health of crews found satisfactory.

Good co-operation has existed with the School Medical and Dental Officers operating in the districts, and much good work has been accomplished.

SECTION 2.—CENTRAL WELLINGTON HEALTH DISTRICT.

Dr. Findlay, Medical Officer of Health.

Part 1.

Scarlet Fever.—Number of cases, 637. Rate per 10,000 of population, 46·17. Four deaths.

Diphtheria.—189 cases notified. Rate per 10,000, 13·69. Eight deaths.

Pulmonary Tuberculosis.—Notifications, 6·09 per 10,000 of population. Death-rate for urban area, 5·23 per 10,000 of population.

It is found extremely difficult to maintain contact with some patients. Daily notification by the hospital of discharges from all cases of infectious disease has proved of assistance. The T.B. clinic at the Wellington Hospital continues to do good work. All child contacts are followed up by the School Medical Officer.

Enteric Fever.—Two cases—one a sailor from the s.s. " Ruapehu " (infection contracted elsewhere), and a case from Porirua (source of infection indefinite). No deaths.

Cerebro-spinal Meningitis.—Three cases. Three deaths.

Poliomyelitis.—Four cases. No deaths.

Influenza (Pneumonic, Septicæmic, and Fulminant).—Three cases. Two deaths.

Pneumonia.—Fifty-one cases notified. Rate per 10,000 of population, 3·79.

Puerperal Fever.—Full-time cases: Twenty-seven cases notified. Four deaths.

Measles and German Measles.—Both these conditions were very prevalent during the year. The attendance at several schools was considerably decreased. Four deaths occurred from measles. There was a short epidemic; cases complicated in seven instances by pneumonia in a girls' boarding-school, Lower Hutt. One girl died. The incidence showed the known fact that measles, under certain conditions, may become very potent. Investigation showed that the amount of square feet of space per child in the boarding establishment was not below accepted standards. Nevertheless, the adoption of the balcony-cubicle system in all boarding-schools is a desideratum.

Infantile Mortality.—42·51 per 1,000 births.

Part 2.

General Administration and Health Conditions.

Wellington City.—Population, 111,400.

City Council Organization.—Prior to last year sanitary and health matters, in keeping with the disorganization in the City Council in the Engineer's Department, were not as satisfactory as might have been. With the advent of the new City Engineer at the end of 1926, the sanitary staff has been placed under better supervision. During the year the Medical Officer of Health and Senior Inspector Middleton devoted considerable time to supervision and inquiry into local matters, and have made many visits of inspection. During the course of the year many complaints from diverse sources were referred to this office and suitable action ensured.

Garbage: The much-discussed question of suitable garbage-carts in Wellington City has been met to some extent by the provision of a folding canvas cover on a frame to each rubbish-cart. I think the innovation has been the means of considerable improvement. To equip the whole city with sufficient carts of new type, even if practicable in Wellington, would be an expensive matter.

Disposal of Garbage: The destructor and masticator at Rongotai continue to do good work. Experience has shown, however, that masticators should not be installed in too close proximity to habitations or extensively used roads. The material, when spread, has a distinct odour, which is carried several chains by the wind. It would appear that for New Zealand, where local authorities are unwilling, and often unable, to provide sufficient spoil for the proper management of refuse-tips, destructors are the best form of disposal. In Sydney the report of the Medical Officer of Health states that he is definitely in favour of incineration.

Stables and Fly Nuisance: With the continued increase of motor traffic and the decrease in the number of stables a vast improvement in the fly nuisance in certain portions of the city has eventuated. In 1923 there were 209 stables; at the 31st March, 1928, the number had been reduced to 70—a reduction of 37 for the year. A special point has been made of ensuring that City Council Inspectors supervise stables most closely. The Council has most excellent by-laws governing this matter, but observation has led me to the belief that the methods usually recommended for dealing with the flies are, under civilian conditions, only very partially effective. With the view of improving the methods at our disposal, Inspector Cowdrey, at the direction of the Medical Officer of Health, has carried out extensive experiments in his garden and at a stable by way of testing the efficiency of various sprays, &c. Unfortunately, the advent of the colder weather has hindered the completion of the work, which will be resumed in the early spring. It is hoped to definitely determine what methods are most suitable for civilian life. Under camp conditions, as supervised by Professor Kirk during war-time with many assistants, the fly menace could be definitely controlled. Our experience is that under civilian conditions the problem is much more difficult.

Water-supplies: These continue to be definitely supervised by inspection and chemical and bacteriological tests.

Water Board: In the 1927 session of Parliament the Wellington City and Suburban Water-supply Bill was passed. The newly constituted Water Board commenced its activities early in 1928. I took an early opportunity of getting into touch with the Board and ensuring the fullest co-operation between the Medical Officer of Health and the Board. The Board now has definite control of the principal water-shed areas in the Upper Hutt and Akatarawa regions, and is considering the advisability of the purchase of a few remaining areas in order to complete the scheme. Great public interest

is being taken as to the final decision of the Board, whether "to mill" or "not to mill." It is pleasing to note that during the last dry summer there was no shortage in Wellington. The City Council will, however, shortly require to decide upon future policy—whether to obtain water from the new Water Board area, or to build further dams at Wainui.

Drainage: The drainage at Seatoun Heights, Karori, and Onslow is practically completed.

City Milk-supply: The municipal milk-depot has had another very satisfactory year. The Manager has recently returned from a visit to America and England, where he visited many milk-stations. The Council hope to commence the erection of the new depot during the coming year. There is no question but that the new depot is necessary. The old depot is not up to the required standard. During the year bacteriological and chemical checks by this office were made. These were satisfactory. The Medical Officer of Health and Inspectors also paid visits from time to time to the depot, particularly with a view to testing and ensuring the efficiency of the pasteurizing process. Recent bacteriological counts showed that the washing-machine in use is quite capable of producing a sterile bottle. I am co-operating closely with the Manager and committee with a view to ensuring that the new station will be satisfactory. Plans are to be submitted to this office. The amount of milk consumed in Wellington per day in 1926 was 0·69 pint per head. This is perhaps higher than in England, but it is probable that an even increased consumption per head would be beneficial to the community, especially for children.

Housing: During the year some fifty-two houses were demolished, thus leaving a net total of some 816 increase in dwellings in the city. The Wellington City Council recently constituted a Housing Committee, which is inquiring into the position in Wellington at present. I duly communicated with that committee, suggesting certain lines of action with a view to arriving at a true estimate of the position. Structural alterations were carried out in fifty-six instances, cleansing-orders in fifty-three, and closing-orders in eighteen.

By-laws: The Wellington City Council is at present remodelling its by-laws. I have asked that, in the main, this Department's model by-laws on buildings for habitation be embodied. This will be of service not only in private houses, but in the control of flats, boarding and lodging houses.

Public Baths: During the summer months inspections were made of the various baths in the city and surrounding districts. Conditions at Thorndon Baths were not of the best. The filtration plant is not satisfactory. The matter was brought to the notice of the Council. I am co-operating with the Engineer in an effort to ensure that any future baths erected comply with the standards now recognized in England and America, where continuous filtration and chlorination are widely practised.

Recreation-grounds and Play Areas: As opportunity offers, the City Council continues to progress in this work. In a city like Wellington the need for such is more apparent. A new area for Wellington North is under construction at Anderson Park. The Council is making headway with the reclamation of the sandhills as a sports area at Rongotai. The proposal to acquire Gear Island for sports bodies has not yet definitely become fact, but there are hopes that the proposal will eventually become concrete. The Hutt Valley must continue to increase in value as a sports asset for Wellington City.

Dust Nuisance: The policy of the Council in constructing sealed roads has resulted in a diminished dust nuisance.

Conveniences: During the year the ratepayers authorized a loan for the construction of conveniences in various parts of the city. When these are built Wellington should be well supplied.

Beach Nuisance, Island Bay: In October the Council decided to proceed with the construction of wharf and shipway on the island at Island Bay. Further investigations are being made with the intention of proceeding shortly with the work.

Rat Nuisance: During the year 496 rats were caught on ships and 307 in Harbour Board sheds; also 498 by the Wellington City Council: total, 1,301. Of these, 1,001 were examined by the bacteriologist. During the year the Wellington City Council rat-catcher resigned, thus causing a break of a few months. The Council have recently appointed another man. Steps have been taken to ensure that this officer is adequately equipped, and that he carries out his work on a proper system. I am much indebted to the Harbour Board for their most helpful co-operation in the matter of rat-catching. Traps are regularly set on ships, and by this method a close guard against the introduction of plague is assured.

Free Ambulance (Wellington City): Towards the end of the year, the Wellington Hospital Board discontinued this service, which is now in the hands of the Free Ambulance Committee, as representative of various local bodies in the Wellington District. Premises were secured near the Town Hall. Prior to the commencement of operations the Medical Officer of Health paid a visit and inquired carefully into the methods *re* disinfection and removal of infectious cases.

Theatres (City): As mentioned in my last report, there is room for improvement in the ventilation of some of the theatres. With the advent of more up-to-date buildings and close competition, there is a tendency for some of the smaller and less satisfactory picture-theatres to disappear. In connection with a large new picture-theatre about to be erected in Wellington I have asked the City Council to require some system of mechanical ventilation. I have further discussed the matter with the architect, and it is hoped that the ventilation in this theatre will be of the most modern type yet installed in this country.

Food Premises (City): Since the advent of the Department's regulations upon food-shops generally, and the co-operative by-laws of the City Council, a gradual improvement is taking place. As many of the premises are old and really unsuitable, progress in some instances is necessarily slow. For a long time the control of fruit-hawkers' carts in the city was not good. This has improved considerably during the last year, and the carts are kept in better condition. Many people take exception to the open type of fish-shop in Wellington. These shops comply, as you are aware, with

the departmental regulations, which permit open shops. The Health Committee of the Council has concerned itself in the matter, and rather inclines to the opinion that such would be better closed. I have presented both sides of the question to the Chairman and other members of the committee. The matter is still *sub judice*. In the fly season it is really a difficult matter to keep out the insect from either open or closed shops.

Plumbers Registration Act: The City Council has been asked to rigorously enforce this Act. Some prosecutions are pending.

Town-planning: A Town-planner to the Council has been appointed.

Lower Hutt.—The population of this Borough continues to increase.

Town-planning: This borough continues to slowly give effect to its town-planning scheme. Great care is necessary in the selection and planning of the offensive-trade area. At the present time there is really no suitable area available. The area suitable for this purpose is still under water, to the south-east side of the Hutt River. The question is being watched carefully with a view to the prevention of the erection of offensive trades in undesirable situations. Close co-operation exists between the Medical Officer of Health, Council, and Engineer on sanitary and health matters in this progressive borough.

Housing: New dwellings erected for the year, 493. Of these 291 were erected by the Hutt Valley Housing Committee, which has carried out most excellent work in relieving the housing problem in Wellington. Too much praise cannot be bestowed upon the scheme, but if possible it would be an improvement if future houses can be designed so as to permit of additions being made in an easy manner. Many of the tenants of the houses at present have large families and no doubt in the future there may be a desire to enlarge some of the dwellings.

Petone.—Petone Beach: The Council is desirous of making the beach more attractive. With a population of some twenty thousand in the Hutt Valley, the bather is making his claims felt, and the time has come when he should receive more consideration. The provision for the discharges into the sea from the various industries at Petone is the same as it has been for many years. The effluents which are discharged into the sea are not dangerous to health, but there is no doubt that the water is rendered most distasteful in appearance to bathers and pleasure-seekers on the beach. This was specially noticeable during the calm dry weather last summer. Measures for improvement raise the whole question of harbour pollution in Wellington. Not only Petone, but Ngahauranga, is concerned. As with rivers and harbours in other parts of the Dominion, the matter is demanding attention. I am in close touch with the Council on the question, and am at the present time carrying out a systematic survey of all causes of pollution in the area concerned. An expensive solution, of course, would be to pipe the discharge from all the works along the foreshore to the mouth of the Hutt River. Extensive experiments as to the set of tides, &c., are, however, necessary before the adoption of such a course. Short of this, it seems rather difficult to absolutely prevent all effluent from reaching the bathing-area, although it may be possible to effect improvement.

Eastbourne.—Water and Drainage: As stated in my last report, a water and drainage scheme is an urgent necessity. The financial difficulties of the borough have, however, rendered actuality indefinite.

Day's Bay.—Although Day's Bay is part of the Hutt County, the locality, in company with Eastbourne adjoining, is in urgent need of water and drainage. Other settlements round the harbour also require water.

Upper Hutt.—By-laws: New health and sanitation by-laws are practically completed. The Council have adopted the departmental regulations as to plumbing and drainage.

Hutt County.—During the year the complete sanitary by-laws of the county were made applicable to the whole area of the county. Conditions here require careful watching. With the advent of the motor-car many holiday habitations are erected. In these there is a great tendency to shirk the by-laws as regards sanitation and buildings. I would direct the attention of the Council particularly to these points.

Inspector Lerwill continues to render invaluable service to the counties on sanitation and buildings.

Sale of Food and Drugs Act.

Wellington being the principal port of entry for imports and a large distributing centre, a great deal of work has been performed with regard to the Act and regulations. In conjunction with the Government Analyst, much valuable work is carried out.

Ice-cream Manufacture.—Particular attention is paid to this. The small manufacturer is gradually being eliminated.

Eating-houses.—As for food-shops generally, the regulations are effecting improvement.

Port Health Inspection.

One hundred and forty-nine overseas vessels were inspected by the Port Health Officer. Fifty-six infirm and prohibited persons were dealt with under the Immigration Restriction Act. Two cases of scarlet fever were removed to the public hospital.

Inspector Frew continues to carry out good work in connection with sanitary supervision of ships and other duties for the Department in regard to ships, especially rat-infestation.

Quarantine Station.

The accommodation remains the same. Certain repairs are now necessary, and will be referred to you. Senior Inspector Bennett, who occupied the position of caretaker for some three years, retired on superannuation in March.

Hotel Inspections.

The standard of sanitation is good. In several instances the buildings are, of course, old, and the difficulties are increased. I have emphasized on local authorities their responsibility in taking action with regard to any nuisance which may occur, under the Health Act.

Industrial Hygiene.

Joint inspections with the Labour Department by the Medical Officer of Health and Inspectors. As opportunity offers, this work is being developed and studied. Visits of inspection during the year were made to all kinds of factories. Attention is required particularly to the means of ventilation, lighting, and removal of various dusts.

Although dependent upon many other conditions, it would no doubt be preferable if industries in New Zealand were developed outside the towns. Sir Thomas Oliver, in his "Health of the Workers," states: "In fact, our increasing net work and the abbreviation of distances by telegraph and telephone have raised the question as to the desirability of transplanting factories into the country, where under more hygienic conditions the health and physique of the working classes might possibly be improved."

Administration.

During the year the closest co-operation and co-ordination existed between the Medical Officer of Health and the Division of School Medical Work.

In conclusion, I desire to express my appreciation of the valuable services rendered by nurses, Inspectors, the District Clerk, and general office staff.

HOROWHENUA-WANGANUI HEALTH DISTRICT.

Dr. Shore, Medical Officer of Health.

Part 2.

Infectious Diseases.

Scarlet fever has been very prevalent in the Wanganui and Palmerston North Boroughs throughout the year, the number of cases notified in these boroughs during the year being seventy-six each. From Wanganui this disease has spread into the surrounding district, thirteen cases being notified from the surrounding country district and fifteen from the neighbouring borough of Marton. The same spread into the surrounding districts is noticeable in respect to the Palmerston North district. Twenty-eight cases have been notified from the country district immediately around this borough, twenty-one from Foxton, twenty-two from Levin, six from Shannon, and five from Feilding. Thirteen cases each have also been notified from Otaki in the south and Patea in the north of the district. An unusually large number—approximately about 20 per cent.—of persons of adult age have been notified as suffering from the disease. Throughout the cases have been mild in nature, and there is little doubt but that this has contributed largely to the spread of infection through undetected cases. Four deaths occurred in the 321 cases notified.

Diphtheria.—The distribution and incidence of diphtheria in the district has closely followed that of scarlet fever. Forty-five cases have been notified from Palmerston North, and seventeen cases from the immediate country district around the borough, eight being notified from Bunnythorpe. At this place preventive inoculation was carried out, 100 children being immunized. Fifty-six cases were notified from Wanganui, six from the surrounding country district, three from Marton Borough, and two from Feilding. Levin, where thirty cases were notified, and Shannon, with fourteen cases, have suffered from small epidemics during the year. Swabbing of all children in the Infant school at Levin was carried out, but gave no very satisfactory results as determining school infection. In the total of 207 cases notified nine deaths occurred.

Enteric Fever.—A small outbreak in the Taihape district was responsible for most of the cases notified. A Maori shearer, who came into the district from Hawke's Bay suffering from the disease, was responsible for the start of this outbreak. An extensive T.A.B. inoculation of the Natives in this and the surrounding districts was carried out, about two hundred being treated in the various pas and settlements in the Taihape and Waimarino districts. No further cases have been notified from this district since this was done. Two deaths occurred in the total of nine cases notified.

Pneumonia.—The number of cases notified has been exceptionally large during the year. Approximately 50 per cent. of the cases have occurred in the Palmerston North Hospital District, chiefly in Palmerston North and Foxton and their environs. One hundred and forty two cases were notified resulting in thirty-seven deaths.

General Sanitation in the Boroughs and Larger Towns.

Wanganui.—The general sanitation of this city is well maintained by a staff of three Inspectors, all of whom are qualified. Rubbish removal and disposal is efficiently carried out by the borough; disposal by dumping and covering. A new site for the disposal of rubbish from the Gonville-Castlecliff area of the borough has lately been approved of.

The sewage system of the borough discharges into the Wanganui River, which is tidal, by various outlets along its banks. Authority has been obtained from the Board of Health to expend a sum of £300 in improving these outlets. The work of providing a new outlet sewer at Castlecliff, reticulating-sewers in the Gonville Castlecliff area, and completing the reticulation of other portions of the city has made good progress during the year, and has been carried out well within the estimated cost. The borough water-supply has been found uniformly good during the year.

Visits in a supervisory capacity with the Chief City Inspector have been made to the eating-houses, food-factories, and shops in the city. These premises are receiving a good deal of attention, and during the year the Chief Inspector has successfully prosecuted several owners of premises for breaches of the regulations. The regulations governing the conduct of hairdressers' shops are being well observed. The Council have consented to their Chief Inspector being appointed an officer under the Sale of Food and Drugs Act for the purpose of taking milk-samples, dealing with unsound food, and have also undertaken the inspection of all licensed hotels in the City.

The excellent standard of sanitation achieved by this City Council, backed by the efforts of its Engineer, Chief Inspector, and staff, is worthy of commendation.

Palmerston North.—The general sanitation of this borough is in the hands of the Borough Engineer and two Sanitary Inspectors, both of whom are qualified.

Rubbish removal and disposal is being efficiently carried out by the borough.

Sewage System: A good deal of trouble has been experienced during the year owing to defects in the outfall sewers. The capacity of these sewers has been overtaxed owing to the influx of ground water. This has led to flooding of certain areas at times with sewage, and has impaired the efficiency of the treatment-works. Proposals for remodelling the outfall sewers and for providing reticulation for newly-built-on areas of the borough have received the sanction of the ratepayers.

Water-supply: During the latter end of the year the water-supply was found to be unsatisfactory. Owing to so much silting-up of the storage reservoir having taken place as to reduce its capacity by about one-third, the filters being overtaxed, the supply was suffering in quality. During the period of dry weather early this year the storage supply fell rapidly and the situation gave rise to some anxiety. In spite of these conditions, the ratepayers have refused to sanction loan proposals for permanently improving and enlarging the water-supply works. The situation as it stands will have, however, to be met by cleaning out the reservoir, installing more filters, and conserving the present supply. A consumption of over 90 gallons per head of population per day should be more than sufficient for all ordinary requirements. One of the main defects of this water system is the very low pressure maintained in the main. This is due to the fact that the main from the reservoir to the town is too small, and also that many of the subsidiary mains are also not large enough. Apart from the seriousness of this in the matter of fire-control, the pressure in some parts of the town is not sufficient to enable the water-closet cisterns to fill.

Eating-houses and Food-shops: In April of this year the borough for the first time undertook the licensing of these premises. A large amount of work has been done in a supervisory way in the direction of ensuring compliance with our regulations.

Feilding Borough.—The general sanitation of this borough is undertaken by the Borough Engineer and a qualified Sanitary Inspector.

Rubbish removal and disposal is being effectively undertaken by the borough.

Water-supply and Sewage-disposal: No new works have been put in hand during the year. Both systems are working well.

Marton Borough.—The general sanitation of this borough is looked after by Inspector Pargeter, who acts as Sanitary Inspector for the borough.

Rubbish Removal and Disposal: This borough has no systematic system of removal or disposal. Inspections which have been made from time to time have shown the necessity for the provision of such.

Water-supply: An inspection of this water-supply showed that the system was defective in many ways.

The septic-tank system of sewage-treatment was found somewhat defective owing to sludging-up of the tank and want of attention to the filter bed. These defects have been remedied.

Eating-houses and Food-shops: An inspection of these premises disclosed the fact that very many of these did not comply with the standard required by the regulations. A report on the conditions existing in these premises was made to the Council, who were requested to carry into effect the registration or licensing of such premises as required by the regulations. So far the Council has tacitly refused to assume the responsibility placed upon it by the Health Act to license and maintain these premises up to the standard required by the regulations. The attitude of this Council towards the quite reasonable requests of the Department has throughout been such as may in the near future require your intervention in securing their compliance therewith.

Offensive Trades and Cattle-saleyards.

All the boroughs are registering both offensive trades and cattle-saleyards, and both are being kept in good order.

Theatres and Public Halls.

As the result of inspections made whilst in the various localities, it can be said that generally the provisions of the regulations are being observed. There is, however, perhaps too little inspection during actual use of such places, and such inspection, if at the same time accurate tests of temperature and humidity by the Kata thermometer were taken, would disclose ventilation defects requiring remedy in the interests of the health and comfort of those patronizing these places of entertainment.

Hairdressers' Shops.

It is found that the provisions of the regulations are generally being well observed.

Second-hand Clothing and Bedding.

Clothing is being disinfected before resale. In some cases this is being done by the vendor personally; in other cases the work is being done by a reliable firm of cleaners, using modern methods of cleansing. Obviously dirty and soiled bedding is being rejected by second-hand dealers and auctioneers under instructions from this Department. Arrangements are in force in the larger town which ensure disinfection before sale.

Holiday Resorts, Beaches, and Camping-sites.

Attention is being paid to these places in the direction of ensuring that water-supplies are of good quality, and that reasonable sanitary arrangements are provided for those making use of these places.

General.

It has been my endeavour by personal visits and through my Senior Inspector to maintain a close touch with our own Health Inspectors and with the Sanitary Inspectors in the various towns and districts. Results show that this has made for a livelier interest in the work in hand, and a closer co-operation between the local authorities' officers and the Department in dealing with matters of mutual interest. I think I may safely say that our visits are now looked upon not only as supervisory, but as helpful in nature.

In regard to our own Inspectors of Health, efforts are still being maintained towards promoting habits of economy in the working of the districts under their charge by formulating and carrying out, as far as the nature of our work permits, a system in regard to the visitation of the different localities in such districts. The idea is slowly but surely gaining ground that it is not the mileage covered or the time spent which counts, but the amount of work done.

Cemeteries.

Since our Department took over the control of cemeteries, at the end of 1926, every cemetery in this district has been inspected at least once. Generally these cemeteries have been found to be well kept. Where any small works have been necessary the trustees or local authority have been communicated with direct. In some cases the trustees have been advised to apply to the local County Council for a grant in aid of upkeep; in one or two cases the taking-over of the cemetery by the local authority is under consideration.

Private Hospitals.

The standard of these institutions has been well maintained. Regular visits of inspection have been paid by Miss Broad, who loses no opportunity of indicating to the various licensees the desirability of maintaining a high standard of efficiency. The condition of these hospitals is in practically all cases very good.

In conclusion, I must mention the great assistance I have had from Senior Inspector Gardiner. His practical knowledge, and his thorough acquaintance with the various regulations, enables him to supervise the work of the other Inspectors, with the result that better and more efficient work is done.

WAIRARAPA–EAST CAPE, NELSON–MARLBOROUGH HEALTH DISTRICT.

Dr. Mercer, Medical Officer of Health, Wellington.

Part 3.

Inspectors.

All the Inspectors of Health in my district have carried out their duties efficiently and satisfactorily. These duties are, as is known, very varied, and are of a wider scope than the duties performed by the Sanitary Inspectors of a city or borough. Senior Inspectors Gardiner and Middleton have been especially helpful in taking charge of many of the routine duties of this office. Senior Inspector Gardiner has done a considerable amount of travelling, and relieved me of duties which but for his assistance I should have had to give personal attention to.

I can also speak well of the work carried out by the various local-authority Inspectors in my health districts. At all times they are willing to assist and co-operate with the Inspectors of the Health Department. I regret to say, however, that in my opinion, some of the local authorities do not allow their Inspectors sufficient time and opportunity to attend to the real and primary duties of a Sanitary Inspector. Too much of the day's work is taken up with office duties, and in consequence routine inspection work cannot be satisfactorily and fully carried out.

Infectious Diseases.

The health of the Wairarapa – East Cape and Nelson–Marlborough Health Districts has been quite satisfactory so far as infectious diseases of a severe type is concerned. Influenza was not unduly prevalent in any part of these districts during the year. Mumps and measles, of both varieties, have, however, been prevalent throughout both districts—mumps all through the year, and the type of this infectious disease has been, I consider, unusually severe. Many adults have been infected, and the victims include two of our own Inspectors. The history in the case of the family of one of them is interesting from an epidemiological point of view. The three members of the family—father, mother, and daughter aged about ten years—attended a school party in an overcrowded and not-well-ventilated room. Twelve days later the daughter had an attack of ordinary measles; just when she was getting over the measles, and nineteen days from the date of the party, she developed mumps, and the day

following her father did the same. From this particular party there developed a fairly widespread epidemic of mumps and measles. This instance of how infectious disease is contracted and spread from personal contact with an infective case is interesting. A few cases of mumps in young adolescents developed serious complications—*e.g.*, suppurating parotitis, pancreatitis; and I have heard of two cases of paralysis of both auditory nerves, causing total deafness.

Measles, both ordinary and German, have been prevalent, especially in certain country districts. I heard from doctors that quite a number of children developed both forms of measles in sequence—*i.e.*, a child had an attack of apparently ordinary measles, and then about a fortnight to three weeks later a second rise of temperature, followed by a second rash. In some instances the second outbreak was more severe than the first; but also the opposite relationship occurred. These cases, with apparently a relapse, I take it, were undoubtedly two separate infections with ordinary and German measles, and not the result of one infection.

Diphtheria and Scarlet Fever.—The notification figures for these two diseases for 1927 show in the Wairarapa – East Cape Health District, 213 and 260 cases respectively. The diphtheria figures show a considerable reduction of those for 1926: 294 to 213—over 20 per cent. reduction. Scarlatina, however, shows an increase of 107 over last year's figures. This increase occurred mainly in the latter half of the year, and is due to a generally increased incidence all through the health districts, and not to any particular outbreak of the disease.

In the Nelson-Marlborough Health District the figures are scarlet fever 29, and diphtheria 10, which are very low in proportion to those for the Wairarapa-East Cape District. The remarks I made in my report for the year 1926 on the much lower incidence of notifiable infectious disease in the Nelson-Marlborough District are maintained in this year's returns. Scarlet fever and diphtheria in the Wairarapa-East Cape total 479, as against 39 in the Nelson-Marlborough Health District.

Diphtheria is still more prevalent in the Poverty Bay district, including Gisborne Borough, than in any other part of the Wairarapa-East Cape District. The preventive inoculation treatment started by me in the latter part of 1926 was continued by Dr. Clark, the School Medical Officer, in February upon the reopening of the schools after the summer holidays. Dr. Clark and his staff mainly carried out this treatment in the country schools in the Cook and Waikohu Counties. The results so far as the obtaining of parents' consent is concerned was pretty much the same in these schools as in the town schools—viz., about 40 per cent. to 50 per cent., which is somewhat higher than I obtained in the Gisborne schools. Taking as an average of 40 per cent. of children attending school, with quite a negligible number of children of pre-school age who received preventive treatment, what lowering of the incidence of diphtheria cases in this the third year of the prevalence of diphtheria might be expected? In my opinion, the inoculation campaign of 1926–27, although it resulted in only 40 per cent. to 50 per cent. of school-children receiving treatment, has fully justified itself. There has been in the Borough of Gisborne alone a lessened incidence over 100 per cent., and about the same in the country children. We know that diphtheria, when it becomes prevalent in a district, generally continues to be prevalent for a period of at least three years. In the Hawke's Bay District during the five years 1915–19 diphtheria was, I believe, more prevalent than in any other part of New Zealand. It then steadily declined, and this year and last year have a very low incidence, although this year is not so good as last year (1926) or the previous year (1925). If we regard this decline as due, as it most probably is, to acquired immunity from attacks, severe and mild, of the disease, it is quite reasonable to assume that the 100 per cent. reduction in incidence in the Poverty Bay District is directly due to active immunization obtained by toxin-anti-toxin inoculation treatment.

Typhoid Fever.—This disease is, unfortunately, more prevalent than it should be in the Wairarapa-East Cape District, although there is a big reduction in the actual incidence figures—76, as compared with 115 in 1926 and 64 in 1925. The large increase in 1926 was mainly due to the outbreak in the Hawke's Bay District and a small one in the Poverty Bay District. The great majority of the cases are Maoris and whites living in contact with Maoris. There have been some white cases where no Maori contact could be discovered. The mortality rate has been high—ten deaths out of sixty-four notified cases.

Pulmonary Tuberculosis.

The notification figures show 106, as against 99 in 1926 and 125 in 1925. There are still difficulties in carrying out "follow up" work. In the larger centres of population the Sanitary Inspector is able to keep most of the cases which he knows are residing in his district, if not actually under close observation, which is undesirable, at any rate under some supervision. But in the country districts it is difficult to keep track of the movements of chronic cases. The lists of cases notified are checked by each Inspector, as far as possible, every six months. I am afraid the domiciliary treatment of some patients leaves a good deal to be desired. This is because many of the patients have not the means to pay for private medical attendance. If there was a little more encouragement by Hospital Boards to get these patients to attend as out-patients from time to time for medical examination, I am of opinion that some of these chronic cases could receive advice and treatment that would enable them to carry on successfully in their respective occupations.

Puerperal Sepsis and Maternal Mortality.

The notifications under section 79 of the Health Act, 1928, are twenty-eight in the Wairarapa-East Cape and four in the Nelson-Marlborough Health Districts—a total of thirty-two. The majority of these notifications are mild cases of "sapræmia and doubtful sepsis."

Private Hospitals and Work of Nurse Inspectors.

This work, which includes many other duties besides visiting private hospitals, has been well carried out by the two Nurse Inspectors, Miss Broad and Miss Lea.

General Sanitation of the Districts.

The routine work continues to be efficiently carried out by both departmental and local-authority Inspectors.

TARANAKI HEALTH DISTRICT.

Dr. Mecredy, Medical Officer of Health.

Part 4.

The Taranaki Health District was inaugurated on the 1st May, and the following report covers the period from that date, except in regard to the statistics of infectious disease, which cover the year 1927.

Infectious Disease.

The notification of infectious disease for the year 1927 was above the average of the five preceding years in the case of scarlet fever, enteric, pulmonary tuberculosis, pneumonia, pneumonic influenza, and puerperal fever.

Diphtheria alone showed a considerable drop from the five-year average, and the actual notifications were the lowest recorded. A small epidemic was, however, experienced in April–May, centred on Cardiff School. As in three of the previous five years, the maximum incidence was recorded in June.

Scarlet Fever.—Monthly notifications gave some suggestion of an impending epidemic, and the total number noted (seventy-five) was the highest for five years. The disease was noticeably mild in type. In July the period of isolation in selected mild scarlet-fever cases was experimentally reduced from six to four weeks. No second cases were recorded as a result of this measure, which was taken advantage of, to a greater or less extent, in all but three of the cases admitted to hospital to the end of the year. The average duration of isolation in these cases was approximately four and a half weeks. The opinion of the Medical Superintendents of the three hospitals in the health district were entirely favourable to the change.

The present mild type of scarlet fever is a difficult—almost impossible—disease to control effectively.

It is possible that the increase in the numbers recorded for certain of the remaining notifiable diseases was due to the closer contact possible between the District Health Office in New Plymouth and the general practitioners. This was certainly the case in regard to pneumonia, the notifications of which shot up rapidly after a circular letter dealing with the necessity for its notification was sent to all medical practitioners.

Enteric was responsible for sixteen cases, but only a few of these were shown to have relation to other cases of the disease.

Pulmonary Tuberculosis was responsible for thirty-two notifications during the year. At present the school nurse has fifty-one school children and ten pre-school children, contacts of cases, to keep under observation. Twenty-five of these are in country and thirty-six in urban areas.

In October an arrangement was made with the Taranaki Education Board by which each school reported, *inter alia*, the number of children and contacts absent with specific infectious diseases. This has proved a useful innovation, and has enabled a rough record to be kept of the general incidence of influenza, measles, German measles, mumps, chicken-pox, and whooping-cough in the district. It was obvious from these and other reports received that measles, and probably German measles also, has been extremely prevalent throughout the year. Chicken-pox was also fairly common, and mumps in a few schools assumed epidemic proportions. Whooping-cough was also responsible for a considerable loss of attendance in certain schools.

One death from measles complicated by diabetes was recorded in the case of a mentally-defective woman. Three young children died from whooping-cough, which was complicated by broncho-pneumonia in one case. No other deaths were recorded from these infectious diseases. It is evident from this that the epidemic of measles was of a low order of virulence, as in certain schools over 50 per cent. of the children were affected, and the attack rate throughout the district as a whole was very high.

Venereal Disease.

At a meeting of the Taranaki Branch of the British Medical Association in August the incidence of venereal disease in the district was discussed, and it was agreed that all practising physicians be asked to notify to the Medical Officer of Health the number of fresh cases of this group of diseases seen each month. In the four months from September to December seven fresh cases of syphilis and thirty-five of gonorrhœa were reported. I hope to present a further report on this experiment at the end of the twelve months.

Water-supplies.

The water-supplies of all the towns in the district were examined chemically and bacteriologically at least once during the year. The chemical results indicated that practically all supplies were of good quality. The bacteriological examinations suggested that a certain amount of contamination was taking place in most of the watersheds.

Sanitation.

During the year the New Plymouth Borough Engineer completed the plans and estimates for a complete sewerage scheme for the town. The estimated cost is just under £160,000. In view of the unsatisfactory sanitary condition of a large part of the town, it is to be hoped that an adequate sewerage scheme will be adopted by the ratepayers at an early date.

As a result of representations made by the Medical Officer of Health, the New Plymouth Borough Council agreed to make the departmental Plumbing and Drainage Regulations the basis of their new by-laws. This was very necessary in view of the previous lack of control of septic-tank installation, and plumbing and drainage in general.

In the rest of the Taranaki District the sanitation of the boroughs is fairly good, though greater attention was needed in certain places to rubbish-disposal and nightsoil-removal. Opunake is in need of an adequate water-supply.

Private Hospitals.

In addition to the routine inspections by Nurse Inspector Broad from Wellington, it was found necessary for the Medical Officer of Health to visit many of the private hospitals in the district in connection with cases of puerperal morbidity, pyrexia, or fever, and also to investigate cases of overcrowding.

Port Health Inspection.

Twenty-five vessels arriving from overseas were inspected by the Port Health Officer at New Plymouth. During the year no prohibited or restricted immigrants were found, nor were any cases of infectious disease reported on board the vessels inspected.

Food and Drugs Act.

Ninety-three samples of milk taken from the 1st May to the end of the year resulted in two successful prosecutions for added water. Fines and costs totalled £13 4s. 6d. Seizure of food was carried out on three occasions. Five samples of butter, twenty-six of bread, and one of ice-cream were taken throughout the district, but in no case did the samples taken fall below the standard laid down by the regulations.

Inspections of Food-premises, etc.

In the many eating-houses which were inspected it was found that in many cases the kitchens were not adequately flyproofed. Butchers' shops in New Plymouth and in some of the country districts fell below a reasonable standard of cleanliness, and in many cases the necessity for flyproofing was completely ignored. A general survey of the cattle-saleyards throughout the district indicated that few were properly cared for, and the majority did not comply with the regulations in regard to surface and the provision of sanitary conveniences.

Refresher Course for Nurses.

A two-days course of lectures and demonstration was arranged by Miss Lambie, in June, for all those nurses employed on work allied to that of the Department of Health. This was attended by four district nurses, two dental nurses, three Plunket nurses, one Red Cross nurse, and one school nurse The course would appear to have fulfilled its purpose in helping those who attended to understand many of the problems which confront the officers of the Department, and in enlisting their co-operation in solving them.

General.

A separate report on the school medical duties carried out by the Medical Officer of Health is being submitted.

The experiment in this district of combining Public Health and school duties under one Medical Officer has proceeded for a sufficient period of time to pass judgment in favour of its practicability. The compactness of the main body of the population, together with the mobility of the Medical Officer of Health, through having a car attached for his personal use, have been two of the most important factors in his covering the district successfully.

SECTION 3.—CANTERBURY-WESTLAND HEALTH DISTRICT.

Dr. Telford, Medical Officer of Health.

Part I.

Infectious Diseases.

Scarlet Fever showed an increase during this year, the increase being forty-nine in excess of last year's figures.

Diphtheria.—In this disease it is pleasing to record a great falling-off in the number of cases, the reduction being 229, the incidence per 1,000 population being 0·63, as against the average for 1920 to 1927 of 1·58.

Enteric Fever.—Nineteen cases were notified which, though in excess of last year's figures, was well below the district average.

Puerperal Fever.—The notification total for the year corresponds exactly with the preceding year.

Pneumonia and Influenzal Pneumonia.—Notifications under these headings were markedly lower than the district average.

Anthrax.

A fatal case occurred in an industrial works using imported material from an Asiatic source, and although we were unable to demonstrate the presence of anthrax bacilli in the materials examined, the probable offending material having already passed through various stages, thereby being rendered innocous. Material from this particular source is always suspect, in spite of careful supervision and inspection at forwarding end.

Food Poisoning.

Fifty-seven cases. The majority occurred in an institutional outbreak. Delay in notification made a satisfactory investigation impossible.

Lead Poisoning.

A fatal case occurred. A post-mortem was held and portions of viscera submitted for chemical analysis. The District Analyst was able to demonstrate lead in these in appreciable quantity.

Pulmonary Tuberculosis.

An increase occurred of thirty-four on last year's figures. An annual tendency to rise has been noted since the end of 1923.

Sanitation.

The Christchurch Drainage Board's extension scheme, commenced in July, 1924, is now well advanced, and should be completed during the coming year.

The Redcliffs drainage scheme is completed, as is also the reticulation, except for a very small number of householders who have not yet connected. The Sumner Borough Council has served final notice on these owners to connect.

Water-supply.

The Christchurch City Council's Water Board has now installed the high-pressure supply in Papanui, Spreydon, Opawa, and Woolston. The only portion not included is that portion of Bromley recently included in the city area.

Difficulty was experienced in the last quarter of the year in regard to water-supplies in the West Coast Health District. This was particularly so at Reefton, where the normal feeders for the reservoir went dry and use had to be made of the Inangahua River by means of pumping, this source being open to occasional pollution.

In Greymouth the difficulty has been the alteration of the river at the water-intake and trouble with silt at flood-time.

A considerable amount of clerical work has been experienced in drafting model health by-laws for the North Canterbury counties. These were submitted to a special committee, and have been revised on two occasions. The final amendments are few in number, and I have no doubt that the counties will adopt them in their final state *in toto*. Their adoption will make the administration of the various health regulations easier than in the past.

Offensive Trades.

The majority have been well conducted. One meat company caused a considerable amount of trouble by allowing an undue amount of solids to pollute the river into which it discharged. Requisitions were served on this company to install certain improvements, but the company objected, and an appeal was lodged. The appeal was heard in due course, and the appeal Commission unanimously upheld the Department's requirements.

Industrial Hygiene.

Attention has been paid to certain of the trades, particularly paint-spraying and industries in which dust is likely to be injurious to the worker. It is pleasing to note that manufacturers in general show a willingness to co-operate with the Department in any suggested improvements for their employees' welfare.

Food and Drugs.

Milk.—A very great amount of work has been carried out in ascertaining the quality of the Christchurch milk-supply, both from the bacteriological and the chemical sides. On the whole, the standard of milk is very good. Dairymen are improving their premises, and particularly is this so in the case of two firms bottling milk, who have arranged steam-ovens for the sterilizing of their bottles. A particularly satisfactory point brought out in the bacteriological investigations is the absence of evidence of tuberculosis in the composite milks used for guinea-pig inoculations. We have two advantages in regard to the milk-supply in this locality—namely, that the bulk is drawn from within a seven-mile radius, and the maximum is about fifteen miles. The other is the abundance of artesian water available for cooling purposes, so that there is little difficulty in holding the milk at an even temperature of 60° to 62° F.

General food and drugs work was well attended to during the year, and food was seized, particularly in the West Coast District. In Canterbury a number of crates of cheese were condemned owing to faulty storage in the hold of a steamer, whereby they were contaminated by sheep-droppings.

The amount recovered for legal proceedings under the various Acts and regulations was £494 10s. 9d.

It will be noted that the number of food-premises inspected has fallen off considerably. This is due to a considerable number of local authorities having adopted Regulation H. 125 and carrying out the inspections themselves, the work of this Department being purely advisory.

STAFF.

I regret very much to record that Inspector R. J. McKenzie met his death as the result of losing control of his bicycle at Lyttelton while engaged on departmental duties. This officer was a very painstaking and well-tried officer. He was held in high esteem not only by the staff, but by the public with whom he had to deal.

In conclusion, I would again thank my staff, one and all, for their loyalty and zeal throughout the year, it being through their co-operation that the year now ended has proved successful from a departmental point of view.

NORTH AND SOUTH CANTERBURY.

Colonel DAWSON, Assistant Medical Officer of Health.

Part 2.

INFECTIOUS DISEASES.

Those for the year 1927 have been fully dealt with in Dr. Telford's report.

SANITATION.

The work of connecting houses with the sewer at Temuka is proceeding steadily. In the reticulated area the majority of the houses will shortly be connected up. The Borough Council are considering the extension of the scheme in the country districts.

The Borough of Rangiora requires a water and drainage system. As the poll to raise the necessary loan was defeated, a requisition was issued by the Board of Health to carry out the work which was considered the minimum requirements. The Borough Council appealed against the requisition, and after considerable negotiation have decided to take a poll on the modified scheme.

CAMPING-GROUNDS.

Marked improvement, particularly in the northern beaches. A septic tank at Selwyn Huts has been installed, certain minor initial difficulties have been dealt with, and the majority of the huts are connected with the sewer. Work is being done with a view to making improvements in the lay-out and siting of these beach camps.

SETTLEMENTS.

There is a tendency for settlements to spring up in county areas close to the border of a borough. The occupiers of the dwellings therein enjoy most of the privileges of the borough, but escape the heavier borough rates. The sanitary conditions of these dwellings are generally unsatisfactory, and not up to the borough standard. Such places are liable to become a menace to the health of the borough. In dealing with the problems of a settlement the Borough Council is better organized than a County Council. Where the size of the settlement warrants it, every endeavour is being made to include it in the nearest borough.

SPRAY PAINTING.

A regular watch has been kept on the employees in these works during the process throughout the year. None of the workers have shown any signs of illness, and some of them have now been employed three years.

COUNTIES.

For the convenience of counties, a set of model by-laws has been drafted and will be shortly submitted to the Counties' Association for their final approval.

SECTION 4.—OTAGO-SOUTHLAND HEALTH DISTRICT.

Dr. CRAWSHAW, Medical Officer of Health; Dr. MCLEAN, Assistant Medical Officer of Health.

NOTIFIABLE DISEASES.

During the calendar year 1927 the notifiable diseases recorded numbered 632, as against 867 in 1926 and 883 in 1925, being a decrease of 235 as compared with the 1926 figures, and also a decrease of 251 in comparison with the figures for 1925. It is pleasing to report this satisfactory decrease in comparison with the previous years.

The following diseases showed an increase in 1927 as compared with the previous year: Scarlet fever, 152 (138 in 1926); erysipelas, 32 (22 in 1926); eclampsia, 13 (9 in 1926); tetanus, 4 (none in 1926). A decrease was apparent in the following: Diphtheria, 43 (234 in 1926); enteric, 3 (5 in 1926) pulmonary tuberculosis, 244 (277 in 1926); cerebro-spinal fever, 3 (8 in 1926); puerperal fever, 23 (29 in 1926); ophthalmia neonatorum, 1 (3 in 1926); influenza, 20 (40 in 1926). No cases occurred of poliomyelitis during the year.

Scarlet Fever.—In common with the rest of the South Island, the district showed a distinct increase in scarlet-fever notifications during February and March. The increase was not confined to the towns, as isolated cases were reported from country districts over the whole area, with the exception of Otago Central. Ten cases in Invercargill and twenty-three in Gore were definitely traced to infected milk-supplies. In the former case infection from this source ceased after isolation of a child of the dairyman who was suffering from a septic throat, and in the latter the milk was pasteurized until throat-swabs had been taken from all persons handling it and found to be free from pathogenic organisms.

Pulmonary Tuberculosis.—Nurse Inspector Jeffery continued her work in connection with this disease. In addition to visiting cases in Dunedin and suburbs, homes were also visited in Oamaru, Moeraki, Waipiata, Gore, and Milton.

Arrangements have been made with the School Medical Officers whereby they are given the names of all children in their districts who are contacts of tuberculous patients. These children, including those under school age, are examined by them as opportunity offers, and any exhibiting suspicious signs are notified to this office. Arrangements can then be made to have them referred to a chest specialist for further advice. In this way a number of children showing definite or suggestive signs of disease have been put under appropriate treatment.

Puerperal Fever.—Twenty-three cases were notified, in comparison with twenty-nine the previous year. All cases notified were carefully investigated, and full restrictions were imposed in accordance with the departmental regulations.

Influenza.—During December and January there was a decided increase in the incidence of influenza. A number of notifications were received, but the severe type of disease did not spread to any extent.

Food and Drugs.

Food analysed or weighed.—During the year 1,077 samples of various foods were taken for analysis and eighty-eight were weighed. The number of food-premises inspected was 2,911. The sanitary condition of food-premises in this district is, on the whole, very good. Frequent inspections have been made and improvements effected wherever found necessary.

Milk.—Only one firm in Dunedin has adopted the bottle system of delivery with regard to milk, and has this year completed the installation of a modern pasteurizing plant. It is understood that one of the largest milk-supply companies is now seriously contemplating the inauguration of the latest methods of distribution, and with this end in view is making exhaustive inquiries to ascertain the most up-to-date and efficient methods. One supplier in Gore is now delivering milk in sealed bottles at the same price as the retailers. He is deserving of every encouragement.

Fish-market.—The new fish-market has now been erected by the Dunedin City Council, following on representations by the Department, the result being a very necessary improvement in the handling of fish.

Private Hospitals.

There has been an increase in the number of private hospitals in the outlying districts of Southland and an increase in medical and convalescent homes in the towns. One small maternity hospital has closed. All the maternity, medical, and surgical hospitals, cottage maternity hospitals, and training-schools have been visited as often as possible. There has been a steady improvement in the equipment of private hospitals.

Midwives and maternity nurses have been visited and their bags inspected. With the exception of the untrained maternity nurses, these are in good order.

Water-supply.

Queenstown.—Owing to the long spell of dry weather, restrictions had to be placed on the use of water. The supply of electric light, which is produced at the waterworks, had to be curtailed. It is understood that the Borough Council have arranged for an engineer's report to be submitted on a further water-supply, drainage scheme, and provision of an augmented electricity supply.

Gore.—The supply has been augmented by the sinking of a new well and the installation of an extra pump. The supply appears to be sufficient for the needs of the borough.

Mataura.—The water-supply continues to be satisfactory notwithstanding the exceptionally dry summer experienced.

Hampden.—The Hampden Borough Council is considering a water-supply for the borough.

Milton.—The Milton Borough Council, after consideration of the alternative scheme for a 250,000-gallon reservoir (with chlorination plant) and a gravitation supply, has decided to recommend to the ratepayers the adoption of the gravitation scheme at an estimated cost of £9,000. A poll of the ratepayers will shortly be taken on this matter.

Palmerston and Mosgiel.—The Borough Councils at these places have augmented their gravitation supplies by sinking wells and pumping into reservoirs.

Outram.—The Outram Town Board has instituted a completely new gravitation scheme to replace the old method of pumping from a well into a water-tower.

Sanitary Works.

The Dunedin Drainage and Sewerage Board continues to reticulate areas in the suburbs as required. For some time the Tainui district has caused the Department considerable concern owing to its low-lying position rendering it liable to flooding. Storm-water drains are in the process of being laid, and it is confidently anticipated that this will obviate any trouble in future.

Kaikorai Valley.—A considerable amount of work has been done in connection with the question of the riparian rights involved.

Ohai.—The Wallace County Council has under consideration the installation of a sewerage system, nightsoil- and refuse-collection services for Ohai Township. It is expected that a start will shortly be made with these works.

Balclutha.—The Borough of Balclutha has completed about one and a half miles of kerbing and channelling for the year.

Mataura.—Good progress has been made towards the completion of a sewerage system, and the work should be completed within the next two months.

Oamaru.—The drainage-work in the Borough of Oamaru is now approaching completion.

Gore.—The Borough of Gore still enjoys a dual system, half the houses being connected to the sewer and equipped with water-closets, and the remainder being served by a nightsoil-collection service. With the recently augmented water-supply there now appears no good reason for continuing the nightsoil service. The Council has been advised to dispense with it, and to compel every householder where possible to install a water-closet.

Refuse and Nightsoil Removal.

The various nightsoil- and rubbish-removal services throughout the district have been carried out satisfactorily.

General.

Hairdressers' Shops.—These have been inspected and a considerable improvement in equipment and methods noted, particularly in the case of the less progressive individuals. Exact compliance with all the regulations relating thereto is not yet general.

By-laws.—The counties of Waitaki, Waihemo, Waikouaiti, Maniototo, Vincent, Lake, Tuapeka, Clutha, Bruce, and Taieri have recently brought out a set of combined by-laws. This should simplify the administration of the Health Act in the districts concerned.

Hotels.—The annual inspection of hotels has been carried out throughout the district. Considerable improvements have been made in the sanitary arrangements of a number of country hotels by the installation of water-closets and septic tanks.

Public Baths.—A very fine tepid swimming-bath has been built in Invercargill, and was in operation during the recent summer. The water is filtered through a quartz filter continuously. At first there was considerable discoloration of the water owing to the growth of algæ, and some public concern was caused thereby. However, the filtering of the water as it leaves the town mains, combined with frequent renewals, has overcome this difficulty. A bacteriological examination of the water of the bath shows it to be of a reasonably high standard of cleanliness.

Crematorium.—The Dunedin City Council has erected a crematorium at Anderson's Bay, and several cremations have been carried out.

Cemeteries.—The inspection of cemeteries has received attention during the year. In the country districts it was found that poor and incomplete records had been kept in the past. Matters are now upon a more satisfactory basis, and there should be less difficulty in the future.

Chiropractors, &c.—The premises of chiropractors, masseurs, skin specialists, &c., have been inspected regularly throughout the year.

Whilst there is nothing of outstanding note to report, there is evidence on every hand of gradual improvement in all that pertains to health work in the district. The people as a whole appear to take a more intelligent interest in health matters than was the case a few years ago, and it seems evident that the educational campaign which has been carried out by the Department through the press and by its officers is bearing fruit.

PART IX.—SPECIAL GOVERNMENT HOSPITALS AND SANATORIA: EXTRACTS FROM ANNUAL REPORTS OF MEDICAL SUPERINTENDENTS.

SECTION 1.—QUEEN MARY HOSPITAL, HANMER.

Dr. P. Chisholm, Medical Superintendent; Dr. Moller; Miss E. Hodges, A.R.R.C., Matron.

I beg to place before you the annual report of the Queen Mary Hospital, and a report on the other activities of the Department of Health in Hanmer Springs.

General.—The work of the institution has proceeded along the usual lines. The number of patients under treatment has shown a steady increase during the year. The establishment of the new hospital for women added considerably both to the medical work and to the general administration. There has been, naturally, a keen desire to place this new section on a sound basis. The gradual extension of the institution in the direction of increasing numbers under treatment has created serious difficulties in subsidiary services. The extension has not been uniform, and there have been consequent difficulties, especially in the accommodation for the nurses, in the massage department, and in the laundry. However, alterations and improvements in all these sections have been approved, and it is confidently hoped on completion of these further alterations and improvements that the working of the Institution will become easier.

Male Hospital.—A very considerable amount of work has been done in connection with the maintenance of the main block. The building has been painted and renovated. A new floor was laid down in the dining-room, which has proved to be a great improvement both from the point of view of the appearance of the dining-room and in the working of this section. One lavatory block was reconstructed, and it is a very great convenience to the patients. Many patients seeking admission to the male hospital unfortunately tend towards a borderland psychosis. There appears to be a considerable amount of misunderstanding as to the function of this Hospital, and the type of patients treated. There appears to be a general impression that this hospital admits and deals with early psychosis. It cannot be too strongly stressed that this type of patient is not admitted, and

provision for the treatment of the borderland patient is not made. The admission of such patients tends to keep away the ordinary psycho-neurotic, and also has a bad effect on such patients as are under treatment. During the year I have had no complaints from the patients in respect to treatment nor to the general conditions appertaining in the hospital.

Female Hospital.—There has also been a tendency to seek admission from the psychotic female patient, and some distress has been caused by the refusal to admit the obviously unsuitable borderland case to the Institution.

Both hospitals have served the useful purpose of dealing with the sick of the village and the district. There has been a considerable amount of out-patient treatment carried out by the Medical Officers.

Medical Staff.—Following the resignation of Dr. Alcock on the grounds of ill health, some difficulty was experienced in obtaining a suitable successor. Dr. Collier and Dr. MacNaughton acted as *locum tenens* during the year, and eventually Dr. Moller was appointed as Medical Officer. Dr. Moller has a special knowledge of neurology, and his ability will prove a great asset to the Institution.

Nursing Staff.—There have been considerable changes in the nursing staff, especially among the junior sisters. It seems unlikely that the junior sisters can be retained for more than about six months to one year in the institution. I hope that with the improvements in the living-conditions at the Nurses' Home the present difficulties will cease.

Massage Department.—With the increasing number of patients in the women's hospital and the number of out-patients desiring treatment in the department, it was found necessary to increase the number of masseuses from three to four.

Male Staff.—There have been very few changes in the male staff, and every endeavour has been made to keep the staff at an absolute minimum. The fact that the institution has to maintain outside services tends to increase the number of men employed. The hospital is being particularly well served by the office staff.

Farm.—The new farm buildings completed last year proved very satisfactory. The supply of milk has been adequate. In spite of the increase in the number of patients under treatment, the farm has been able to supply us with sufficient quantity of milk throughout the year. Some 30 acres of new land has been broken in, and during the next year it is hoped to complete clearing such land as is at present under broom and manuka. The farm has been visited at regular intervals by Mr. Bruce, Agricultural Adviser to the Department. We are much indebted to him for his helpful advice.

Tea-kiosk.—The tea-kiosk serves a very definite and useful purpose to the public, and during the last year it has been self-supporting.

Bathhouses.—The bathhouses and swimming-pools still continue to be popular with the public.

Electrical Supply.—There has been some difficulty during the past year with the electrical supply owing to the change-over from 110 to 230 voltage. The new power-house has been erected, and the change-over was made in September. In spite of the installation of an extra machine, the amount of power is extremely limited. This is due to the lack of water-power. According to the arrangements made, power has been supplied to certain houses in the village, but I can foresee no possibility of any extension in this direction. It will be a very serious problem when the new Nurses' Home is completed as to how much power is going to be available for the building. At present all the available power developed is used by the institution, and by such houses as are connected.

Gardens.—The public grounds and the hospital gardens have been carefully attended, and are in a fairly satisfactory state. The institution has been moderately well supplied with vegetables.

General Maintenance.—The general maintenance of the hospital has been carried out, and the buildings are in a good state of repair.

New Work in Progress.—The central steam system has been commenced, and will in all probability be completed by the end of the winter. Should the steam system prove successful, it will be a very considerable economy both in labour and in firing. Arrangements have been made and machinery is on the ground for the alterations in the laundry, and this should prove a very great assistance, as the present machinery is worn out and utterly inadequate for the work required.

Nurses' Home.—Plans have been completed, and I have every hope that the building will be finished within a year. This, at the present moment, is undoubtedly our most urgent requirement.

Proposed New Work.—Last year a new lavatory block was attached to one of the wards, and it is very essential that a second lavatory block be renovated and thoroughly refitted.

General.—During the year an extra number of single rooms has been made available in an endeavour to meet the demand for better accommodation. The provision of private rooms at an increased fee has proved quite satisfactory. The treatment provided is identical for all patients in hospital, whether they be in wards or in a private room, the only difference being in service and accommodation. No difficulty has been experienced in this matter, nor has there been noticed any "class" distinction. In an institution such as this, where all the patients come in contact with each other, it would have been very obvious should such a difficulty have arisen. It is found that patients of both so-called "classes" intermingle, and no distinction is perceptible. Nor do I find the slightest desire or tendency on the part of the nursing staff to favour one "class" to the detriment of the other. From a financial point of view the scheme is satisfactory. It provides for people who desire more privacy than is obtainable in the wards, and also provides for those who are in a position to well afford the increased cost.

I desire to express to you my appreciation of the help and support I have received from the senior staff of the hospital. The smooth running of the institution is undoubtedly due to this all-important factor, and the hospital is indebted to these officers for their help and assistance.

I beg to thank the Hon. the Minister and yourself for your kindness and help during the year.

SECTION 2—KING GEORGE V HOSPITAL, ROTORUA.

Dr. L. A. Lewis, Medical Superintendent; Dr. W. S. Wallis, Orthopædic Surgeon; Dr. R. S. Whiteside, Assistant Medical Officer; Miss Searell, A.R.R.C., Matron.

I have the honour to present the report on this institution for the past year.

Of the 933 patients under in-patient treatment during the year, 741 were suffering from general diseases, as distinct from orthopædic conditions. The average stay of the general cases was twenty-four days.

A review of the statistics show that the proportion of general cases, as distinct from orthopædic, is increasing. The proportion of orthopædic cases in hospital remains at rather less than half of the total number. Rather more than half of the orthopædic cases are deformities, the result of infantile paralysis. A number of these are readmissions for further corrective treatment. Contrary to current ideas, recovery of muscles has been noted years subsequent to the onset of paralysis. The need for after-care does not appear to have been sufficiently realized in some cases which have returned for further treatment.

The policy of concentrating the services and accommodation has been continued. The separate isolation hospital has been closed and the infectious diseases accommodated in the Lowry Wards. As well as effecting economy, this move has resulted in a more adequate care of the patients than was possible in the old situation, especially in view of the fact that for the past six months some fifteen patients suffering from enteric fever have been treated at a time. In all, some forty cases of enteric fever have been under treatment. The majority of these came from Waikari Bush. The infection was of a serious type, five deaths occurring. Complications were frequent and relapses common.

Orthopædic Section.—In addition the infantile-paralysis cases, a number of patients suffering from spastic paralysis, malunion of fractures, and deformities due to other diseases have been under treatment. In all, 192 orthopædic patients have been under treatment, with an average stay of ninety-two days. The new plaster-room as an annexe to the theatre has facilitated the work of this section.

Maternity Ward.—Three beds have been available in this section during the past year. No cases have been refused admission, but the accommodation available has been made only occasional use of and at no time has more than one of these beds been occupied. Eight maternity cases have been admitted during the year.

Private Wards.—An increasing use of these has been made. Thirty-six patients have been admitted under the care of outside practitioners. This service promises to improve the standard and widen the scope of the work done in hospital by the introduction of new methods and by the professional intercourse it affords.

Theatre and Plaster-room Annexe.—Of the 371 operations performed, major orthopædic were 52; minor orthopædic were 69; major general were 124; minor general were 126; 130 fixation plaster applications were made; 30 plaster casts were made in the process of preparation of long calipers and spinal jackets; 189 bed-boots were made.

Nursing.—Five nurses passed the State examination (two with honours) during the year.

I desire to place on record my appreciation of the co-operation of the responsible officers and the spirit of loyalty to the institution shown by all members of the staff.

My report would not be complete without a grateful acknowledgment of the work of the Red Cross, the Women's Club, and the Sunshine League. Through their activities the lot of the patients has been brightened and their recovery hastened. I regard these bodies as performing an indispensable part in the work of the hospital.

SECTION 3.—OTAKI SANATORIUM.

Dr. E. Irwin, Medical Superintendent; Miss Davies, Acting-Matron.

In regard to the patients treated during the past year, 44·34 per cent. left the institution with the disease arrested and fit to return to work, 38·26 were definitely improved (of these a certain number were taken home by relations to continue the treatment), 19·39 were discharged without appearing to have gained by their stay (these were either suffering from complications or were too chronic or advanced to benefit by treatment).

It is to be regretted that many patients have been sent on here who, after examination, have proved to be too advanced for sanatorium treatment; these are usually kept one or two months and then returned to their respective districts.

The treatment relied on has been (1) Rest, fresh air, graduated activity, and work. (2) This has been supplemented in most cases by medicinal treatment. (3) In intractable and unsuitable cases, inunction of tuberculin ointment has been tried; in the case of children particularly this latter treatment has produced rather striking results.

In regard to food, which is an important factor in the treatment, it is simple, of excellent quality, and has a nutritive value adequate for the needs of the patients, the supply of milk, cream, eggs, mutton, and vegetables from the farm being particularly good.

Applications for admission have been dealt with reasonably soon, the number of such applications showing an increase during the colder months. One hundred and eight patients were admitted during the year. Of these, 7 were below sixteen years, 6 were nurses, 9 were clerks or typists, 69 were engaged in domestic duties, 1 was a school-teacher, 1 was a music-teacher, 2 were waitresses, 4 were seamstresses, 7 were shop-assistants, 1 was an art student, and 1 was a Salvation

Army officer. Ages: Under sixteen years, 7; between sixteen and twenty-five, 48; between twenty-five and forty, 44; over forty, 9. Country of birth: New Zealand, 80; Australia, 5; England, 15; Ireland, 2; Scotland, 3; Finland, 1; France, 1; Chatham Islands, 1.

During the year Miss Pownall, our esteemed Matron, decided to go on a visit to the Old Country. While every one recognized that she deserved a well-earned rest, the severance was received with great regret by the patients and staff. She is visiting most of the institutions in England connected with tuberculosis work, and we all hope that it may be a very pleasurable and profitable experience. Miss Davies, the Acting-Matron, was welcomed to Otaki.

We are indebted to the secretary of the Red Cross Society, Wellington, for various donations of books, magazines, and gramaphone records, all of which have been much appreciated by the patients Mr. Morse, the local cinematograph-proprietor, continues to favour them with a weekly exhibition of pictures, and this is eagerly looked forward to. The Levin Branch of the Wellington Choral Society contributed a very enjoyable entertainment during the year. The installation of a wireless set has also afforded much pleasure. We have to thank the Education Department for the supply of *School Journals* for the children.

In regard to the farm, operations under the direction of the Agricultural Adviser have been very successful, there being an ample supply of milk, cream, and mutton of first-class quality. In short, from a productive standpoint, the farm is a definite asset to the institution.

Structural alterations were carried out in regard to the shelters, three four-bed shelters being converted into two-bed shelters, each being lined with sanitas baize. Work in connection with the other outside shelters is in hand. Concrete paths and steps leading to the new east shelters have been made. The ornamental grounds have been well cared for; they are very attractive and furnish an abundant supply of flowers, which are much appreciated.

In conclusion, the general routine and work of the institution has proceeded satisfactorily and smoothly.

SECTION 4.—PUKEORA SANATORIUM, WAIPUKURAU.

Dr. G. Maclean, Medical Superintendent; Dr. G. M. Scott, Assistant Medical Officer; Miss A. L. Lundon, Matron.

I am able to report that the work of the Sanatorium has proceeded satisfactorily throughout the year. The number of patients who received treatment during the year was 281, and of these 92 remain in hospital, while of those discharged 159, or 84 per cent., left the sanatorium as "disease arrested." Twenty, or 10 per cent., were discharged "unrelieved" and 10, or 5·2 per cent., died. Of these 10 patients 3 died of sudden pulmonary hæmorrhage. On reliable evidence these men showed unmistakable signs of the disease for many years previous to admission, the figures in each case being 4, 1, 2, 2, 5, 8, 1½ (uncertain), 2, and 9 years respectively. A return of all cases admitted during the last two years is informative in regard to the number of patients sent for treatment from the various hospital districts, as follows: Whangarei, nil; Kaipara, 2; Auckland, 55; Waikato, 33; Thames, 7; Tauranga, 1; Bay of Plenty, 2; Waiapu, 1; Taranaki, 4; Stratford, 4; Cook, 7; Wairoa, 1; Hawke's Bay, 21; Taumarunui, 2; Hawera, 5; Wanganui, 5; Palmerston North, 9; Waipawa, 9; Dannevirke, 4; Wairarapa, 13; Wellington, 86; Nelson, 6; Wairau, 1; Buller, 2; Grey, 4.

A comparison of these figures in some cases with the huge number of notifications of the disease will show that the sanatorium is not being used by the larger populous districts, with the exception of Wellington. The Auckland and Waikato Districts send fewer cases than they should. The distance of the sanatorium from the northern part of the North Island cannot be considered a serious obstacle with present facilities for travel, when, for instance, a patient is able to leave Auckland at 7.45 in the evening and arrive at the sanatorium at 11.30 the next morning. The climatic change alone, which all Auckland patients remark upon, is worth the trip for them, and, with our average individual patients stay at about five months, more patients should be sent from these areas. Recent notifications for the Auckland District alone have shown as many as thirty-eight cases notified in one month. An endeavour should be made on the part of the Hospital Board concerned to get these cases away earlier for educative and curative treatment. Were the Auckland Hospital District to make similar use of the sanatorium as does, for instance, the Wellington District, in proportion to its size, the quota from Auckland would be more than twice the number given—viz., twenty-seven per year.

Ninety-six out-patients' attendances are recorded, but this figure refers to Pension Department cases regularly reporting from an area extending from East Cape to Woodville. There have been many more civilian out-patients who have reported for examination subsequent to their discharge from the sanatorium.

The total number of service patients treated during the last three years has been 178, and during that period of three years sixty-eight ex-service patients who have received treatment at varying periods since the commencement of our work here in 1919 have been readmitted to the sanatorium in consequence of recurrence of the disease. In contrast with this number, there have been only twelve civilian patients readmitted for treatment, which serves to illustrate that ex-service patients are being very well treated by the Pensions Department.

A comprehensive after-history questionnaire of all cases ever treated at the sanatorium has been completed up to the 31st March, 1927—that is, covering a period of seven years. 1,071 requests for such information were made: 288 of these failed to make any reply, and 219 were returned through the Dead Letter Office. Of the remainder (564) 54 per cent. are doing a full day's work without any symptoms, 24·5 per cent. are part-time workers, 8·5 per cent. are invalids, and 13 per cent. are dead. In the seven years under review 722 civilian patients have been treated, and of

these, 6·37 per cent. are known with certainty to have died. 1,114 service patients have been treated in the same period, and 9·33 per cent. of these are known to have died in subsequent years. The death-rate in the earlier years was heavier amongst service patients. Many of these were too ill to remain sanatorium cases in 1920 and were transferred to Trentham Military Hospital, and all of those so transferred died.

The practical point from consideration of these figures is that 85 per cent. of the patients treated in this sanatorium during the seven years under review, and who have replied to our requests for information, are alive and well, and in a position to earn their own living to-day. When we consider that there is no attempt made at strict selection of early cases for treatment, that most of our cases treated here are type III of pulmonary tuberculosis, and that in addition the Pukeora Sanatorium has the shortest individual-treatment period of any sanatorium in New Zealand, the results of treatment, as shown by the after-history records, must be regarded as very satisfactory, and as a justification of the adoption of the sanatorium method in treating the disease.

An occupational review of all patients treated in the same period of seven years is of interest in regard to incidence of the disease. Those following indoor occupations were 53·5 per cent. of the total, while the remainder, 46·5 per cent. were outdoor workers. Among indoor workers clerks largely predominated, representing 32 per cent. of the total, with storemen (3 per cent.), grocers (3 per cent.), and printers (2·3 per cent.) in the order given. Among the outdoor workers farmers (including farm labourers) top the list at 38 per cent., with seamen (firemen not included), 5 per cent., next in order.

Buildings, &c.—Repair work is necessarily increasing every year, as is usual with wooden buildings. The original malthoid roofs of the main building and shacks have now become a constant source of trouble, and the question of reroofing in iron will need to be considered the next urgent work to be put in hand.

Grounds.—The general appearance of the grounds is much more satisfactory than it was, but there is still ample room for improvement, and a steady effort in this direction must be maintained I am particularly desirous that the project of an entrance, with pillars in brick, the plans of which I procured some two years ago, will be completed this year.

X-ray Work.—Three hundred and forty chest and other X ray films were taken during the year. The plant has given excellent service without the slightest working-fault.

Dispensary.—The value of drugs used was £291 15s., which, though a slight increase on last year's amount, is still low. Extensive trial was made on triple calcium products, but no advantage in the use of these was demonstrated over the ordinary calcium salts—chloride and lactate. For the latter half of the year this dispensary has been relieved of all work of dental clinics, but Maori school requirements are still supplied. The Dispenser's time is fully occupied with additional work, such as routine sputum-examinations and as an assistant in the X-ray department.

Farm.—All our requirements, with the exception of milk and cream over a period of some ten weeks last winter, have been met. The shortage was investigated by the Director-General of Health and quickly remedied.

Orchard and Kitchen Garden.—Vegetables to the value of £255 were supplied to the institution from the orchard and kitchen garden during the year, but the sum of £322 was paid out in wages, so that the return for wages paid is no better than last year. For the last two seasons a vegetable-patch nearer the sanatorium was, at my suggestion, worked by patients under the ornamental gardener, and the yield from this plot for the second year has come up to £27 9s. I feel sure that more could be done with this piece of ground, worked by the patients, and I would recommend that it be enlarged and made the kitchen garden of the sanatorium, under the supervision of the ornamental gardener, who grew vegetables before, so that the working-patients' labour may be turned to more avail in this respect.

Staff Changes.—The only staff change of note is the appointment of Mr. R. W. Wade as House Manager in October last. Mr. Wade is an exceedingly capable officer, and there is considerable evidence of much success in his work in the supervision of the outside staff and in the introduction of many noticeable economies.

Red Cross Society.—Again the Red Cross Society has stood by us throughout the year, and regular visits have been made once a week by the various sub-committees of the society, and we have received for the patients a large amount of gifts in the way of food, fruit, and other delicacies. To Mrs. E. Rice and Mrs. Broad, who control the local centre of the society's activities, our especial thanks are also due for arranging all these visits.

The Hastings Branch of the Red Cross Society has also interested itself in the matter of vocational training, and I am pleased to record that, as a result mainly of Mrs. T. H. Lowry's efforts, this work will be soon commenced once again amongst the patients.

We are also indebted to Mrs. T. H. Lowry and her band of home workers at Hastings for a long list of gifts throughout the year, most of which were purchased from the proceeds of the Pukeora Shop-day in Hastings. The valuable articles received included a gramophone and records, vases, chair-covers, camp-chairs, cane wicker chairs, bedside-tables, and Christmas presents.

In conclusion, I would record my sincere thanks to the whole of the staff for their loyal co-operation and support throughout the year.

APPENDIX.

PART 1.—MEDICAL RESEARCH: SUMMARY OF WORK CARRIED OUT AT THE MEDICAL SCHOOL, OTAGO UNIVERSITY.

By Dr. C. M. Hector.

I beg to submit herewith a summary of the research work carried out by me during the past three years.

1. Poliomyelitis Research.

This work was initiated in May, 1925. Material for the investigation was derived from the epidemic of 1924–25 and subsequent cases in Auckland and Dunedin. It consisted of spinal cords and other tissues preserved in glycerine. For the purposes of the investigation forty-six monkeys have been purchased. The cost of these was at first about £5 per head, but latterly they have been obtained direct from Calcutta at about £3 per head. The cost of feeding them has been about 4d. per head per day. The animals have been housed in a building specially built for them, with facilities for warming. So far only one monkey has shown evidence of tuberculosis—disease to which monkeys in captivity are, as a rule, very prone. Of the forty-six monkeys purchased, two died *en route* from India and two immediately after arrival, leaving forty-two monkeys for experimental purposes. Of these, twenty-five are still on hand. Of the seventeen dead, eight have died of a disease apparently of a contagious nature, accompanied by choreiform manifestations. Inoculation experiments and histological examinations have shown nothing definite in this condition. One monkey died of poliomyelitis after inoculation, and post-mortem showed characteristic lesions in the central nervous system. One monkey definitely paralytic after inoculation was killed with a view to transmitting the infection. It showed characteristic lesions in C.N.S. Another monkey suspected of a mild attack of poliomyelitis after inoculation was killed to verify the condition, and was found to have the characteristic lesions, together with tuberculosis, which accounted for its prolonged illness. Of the remaining monkeys, one died under an anæsthetic, one from post-operative hæmorrhage, and four were destroyed after inoculations.

Inoculation Experiments.—Twenty-five animals have been inoculated. Some of these have had repeated injections. Some have had, in addition to intra-cerebral, also intra-peritoneal and intra-thecal injections. The material used has been emulsions of spinal cord, naso-pharyngeal washings, fæces, and scraps of nerve tissue. With this material eleven positive results have been obtained—three verified by post-mortem examination. Of these three, two were inoculated with emulsion of spinal cord from the same case (a patient from Wanganui) and one with fæces of an infant from Dunedin Hospital. Attempts at further transmissions from these cases failed. Naso-pharyngeal washings gave in all cases a negative result. The symptoms noted in those monkeys which were ill after inoculation and which recovered were drowsiness, shivering, loss of appetite, offensive motions, diarrhœa, transient weakness of the limbs, general excitability, and nervousness.

Rosenow's Test.—This test, which is a precipitin reaction, was devised by Rosenow for the purpose of detecting mild cases of poliomyelitis and carriers. We were favoured by Rosenow himself with a supply of serum for making the test, but the reactions, if positive, were so faint as to have little practical value. Search was also made for a diagnostic skin reaction, but no definite reaction was obtained.

Inoculation of Rabbits.—Inoculation with poliomyelitis material was attempted, both with and without the aid of depressants, but no infection resulted.

Worm Infection.—As some of the monkeys appeared to have died from infection with a Nematode worm (*Œsophagostomum brumpti*), and as this worm has been known to produce fatal diarrhœa in man, it seemed desirable to inquire into the worm infections of the monkeys in hand. Cultures of fæces were made which revealed *Strongyloides intestinalis* and Anguilulæ (from tap-water probably), but no Œsophagostoma. These last, however, were found in small numbers in some of the monkeys examined post-mortem—obviously not abundant enough to threaten our supply of monkeys or to produce risk of human infection.

In my report of March, 1927, I proposed a further examination of the poliomyelitis material on hand, in the hope of getting an active virus to test out the serum of various groups of the population. This examination has been carried through, but unfortunately no suitable virus has been recovered from the material. In fact, the work as a whole tends to show that, while the virus is undoubtedly present in the material, it is of a mild nature. I proposed also to test the hydrogen-ion concentration of the glycerine in which the poliomyelitis material was preserved. Tests were made with the usual colorimetric method, but it was found by experience and from the literature that the colorimetric method was not sufficiently sensitive or reliable with glycerine media.

2. Influenza Inoculations.

Several attempts were made to inoculate monkeys with filtrates derived from (*a*) bronchial secretion of fatal cases of influenza, (*b*) pleuritic effusion from an apparently epidemic pleurisy suspected to be influenzal. These materials were injected intra-tracheally, both singly and combined with dilute suspensions of *Staphylococcus aureus* to aid injections, but no infection followed in any of the animals injected. The objects of these tests was to determine the presence or otherwise of a filter-passing organism in influenzal secretions.

The above experiments were too few to determine the point.

3. Hydatid Disease.

In my report of March, 1927, several points for research were put forward, viz. :—

(1) *The Nature of the Spicules in the Embryo and the Composition of the Hooklets in Scolices.*—Tests show that the spicules of the embryo are completely soluble in strong nitric acid. They are probably chitinous, certainly not siliceous. The hooklets of the scolices undergo partial solution and change of refraction in cold caustic potash (6 per cent.); they are completely soluble in hot caustic potash. They appear to have a double composition. The form of the hooks in the hexacanth embryo is similar to that of the hooklets of the scolices of many of the tape-worms. They have hitherto been depicted as linear spicules.

(2) *Method of Rupture of the Embryophore.*—The hexacanth embryo (or onchosphere) is enclosed in a stout capsule, the embryophore. As discharged in the fæces of the dog, the embryophore appears to be surrounded by an irregular glutinous coating. The mode of liberation of the embryo was examined by means of (*a*) natural and (*b*) artifical gastric juice on the warm stage of the microscope. It was found that the glutinous envelope swelled up into a globular mass surrounded by a membrane and containing highly refractile granules. The embryophore was found to be composed of radially-arranged rods. After twelve hours in gastric juice these could be easily separated from one another by slight pressure. They were found to be insoluble in strong nitric acid, which, however, stained them yellow, indicating a protein nature (? keratin). They are probably cemented together by a proteid which swells under the action of the gastric juice, and this may be the mode of liberation of the embryo.

4. Pollination of Grasses.

This has an important bearing on the occurrence of hay-fever. At the suggestion of Professor Hercus, I took up during the latter months of 1927 the microscopy of grass-pollens. By favour of the Agriculture Department I have already received complete lists of grasses flowering in the greater part of New Zealand throughout a period of eleven months. These I have card-indexed for reference, examining the grass-pollens microscopically, I found so much similarity among the dried pollens that it became desirable to make a study of fresh pollens. To do this it became necessary to be able to recognize the various grasses in the fields. The past season has, therefore, been devoted to making a collection of the native and introduced grasses, studying their distribution and prevalence in the district, and their times of pollination. Assistance has been derived from the works of Hilgendrof, Buchanan, and the local lists of the Dunedin Field Club. It is clear that the best method of assessing the distribution of grass-pollens is by means of pollen-plates exposed systematically throughout a period of twelve months, from one dead season to the next.

PART 2.—GOITRE INVESTIGATION.

By Dr. Shore, Medical Officer of Health.

Towards the end of 1927 a goitre investigation was commenced in the schools in and near Wellington City. A start was made with the schools located in the Hutt Valley. Each school was visited, and each child in attendance was examined to determine the presence or absence of goitre. The following standard was adopted: Any of those children in which careful palpation failed to reveal any thickening of the isthmus or any degree of enlargement of one or other of the lobes was counted as "goitre free." The classification of the goitrous children into incipient, small, medium, or large was attempted, but it is obvious that no two examiners would agree to classification. In this report, therefore, more stress is laid upon the presence or absence of goitre than on its classification as regards size. As this is only a progress report, no attempt will be made to draw deductions or arrive at conclusions. Any suggestions made may have to be altered on completion of the investigation.

Hutt Valley.

This area includes all the schools at Petone and Lower Hutt, and the schools at Epuni, Taita, Silverstream, Trentham, Upper Hutt, and Korokoro. All secondary and public schools and private schools were examined.

The total number of children examined was 4,417; of that, 1,423, or 32·2 per cent., were classified as having goitre. Classifying this total into sexes, we have: Males—Total, 2,254; having goitre, 712, or 31·5 per cent. Females—Total, 2,163; having goitre, 711, or 32·8 per cent. This difference between the sexes is not significant.

The following table gives the distribution of goitre cases as shown in the returns from each school:—

School.	Percentage af Goitre.		School.	Percentage of Goitre.	
	Males.	Females.		Males.	Females.
Petone West	42·7	43·6	St. Peter and St. Paul Convent, Lower Hutt	25·0	31·3
Petone Central	47·2	48·3			
Petone Convent	42·7	44·7	Epuni	37·1	..
Hutt Park (now Waiwetu)	21·3	26·7	Taita	15·8	20·3
			Silverstream	29·3	21·8
Lower Hutt Central ..	30·2	28·4	Trentham	16·6	20·0
Lower Hutt Eastern ..	26·6	28·9	Upper Hutt	22·5	21·3
Lower Hutt High School ..	18·1	35·6	St. Joseph's Orphanage, Upper Hutt	23·3	21·2
Sacred Heart Convent, Lower Hutt	33·3	26·6			
			Korokoro	23·5	29·4

With the exception of Korokoro School, all the schools are situated on the river-flat, and the water-supply is either deep artesian or shallow well, with the exception of Upper Hutt and Korokoro, which have upland surface-water supply. Petone schools are partly Korokoro water-supply and partly deep artesian.

In the following table the schools are grouped according to their water-supply and the percentage of goitre for each group given.

	Percentage of Goitre.
A. Upland surface-water supply	21·7
B. Artesian water-supply	27·3
C. Shallow-well water-supply	21·8

The Petone figures are not included in the above table, as Petone water-supply is partly artesian and partly upland surface, and it is impossible to differentiate between the two supplies. The average percentage of goitre in Petone school-children is 45·6. It should be noted that the figures of group C are small compared with groups A and B.

As a comparison, the figures for four Wellington City schools are given below. The water supplied here is from entirely upland surface: Total number of children examined, 1,891; percentage of goitre, 21·9—a percentage that corresponds closely with group A in the previous table. It would appear therefore, that the percentage of goitre from those areas supplied by artesian water shows a distinct increase over the percentage obtained from districts supplied with upland surface water.

Goitre Incidence in relation to Length of Residence in the District.

Length of Residence.	Percentage of Goitre.
Under one year	22·6
Over one year and under two years	32·4
Over two years and under three years	21·4
Over three years and under five years	25·5
Over five years and under ten years	33·0
Over ten years	33·6

In seeking the information, unless a child was very definite in answering, the answer was neglected, and as an extra safeguard the replies obtained only from children who were nine years or over were analysed.

So far not a big number (612) of replies have been tabulated, so that when larger numbers are used the percentage obtained may be altered. Of the figures so far available, there seems to be a definite increase in the incidence of goitre according to length of residence.

Classifying the register into two groups, with five years' residence as the boundary, we get: Under five years' residence, percentage of goitre, 25·8; over five years' residence, 33·2—a difference that even on the numbers available would appear to be significant.

Incidence of Goitre in Yearly Age Groups.—The following table gives the incidence of goitre in each yearly age group for the district. The second column is the percentage of both sexes combined, the third is for males, and the fourth for females.

Age Group.	Goitre Percentage.			Age Group.	Goitre Percentage.		
	Both Sexes.	Males.	Females.		Both Sexes.	Males.	Females.
5 years	24·9	34·2	17·3	11 years	39·3	35·6	43·2
6 ,,	25·3	27·7	23·4	12 ,,	40·3	37·9	42·9
7 ,,	24·8	25·9	23·7	13 ,,	46·2	41·5	49·2
8 ,,	25·8	26·4	25·4	14 ,,	33·7	27·5	40·3
9 ,,	31·1	29·8	32·4	15 ,,	28·4	26·2	30·6
10 ,,	34·6	36·2	32·9	16 ,,	40·0	27·8	52·9

"Age group" indicates that the child, say, ten-years-age group was ten years old last birthday. The figures in the fifteen- and sixteen-years group are too small for the percentages to have any significance. Very few of this age were found at primary schools, and only two secondary schools have so far been examined. The trend of these figures is better illustrated in the accompanying group.

Chemical investigation of the water and soils in this area of this investigation is at present being carried out, but results are not yet available.

PART 3.—ABSTRACT OF A REPORT UPON AN INQUIRY INTO THE OCCURRENCE OF RHEUMATIC FEVER IN AUCKLAND.

By Dr. TURBOTT, Medical Officer of Health.

Scope and Method of Inquiry.—The main purpose of this inquiry in Auckland was to determine the prevalence and nature of rheumatic fever, a non-notifiable disease. A rapid sample of the youth of this city was obtained from the examination of 10,040 children in seventeen city primary schools so situated geographically as to form a true cross-section of the city. Cases of rheumatic fever were sorted out, followed up to their homes, carefully examined, and full inquiries made into the personal, family, social, and housing histories of each one. A control group of fifty healthy non-rheumatic children was formed and similarly examined, having similar age and sex grouping as the rheumatic cases, and representative of suburban and crowded city areas. A further group of patients was followed up from the Public Hospital records of rheumatic-fever cases under forty years of age for the previous three years. Throughout the inquiry only the clinical entity rheumatic fever was sought, with its recognized heart or choreic manifestations. One hundred and seven cases comprise the present study.

Prevalence.—In 10,040 school-children sixty-six cases of rheumatic fever were traced—thirty-one in males, thirty-five in females. At some time during the primary-school period 0·6 per cent. of the roll was attacked, a morbidity rate of 0·6 per 1,000 (average of ten years). Twenty-one children suffered from rheumatic fever without heart involvement, while in thirty more carditis developed during the attack. In twenty of these latter the damage was irremediable. There were fifteen cases of chorea, in five of which carditis developed and remained. The power of chorea to damage the heart was as potent as other types of acute rheumatism. Of the total sixty-six cases, twenty-five returned to school with damaged hearts. For the same group of 10,040 children, fifty-four were considered to have organic heart-disease. It would appear, then, that rheumatic fever was responsible for 46 per cent. of organic cardiac disease. Could the former be prevented, almost half of the latter in our schools would be eliminated.

Tracing back the hospital records from September, 1927, for three years, eighty-seven cases of rheumatic fever were treated—fifty-one in males, thirty-six in females. Forty-one typical cases under forty years of age were traced. Eight patients suffered from rheumatic fever without and twenty-seven with carditis. Of these latter, twenty-three were left with permanently damaged hearts. In six cases of chorea, one carditis developed and proved irremediable.

Sex Incidence.—School group (annual rate per 10,000 pupils, average of ten years)—Males, 3·1; females, 3·5. Hospital group (annual rate per 10,000 city and suburbs population, average of three years)—Males, 0·89; females, 0·63. In both groups chorea had a greater incidence on girls than on boys.

Age Incidence.—Up to the fifth year the incidence of acute rheumatism was low. The next years were heavily attacked, rising to a maximum in the ninth year. 0–4 years, ten cases; 5–9 years, fifty-nine cases; 10–14 years, twenty cases; 15–19 years, five cases; 20–39 years, thirteen cases. In Auckland, as elsewhere, acute rheumatism is essentially a school-age disease.

Seasonal Incidence.—The highest incidence occurred in September, (12·4 per cent.) the next highest in July (11·8 per cent.), and generally in the winter and early spring months. The lowest incidence occurred in our summer months. Cold was correlated with prevalence; with rainfall also there seemed to be a definite association. When the annual attack rate per 1,000 for the school group was plotted against the mean temperature and mean rainfall for the years 1918–1927 it was seen that, with an exception in 1922, the rheumatic fever morbidity was positively correlated with the rainfall and negatively with the temperature.

Etiology.—No evidence as to the essential cause was found.

Duration of Treatment; Recurrences; Some Physical Observations.—In the school group 74 per cent. were treated in their homes. The average duration was six weeks, but 57 per cent. of these children had less time in bed. For the remainder sent to hospital and for the actual hospital group the average was seven weeks in bed, 29 per cent. only receiving less. Recurrences occurred in 29 per cent. of the school, and in 46 per cent. of the hospital cases. Anæmia was evident in 31 per cent. of cases. Nutrition was subnormal in 29 per cent., a figure above that found in routine school examinations. With regard to teeth, diet, and constipation there was no significant departure from control findings. It happened that less goitre was found in each rheumatic group than in non-rheumatic controls.

State of Tonsils.—School group: Healthy throats, 16·7 per cent.; subject to sore throats, 39·4 per cent.; enlarged tonsils, 59·1 per cent.; tonsillectomies, 24·2 per cent; total enlarged tonsils and removals, 83·3 per cent. Hospital group figures were respectively 46·3 per cent., 19·5 per cent., 36·6 per cent., 17·1 per cent., 53·7 per cent. Control group figures were respectively, 30 per cent., 20 per cent., 54 per cent., 16 per cent., 70 per cent.

The above figures, while showing widespread tonsillar affection in healthy children reveal still more in rheumatic children. Tonsillitis ushered in the rheumatic attack in 34·6 per cent. of cases. It would seem that tonsillar hypertrophy, while less frequent in adult life (see hospital group, half adults, retrogression with increasing age) was common at the age of first attacks. It would seem that the tonsils were the portal of entry. The tendency to tonsillar hypertrophy in childhood means a predisposition to rheumatic disease, the incidence of which would be reduced if the former could be understood and prevented.

Complete removal of tonsils in this series did not avoid the occurrence of rheumatic fever, but appears to have prevented permanent heart damage. This was absent in cases where the tonsils were enucleated before the attack.

Heredity.—Acute rheumatism is a family disease. The findings for the combined groups were: With family history of rheumatic fever, 58·9 per cent.; without same, 32·7 per cent.; unknown, 8·4 per cent. In the control group—positive histories, 22 per cent.; negative, 74 per cent.; unknown, 4 per cent. In rheumatic patients there was almost three times the positive family history as in the non-rheumatic controls.

Infectivity; Social Conditions.—Evidence of infectivity was sought, but not established. Similarly, nothing of importance was established connecting social conditions and liability to rheumatism.

Influence of Environment at First Attacks.—Dampness in dwellings (controls, 16 per cent.; rheumatic groups, 31·8 per cent.) was probably significant. A larger proportion of rheumatic homes were southerly in orientation (controls, 10 per cent.; rheumatics, 21·5 per cent.) and sunless in their rooms (controls, 8 per cent.; rheumatics, 14 per cent.).

Overcrowding in space was rarely evident, but three times the amount of overcrowding in rooms occurred in the combined groups (18·7 per cent.) as in the controls (6 per cent.).

Dampness of site was more than three times as prevalent in rheumatics (25 per cent.) as in controls (8 per cent.). Evidence of effect of elevation of section as regards road, nature of soil, altitude of site (hilltop, hillside, or valley), was inconclusive. Proximity to watercourses (within quarter of a mile of creeks, &c.) seemed to be of significance (controls, 4 per cent.; rheumatics, 26·2 per cent.).

Prevention.—No new preventive factor emerges from this study. Freedom from dampness and plenty of sunlight are indicated. The determination of the pre-rheumatic child is difficult, but a consideration of nervous symptoms (including clumsiness, fidgetiness, lack of concentration, &c.), anæmia, tonsillitis, and heredity should further this end and lead to the supremely important early diagnosis. The maximum obtainable rest still needs, preferably in institutions, emphasis in treatment.

PART 4.—ABSTRACT OF A REPORT UPON A SHORT INQUIRY INTO RHEUMATIC CONDITIONS IN AUCKLAND SCHOOL-CHILDREN.

By Dr. H. J. Wilkie, School Medical Officer.

This inquiry was carried out in twenty Auckland elementary State schools, two of which were junior high schools and the rest ordinary primary schools, and embraced 8,428 children of ages from five to fifteen years. Three of the schools, were in the city, seven in marine suburbs, and ten in inland suburbs. In one of the suburbs were brick-kilns, in another sugar-works, in a third glass-works, and in a fourth freezing-works and abattoirs.

The medical-record cards were examined, and the cases of all children said to have rheumatism or growing-pains investigated. A number of the latter were ruled out as not rheumatic, but persistently recurring pains in wet or cold weather, with sore throats or other rheumatic manifestation, were considered rheumatic. Such children were carefully examined, the parents interrogated when possible, and the majority of the homes visited by the school nurses, who have large experience in such work. The percentage of rheumatic manifestations was highest—5 per cent.—in a marine suburban school (clay soil, in neighbourhood of sugar-works) and lowest in the neighbouring school (on same soil). Locality and housing appear to play a much smaller part in the rheumatic picture in New Zealand than at Home, which can be accounted for by the nomadic habits of the majority of the people. The percentage of organic rheumatic heart-disease was highest in one of the city schools in a poor neighbourhood, and lowest in a suburban school, also in a poor district.

Out of 8,428 children 225 (2·7 per cent.) showed some form of rheumatic manifestation—heart-disease, joint pains, history of acute rheumatism or chorea, &c.

Fifty-five (24·4 per cent.) of these rheumatic children had some heart affection, forty-three showing permanently damaged hearts and twelve functional derangements.

The number of heart cases of all varieties—congenital, functional &c.—among the 8,428 children was ninety-two. Thus more than half of the heart abnormality found in this survey was due to rheumatism.

Forty-five (0·5 per cent.) of the 8,428 children had had acute rheumatism and twenty-three (0·27 per cent.) chorea.

Heredity.—Taking all the cases of rheumatic affections, there is a rheumatic family history—acute rheumatism, quinsy, heart-disease, &c.—in 62·72 of the cases. The hereditary nature of the complaint appears marked.

Status.—Father's work varies—professional, labouring, trade, clerical, &c.; all types of urban occupation. Only 2 per cent. were poor. Rheumatism is said to be a disease of "the poor but not the poorest," but this does not seem to apply in the small number investigated.

Housing.—The moving habits of the people make this a different problem in New Zealand from that in England. Forty-four per cent. were still in the house where they had their first attack, and 10 per cent. of these houses were described as damp by the school nurse visiting the home.

Note on Heating of Schools and Drying of Clothes.—In nearly all schools the arrangements for drying clothes are inadequate or nil, and this must have a bad effect on children with rheumatic tendencies.

Conclusions.—(1) Heredity is marked. (2) The number of organic heart cases who had merely a history of pains shows the importance of not neglecting "growing pains." (3) Enlarged tonsils appear to afford a point of entry for the disease. (4) The percentage of malnutrition is much greater in rheumatic children than in others. (5) Acute rheumatism and other rheumatic affections begin early in life—under five to six years; the commonest ages of onset of chorea are seven and eight years, when the strain of school life may begin to tell.

PART 5.—EPIDEMIC OF INFLUENZA IN A RESIDENTIAL COLLEGE.

By Dr. SHORE, Medical Officer of Health.

Soon after the commencement of the first term of the present year (1928) an outbreak of influenza occurred in the school under review. The school is largely a residential one, there being 233 scholars in residence and forty day boys in attendance. The residents are divided into four houses, which we will designate A, B, C, and D. House A has fifty-five boys in residence. These are divided into three dormitories, accommodating nineteen, eighteen, eighteen respectively. House B has fifty-seven boys, each dormitory having nineteen boys in it. House C has fifty-five boys, the dormitories containing nineteen, eighteen, eighteen respectively. House D has sixty-six boys with four dormitories, housing sixteen, sixteen, seventeen, seventeen each respectively.

Each dormitory has good cross-ventilation, and each bed is placed between two windows, the distance between adjacent beds being about 3 ft. There is no overcrowding on space. The school year is divided into three terms. At the beginning of the term the school boarders consisted of fifty-six new boys and 174 boys who had been in residence for twelve months and over. There were three boys who had been in residence for one term each. In most further calculations we shall discard these three boys, and then we can divide the population into two main groups—namely, a group of fifty-six boys who at the time of the epidemic had no experience of the school, and a group of 174 boys who had at least three terms experience.

During the middle term of the year 1927, the medical officer of the school, after obtaining the consent of the parents and guardians, decided to carry out an inoculation campaign against influenza, his experience being that influenza was always more prevalent in the school during the latter half of the year. The vaccine he used contained (per cubic centimeter) Staphylococcus aureus hæmolyticus, 500 million; Pneumococcous, 100 million; M. Catarrhalis, 50 million; Streptococcus, 20 million; B. influenzæ, 20 million. The strains used in the manufacture of this vaccine were what may be called "New Zealand" strains. The first dose was 0·5 c.c., and was followed seven days later by a dose of 0·75 c.c.

Of the 174 old boys attending the school this year, no less than 159 were given the vaccine. Therefore the school population at the beginning of the year can be divided into two groups—namely, boys inoculated with vaccine, 159; boys not inoculated with vaccine, 74.

Thus for the purposes of this investigation we divide the population firstly on a residential basis, and secondly on an inoculation basis, as follows—Total population, 223: 56 new boys (plus 3 with one term's residence), 174 old boys (with over three terms' residence); 159 boys inoculated with vaccine, 74 boys not inoculated with vaccine.

Accommodation for Sick.—Attached to the school is a small sanatorium where all the sick are accommodated. At the time of the epidemic under review this was not nearly sufficient. Two dormitories were therefore emptied and the boys distributed throughout the other dormitories. This fact makes it almost impossible to trace the course of infection in any one dormitory. This meant, except for the few boys who were treated in the sanatorium, that the population of the remaining dormitories was not sensibly reduced, because it was augmented by boys removed from the first dormitory used as an isolation ward, and, second, by the boys from the second dormitory put to use as an isolation ward. Moreover, as the population of the remaining dormitories was augmented, there was constant alteration in position of beds.

Day Boys.—There were at the beginning of the year forty day boys in attendance. These day boys come in contact with residents in the class-rooms, in the assembly-hall, and for the midday meal in the dining-room.

Source of Infection.—The probable source of infection was one boy who returned to school at the commencement of the term and was suffering from a slight cold and gave a history of having been in contact with a case of influenza. The school reopened early in February. Within a few days (the 8th) the first case was admitted to the sanitorium.

Type of Disease.—The type of disease was mild, and practically all the symptoms were confined to the nose and throat and adjacent sinuses. The temperature persisted for three or four days and then settled down. The only complications were sinusitis, tonsillitis, conjunctivitis, and one case of bronchitis. Unfortunately, no bacteriological examinations were made, so that no information is available as to the bacterial flora.

Isolation.—The cases were all kept in bed until the temperature had been normal for three days; thereafter they were kept in isolation for a further period of five days. The procedure was that as far as possible the sanatorium was kept for acute cases; the convalescents were drafted back into one of the two dormitories. While convalescing in the dormitory ward the boys were allowed to take meals in the dining-room, but at separate tables. All leave was stopped during the epidemic.

Course of the Epidemic.—The following table gives the number of cases occurring on each day.

Table A.

February.

Date	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Number of cases	1	..	1	..	..	5	8	15	12	17	8	9	13	9	2	4	8	1	..	1	..	4

March.

Date	1	2	3	4	5	6	7
Number of cases	1	1	..	..	..	1	1

This table shows that of the total number of cases, 110, or 90 per cent., occurred between the 13th and 24th of the month. Three days later there was a slight recrudescence, and then the epidemic

tailed off. The number of cases of influenza in the whole school was 122, which represents a percentage incidence of 52·3.

Influence of Length of Residence.—In order to demonstrate whether the length of residence in the school had any influence on the incidence of infection, the boys were placed in groups according to the number of terms they had been in residence. The following grouping was made: (1) New boys with no previous residence at the school; (2) boys who had been in residence one year only—that is, three terms; (3) boys who had been in residence four, five, and six terms; (4) boys who had been in residence more than six terms.

Incidence of infection according to length of residence in terms is shown as follows:—

Table B.

Number of Terms in Residence.	Number of Boys.	Number of Cases of Influenza.	Percentage of Incidence.
New boys	56	34	60·9
Boys with at least three terms	57	38	66·6
Boys with over three and up to six terms' residence	51	21	41·3
Boys with over six terms' residence	66	27	40·9
Total boys with three terms' residence and over ..	174	86	49·4

The above table demonstrates that with increase of length of residence in the school there was a decrease of incidence of the infection. The percentage incidence amongst the new boys was 60·9, and amongst the longest-residence boys only 40·9. If we group all the old boys together the percentage of incidence of infection was 49·4. It will be noted that the difference between new boys and boys with three terms' residence is in favour of new boys.

Influence of Previous Vaccination with the Anti-influenzal Vaccine.—As has been mentioned, during the year 1927 all boys (whose parents or guardian consented) were given two doses of vaccine. Altogether there were present at the school at the beginning of the present year 159 boys who had been given the vaccine during the previous year. There were, therefore, in the school at the same time 74 boys who had had no vaccine. Amongst the 159 boys who had vaccine there were 80 cases of influenza, a percentage of 51·3. Amongst the 74 boys who had not had vaccine there were 42 cases of influenza, a percentage of 56·7. This is shown in the following table:—

—	Number of Boys.	Influenza.	
		Number of Cases.	Percentage.
Boys given vaccine	159	80	51·3
Boys not given vaccine	74	42	56·7

If one could eliminate the question of the influence of the length of residence, then the result would appear to be very little in favour of the prophylactic use of the vaccine. It must be remembered, however, that amongst the 74 boys not given vaccine were 56 new boys and 3 boys who had been in residence only one term.

There were, however, in addition to 159 boys vaccine-treated, 15 other boys not vaccine-treated—both groups with over three terms' residence—which gives us a total of 174 boys with residential influence. The percentage of incidence amongst these 174 boys was 49·4 (see Table B), as against 51·3 amongst the vaccine-treated boys. This shows a result somewhat in favour of the old boys as a group, as against the old-boy group which was treated with vaccine. It must be remembered, however, the number of boys not treated with vaccine is very small, so very little if any significance can be attached to the figures.

The results, however, would seem to indicate that length of residence, with which goes increasing age, is more important as an immunizing factor than a previous treatment with ante-influenzal vaccine. It is, of course, well recognized that any increase of immunity given against influenza by a vaccine is only of a short duration. The times between the giving of the vaccine and the appearance of the epidemic was at least five months.

In order to demonstrate the difference to susceptibility between new boys and old boys, and also between those treated with vaccine and those not treated, the following table has been prepared. In Table C the total number of cases existing in any one day has been expressed as a percentage of the total incidence in that class. This therefore, introduces the time factor, endeavouring to demonstrate whether the boys in the different classes tended to succumb earlier or later in the epidemic.

Table C.—Table showing the Progression of the Percentage of Cases for each Day of the Epidemic in the Two Groups, New Boys and Old Boys, and Vaccine-treated and Non-vaccine-treated.

Day of Epidemic.	New Boys.	Old Boys.	Minus Vaccine.	Plus Vaccine.	Day of Epidemic.	New Boys.	Old Boys.	Minus Vaccine.	Plus Vaccine.
1	..	2	..	1	16	..	82	..	81
2	..	3	..	3	17	97	88	98	88
3	..	..	..	..	18	100	..	100	..
4	..	..	..	..	19	..	..	..	..
5	..	..	..	..	20	..	90	..	90
6	3	5	3	7	21	..	..	..	..
7	12	13	12	13	22	..	94	..	95
8	29	26	33	20	23	..	95	..	97
9	41	32	43	30	24	..	97	..	98
10	62	44	59	33	25	..	..	..	..
11	68	50	67	49	26	..	..	..	..
12	82	59	74	50	27	..	..	..	..
13	91	64	88	65	28	..	98	..	99
14	..	75	93	74	29	..	100	..	100
15	..	77	..	76					

It is evident from the above table that the total incidence of cases was reached much more rapidly in the case of new boys than of old boys. By the fifteenth day of the epidemic the epidemic was finished amongst the new boys, whereas amongst the old boys 88 per cent. only of the cases had occurred by that date. This demonstrates that the old boys succumbed much more slowly than the new boys, and indicates that the resistance of the old boys was greater.

Similarly the incidence amongst the vaccine-treated boys was, up to the seventeenth day of the epidemic, somewhat still more gradual; but the difference is not sufficiently marked as to warrant any deductions to be drawn therefrom. It perhaps should be mentioned that amongst the fifteen old boys in the school who had not had vaccine there were eight cases of influenza, and that these occurred in the first twelve days of the epidemic, so that they succumbed early in the outbreak.

PART 6.—REPORT ON THE HEALTH CONDITIONS AND ENVIRONMENT OF RURAL SCHOOL-CHILDREN IN CERTAIN DISTRICTS OF NEW ZEALAND.

By Dr. Albert Henderson, School Medical Officer.

[The main observations alone are recorded.]

An attempt was made to elucidate the standard of health attained and the environmental conditions. Groups of schools were selected representing children of coal-miners, bush timber-mill workers, dairy-farmers in thriving communities and in remote country areas. Children attending twenty-five schools in New Zealand were examined and the homes of 476 children were visited. Reports and detailed statistics of each group were obtained, and also a comparison of the groups. The number examined in some of the groups was small, but the findings are sufficiently exact to give a fair view of conditions.

An effort was made to assess the financial status in the homes visited. This classification is obviously a rough one. In the case of coal-miners and bush timber-mill workers wages and number of days worked were taken into account, and in the farming groups the number of cows milked, &c.; otherwise judgment was formed on appearances and on statements volunteered by the parents.

Group A.—Children of Coal-miners.

Two coal-mining towns were selected as suitable for this investigation. One was situated about 500 ft. above sea-level in hilly country, and the other on a river-bank 45 ft. above sea-level. In the former the lie of the ground afforded good drainage and, though in a valley, was not too closely surrounded by the hills to prevent an adequate amount of sunlight. There was a considerable amount of level space, too, for play areas. A proportion of the homes in the second town selected were subject to dampness from the flooding of the river. The homes of 105 children were visited in these towns.

Twelve per cent. only of the children had New-Zealand-born parents, but most were children of English and Scottish coal-miners. This group compares unfavourably with the farming groups as regards weight for height and age. It also shows the greater tendency to mild rickety deformities and to goitre. In regard to other clinical evidence of subnormal nutrition there is little to choose between the groups.

Financial status of the parents was—adequate, 75 per cent.; doubtful, 12 per cent.; poor, 10 per cent. General conditions were good with regard to ventilation and cleanliness. Home atmosphere was cheerful as a rule. Clothing was satisfactory, 90 per cent. of the children wearing boots. No work was done by the school-children out of school-hours, and there was no loss of sleep. Few of the mothers worked outside their own homes. The hours of meals were regular. Fresh milk was not so readily obtainable all the year round, and condensed milk was occasionally used. In the diet sweets and tea were consumed to a greater extent than in the farming groups.

Group B.—Children of Bush Timber-mill Workers.

A town on the railway-line in the central part of the North Island was chosen as suitable for the investigation of these conditions. It is about 1,000 ft. above sea-level, but lies in a valley surrounded by hills, which shut out much sunlight. The situation is, therefore, depressing. Fogs are common, and there are frequent late frosts. Visits were paid to the homes of fifty children. The houses were rented from the millowner at a moderate rent.

Financial status: Adequate, 70 per cent.; doubtful, 24 per cent.; poor, 6 per cent.

This group compares unfavourably in several respects with the others—viz., personal and household cleanliness, amount of tinned foodstuffs and tea consumed, scarcity of vegetables and milk in diet, dampness of houses. New-Zealand-born parents are in the majority. The weight for height and age standard is lower than in the farming groups, and mild rickety deformities more common. Less than 5 per cent. of children showing under-weight belonged to families in poor circumstances. Apart from under-weight, however, there were in the greater proportion no other signs of clinical subnormal nutrition. Meal-hours and the amount of sleep were good, and very little work was performed out of school-hours. Few of the mothers worked outside of their own homes. Twenty-six per cent. of the homes were described as damp.

Group C.—Children on thriving Farming Communities.

Schools in thriving farming communities were selected. The occupation of the parents was mainly dairying. The homes of 217 children were visited, no special selection of type of home being made.

Financial status described as—adequate, 66 per cent.; doubtful, 24 per cent.; and poor, 10 per cent. There was a large proportion of New-Zealand-born parents. Thirty per cent. of the mothers work on the farm, and there is therefore a high degree of domestic inefficiency. Eighteen per cent. of the houses were described as dirty and 6 per cent. as damp. Meal-hours were late, 25 per cent. of the children having their hot dinner not before 7 p.m. Slight rachitic deformities were less common, and this group more than held its own with the two previous ones in regard to nutrition. Excess work after school-hours would appear to have more effect on school progress than in signs of impaired nutrition. The fact that the mothers of 30 per cent. work out-of-doors, mainly in milking-sheds, may also be a factor in retardation, as it certainly is in regard to personal and house cleanliness and efficiency. In this group, with 21 per cent. of retardates, 25 per cent. had less than ten hours' sleep; 19 per cent. had more than three hours' work on the farm. As small and big children both were included in this reckoning, it is evident that the older children in many cases do more than three hours' work.

Group D.—Children in Remote Farming-areas.

Children attending five schools in more or less isolated districts were included in this survey. Sixty-eight homes were visited. Housing was good on the whole, though some of the poorest houses were in this group.

Financial status is described as—adequate, 46 per cent.; doubtful, 34 per cent.; poor, 20 per cent. A large percentage of the mothers work out-of-doors. Ten per cent. of children in this group were found to be below average weight for height and age. Clothing was inadequate in some instances. Meal-hours are late. Seventeen per cent. of the houses have bathrooms. The note that was evident in many, though not all, homes, was depression. Though doubtless other factors enter to account for it, considerable stress must be laid on isolation.

Group E.—Children of Share Milkers.

During the last few years there has been in this district a considerable decrease in the number of share milkers on farms, the farmer finding it more economical to pay labour or do without. As a result, of twenty-two country schools only thirteen share milking families were found. These were represented by thirty-eight children.

Financial status was—adequate, 46 per cent.; doubtful, 36 per cent.; and poor, 18 per cent. Thirty per cent. of the houses were described as dirty and 15 per cent. as damp, the percentage showing domestic inefficiency being high, as was that of those showing lack of cheerfulness. Meals were late.

More than 18 per cent. of the children did more than three hours' work on the farm; 24 per cent. had less than ten hours' sleep. Ten per cent. of the children of share milkers never drank milk. Twenty-six per cent. of these children showed retarded school progress.

General Observations.

Housing.—Over 60 per cent. lived in houses of five rooms or more; about ten per cent. dwelt in tents, garages, or shacks; the remainder in houses of less than five rooms.

With reference to the housing in the coal-mining group, though rooms were small, ventilation and cleanliness were well carried out and sunshine penetrated the rooms. About 10 per cent. suffered from damp from flooding of the river.

Among timber-mill workers housing-conditions were worse. Though many lived in houses with six rooms or more, these were small and in some cases damp. The homes of 26 per cent. were dirty. In some cases too little sunlight could reach the rooms, in others the roof leaked, and in others flood-water penetrated the floors.

The houses of farmers in thriving communities do not call for remark, but a good deal could be said about housing in the share-milking group. Thirty per cent. of the houses were dirty and 15 per cent. had damp rooms. Ventilation was poor in 30 per cent. In many instances houses were in low-lying and damp situations, and mud was a conspicuous feature.

Nearly all were supplied by tank-water, and no doubt in dry seasons a scarcity would prevail.

Housing in the way-backs was good on the whole, though some of the very poorest houses we came across were in this group. For example, in one settlement three of the houses visited were rough shacks of slabs of four and five rooms. The rooms were all small, and roughly lined, news-sheets acted as wallpaper. Windows were small and few, and an air of stuffiness prevailed. All had big open fireplaces and plenty of firing. In two families the boys, four and three in number, slept two in a bunk in outside sheds. Blankets were in short supply, and sacks, &c., were used to supply the deficiency. In one the girls slept in a small dark closet partitioned off from the parents' room, without a window to supply light or air.

Clothing.—As a rule, this was sufficient in all groups. In a few instances in the backblocks the supply was inadequate. In all groups there were a few cases of overclothing.

Footwear.—In the coal-mining and timber-mill groups boots and stockings were worn by most of the children—90 per cent. A, and 60 per cent. B. In the farming groups it was the exception to wear boots and stockings, even among the well-to-do; these were worn only in the very cold weather.

In all groups, in wet weather, the children either came to school barefoot, or changed wet footwear on reaching the classroom, or stayed at home. The rule among teachers was that wet boots and stockings were removed and placed near a fire or stove in the classroom to dry. I am afraid that this applied only to thoroughly soaked footwear, and that the wearing of damp footwear during school-hours is not uncommon. The inadequate means of drying such wet garments in the schools is very marked, and is worthy of consideration as one of the possible causes of rheumatism and cardiac complaints, &c.

Nutrition.—Over 14 per cent. of all the children of all groups were under-weight for height and age. Ten per cent. divergence from average weight was allowed before the child was considered under-weight. Clinically 30 per cent. represents the proportion of subnormal nutrition. The farming groups showed definite superiority over other two as judged by weight for height and age standard. Numerous instances were met where this weight for height standard alone gave a false idea of nutrition.

The amount of work done by the mother out-of-doors is a powerful factor in influencing the standard of personal and home cleanliness and efficiency. It is to be noted, however, that only two cases of scabies and two of pediculosis were found in the total number examined. Though few acknowledge to sleeping with closed windows, from observation it appeared improbable that windows were opened frequently, especially on cold, foggy, or rainy nights. Less than one-third of the children slept in separate beds. Most sleep two in a bed. In several cases it was noted that sleeping-accommodation was cramped, ill-ventilated, and the supply of blankets inadequate. Most of the children slept in night-clothes, but a small proportion slept in their day-clothes.

Other Physical Defects.—There was an average degree of physical defect in the children. The work of the dental clinics was evidenced by many fillings and extractions.

Recreation.—On the whole, evidence is collected from parents and goes to show that the majority of children do not spend as much time at cinematographs as might be expected. In two town groups where picture-shows are an institution 20 per cent. and 10 per cent. attended once a week.

School Progress.—This was retarded in children of coal-miners, 12 per cent.; timber-mill workers, 14 per cent.; farmers in thriving areas, 21 per cent.; in remote farming-areas, 11·5 per cent.; share milkers, 26 per cent.

Three years in excess of the average for the class was the standard for retardation adopted. Various factors help to account for retarded school progress, such as work done before and after school-hours. Racial heredity, maternal overwork, migration from school to school, shortened school attendance from various causes, including sickness.

In the third group (thriving farming communities), with 21 per cent. retardates, 25 per cent. had less than ten hours' sleep; 19 per cent. had more than three hours' work. In the fifth group (share milkers), with 26 per cent. retardates, 24 per cent. had less than ten hours' sleep; 18 per cent. had more than three hours' work. As remarked above, the amount of work done outside school-hours would appear to have more effect on school progress than on nutrition.

Though children who do work before and after school-hours do not compare unfavourably in development with others, their nervous system would not appear to be in as good a state, for retardation in school-work is more pronounced, and a common remark of teachers is that such children show signs of fatigue in school—indeed, in some cases actually fall asleep.

A series of letters which appeared in the correspondence column of an Auckland newspaper sheds some light on the lives of some children on farms. Thus a mother on the farm, writing in reference to the Summer Time Bill, says, "Children on dairy farms often only get a quickly gulped cup of tea and some bread in their hands as they bolt off to school. More fortunately situated children have their home-work done before these have finished milking, and are evidently at the pictures before the farmer's children sit down to their late tea." Another correspondent wrote as follows: "If the boy was helping he had to rise before 5 o'clock and work till school-time. Milking at night was started at about 4 o'clock, and was not completed until 7 o'clock." This gives the average boy five or six hours' work on the farm, in addition to which he has to ride or walk to school any distance up to five miles. He does this on a breakfast which, according to the farmer's wife, may be a hastily gulped cup of tea and some bread. He has his main meal after 7 p.m., often much later.

Diet.—On the whole, the constituents of a sound diet were present in the daily rations of all the groups.

Butter: The daily consumption of butter in quantity was universal, except in some backblock families. New Zealand children as a rule consume great quantities of butter.

Meat: Less than 5 per cent. never partook of butchers' meat.

Bread: Brown or whole-meal bread entered into the daily diet of nearly 50 per cent.

Porridge: Over 45 per cent. had porridge daily. Prepared meal was used rather more frequently than pure oatmeal.

Green vegetables: It was in regard to the use of green vegetables and of milk that the most apparent deficiency in diet was evident. Only about 35 per cent. had green vegetables daily; in many cases this would mean only when in season. In group B (bush-mill workers), only 20 per cent. had them daily. From what has been said of the townships' situation and climate, &c., it will be easily seen that the only way to obtain a constant supply would be by purchase, which in most cases would be too expensive. In most districts, however, the cultivation of green vegetables could be greatly increased, to the benefit of the households. Twenty-one per cent. of all the groups had no vegetable-garden at all.

Fruit: Fresh or bottled was in common use in the first three groups: about 50 per cent. would have it daily. Children of the last two groups saw it less often, especially share milkers (40 per cent.).

Tinned food: Fruit, fish, &c., was much less used than one expected. The bush timber-mill group (46 per cent.) were the largest users of this as an article of routine diet. Ninety-five per cent. of coal-mining group never had used it, or only on a special occasion, as at Christmas.

Sweets or lollies: Ten per cent. never had them at all. Less than 5 per cent. acknowledged to having them more than once a week.

Beverages: After water, cocoa was the favourite daily drink, tea coming a good second, and coffee hardly visible except among bush workers. Twenty-one per cent. never drank tea; 17 per cent. drank tea oftener than once a day.

Milk: Fresh milk was obtainable as a rule. Condensed milk was used occasionally in coal-mining and timber-mill groups. The amount of milk consumed daily was roughly estimated thus: If a child drank milk as a beverage as well as having it with puddings and porridge, it was credited with 1 pint per day. Thirty-two per cent. had 1 pint daily; 48 per cent. had less than 1 pint; very few indeed had more than 1 pint; 10 per cent. of share-milkers group never took milk as a beverage. Milk also entered into the diet in milk-puddings. The first three groups had these practically every day; about 50 per cent. only of the last two groups had them less frequently.

Meal-hours in farming-areas: Many of the children rise with the rest of the family at an early hour, swallow a cup of tea and a scone or bread and butter, do their bit in the cow-shed or otherwise, and have a hurried breakfast at 8 to 8.30 a.m. The result of a scanty breakfast is an inroad on their lunch-packet in the middle of the morning. At 12.30 or so follows the rest of the lunch. They are hungry on reaching home after school, and get a snack of bread and tea before again helping in the yard. When all is finished outside, the main meal follows, and promptly after washing up the child goes to bed. This is the meal routine for many a country child. While these conditions hold it is a preaching of perfection to abolish the "play lunch" entirely, or to have much hope that three meals a day can become an established custom.

One has the greatest of sympathy with the farmer, and especially with the farmer's wife, in present conditions. As already pointed out, in many instances the wife takes her turn at outdoor work, and must be very hard pressed to maintain a high domestic standard.

School lunches: There was a marked improvement in the nature of the lunches brought to school by the children. Chunks of cake, and currant-scones, and jam-sandwiches were much less prominent. Instead many children brought bread-and-butter sandwiches in which were a variety of edibles, such as lettuce, tomato, banana, cheese, egg, meat, &c. Apples frequently formed part of the lunch. By far the greater part of all farming groups brought lunch to school.

Recommendations.

Much good could be done by systematic supervision of the school lunch. It should be part of the daily school programme that a period of twenty minutes in the middle of the day be devoted to lunch and rest. This supervised lunch has been so often stressed by our service that there is no need to enlarge on it, except to say that it should be made compulsory. By so doing, and by providing hot drinks in cold weather, the tendency to eat at other times would receive a check and good habits

generally be encouraged. Instruction of school-children in hygiene and dietetics should be continued and made more intensive. In this connection the care of vegetable-gardens at home by children should be fostered. In all groups except remote farming groups the percentage having no vegetable-garden varied from seventeen to thirty-seven.

Facilities for bathing and swimming should be encouraged. Only two schools out of twenty-five examined had these. In selecting sites for new schools in the country this should be kept in view, so that, if possible, a bathing-pond should be part of the school environment.

Proper provision for the drying of wet garments should be made in every school.

The increased facilities for obtaining medical and dental treatment in remote areas are manifested by an improvement in the physical condition of rural school-children. Better housing-conditions and diminished hours of work are indicated in some areas if the best result is to be obtained.

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