1930.

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. A. J. STALLWORTHY, MINISTER OF HEALTH.

CONTENTS.

REPORTS.

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

I HAVE the honour to lay before you the annual report of the Department for the year 1929–30.

PART I.—GENERAL SURVEY.

VITAL STATISTICS.

Death-rate.—The crude (actual) death-rate for the Dominion for the past year was 8·75 per 1,000 of the mean population. In 1928 the death-rate was 8·49. The infantile mortality was 34·10, which records a remarkable fall on the previous year's rate of 36·18.

Birth-rate.—The birth-rate per 1,000 of the mean population was 19·01 in comparison with 19·56 for 1928. The total number of births registered was 26,747, being 453 below the total for 1928. This is the lowest birth-rate recorded in the Dominion, a matter of grave concern. In this connection the following remarks made by Dr. G. H. Abbott in his presidential address before the Australasian Medical Congress last year in regard to women avoiding having families may well be quoted: "All medical men are faced with the fact that many married women avoid having a family and that many others unduly limit the number of their children, and we know that often much damage is done to married

women by the practices adopted. Their health may be quite ruined or may be so interfered with as to make life miserable for themselves or their husbands and provide work for the Divorce Courts. Then methods used to avoid conception in the early stages of married life may take away the possibility of having children when they are desired. If persons who advocate birth-control so earnestly would see that it is carried out in instances in which the community would gain, instead of encouraging the better-educated and desirable citizens to limit their families and instructing unmarried people to carry out undesirable practices, then I might have more sympathy with them. We must remember also that what might be excellent advice in overpopulated countries might be the worse possible advice for under-populated countries like ours. No one is more proud of or has more sympathy with our Australian women than I, and I understand well the difficulty of bringing up a family under modern conditions; but one can see a tendency in many of our young people to aim at enjoying all the pleasures of this life without accepting its responsibilities. However, I have not lost faith in our women, and I believe that if the older members of the fair sex, instead of organizing all sorts of events to assist institutions of doubtful benefit, formed a large society to encourage a more healthy state of mind in our younger women and to educate them and help them in their troubles when they marry and have children, they would do much good. Also it should be instilled in their minds that every Australian woman who bears a child is fighting for her country as well as any man who went to the Great War, and that it is much better for a married woman to hold a baby in her arms than a pet poodle, which may give her hydatids."

Dr. Riley, Professor of Obstetrics and Gynæcology of the Medical School, Dunedin, contributes in a recent issue of the *New Zealand Medical Journal* an able article on birth-control, in which he truly states: "No country can remain virile unless the population is at least stationary; if it is to be progressive, there must be increased population. If people marry they should take the responsibilities of marriage—love is something more than the mere gratification of passion. What is wanted is courage to face all the difficulties and sometimes even the hardships of married life—more of the old pioneering spirit which enabled the makers of this country to carve out a future almost with their bare hands . . . What is wanted in New Zealand is an adjustment of values. The petty social round, the theatres, concerts, kinema pictures, the encumbrance of our houses with useless and unnecessary adornments are nothing to the joy and interest of little children. Children are the best insurance against old age, their voices help to renew our youth."

Like Dr. Abbott, as regards Australia, I have not lost faith in New Zealand womanhood. To rely on other countries to so large an extent to keep up our population is deplorable. Our best arrival is the infant born in a New Zealand home to be brought up with a love of his country and of the British Empire. It is important that our manhood should realize this also, for I fear that many of them are not anxious to assume the responsibilities of parenthood. They should bear in mind Professor Allen's remarks in Melbourne in his presidential address before the Medical Congress, 1908, "The childless home lacks the deepest source of joy, and those who think that they can cheat the purpose of marriage without incurring the risk of personal injury, simply deceive themselves."

Tuberculosis.

The death-rate of 4·56 per 10,000 of mean population establishes a record for this disease. The rate for 1928 was 5·02. During the year the public generously subscribed to the Christmas Seal campaign, with the result that the amount of £2,500 will be available as a nucleus for the establishment of permanent health camps in the Dominion for treatment of children specially liable to tuberculosis. The co-operation of the Post and Telegraph Department by which special stamps were sold at the post-offices throughout the Dominion, which made this appeal possible, is greatly appreciated. I feel sure that any such future appeals will be well supported by the public.

Cancer.

The death-rate from this disease (10·43) is the highest on record. It is a moot point whether this increase is real or only apparent and due to the increasing proportion of older age groups in the population, and to improved facilities for diagnosis. The important fact is that cancer is all too prevalent, and this should act as a stimulus to the campaign inaugurated by the New Zealand branch of the British Empire Cancer Campaign Society. This society has made an excellent beginning, and shows promise of becoming a very real force. The appointment by the society of Dr. H. M. Begg of the staff of the Imperial Cancer Research Committee, London, for research work in New Zealand is in line with the policy of the society's committee. The liberal donations to this worthy organization by public-spirited citizens is very satisfactory.

Infectious Diseases.

Of the notifiable infectious diseases scarlet fever ran a fairly high incidence, but was of a mild nature, with a case mortality rate per 1,000 notifications of 5·57 in comparison with 8·98 for the previous year. A light year was experienced with regard to whooping-cough, but the diphtheria death-rate shows a rising tendency. However, the death-rate of 0·65 per 10,000 mean population for diphtheria shows a remarkable fall in comparison with the rates of early years.

Maternal Welfare.

A slight improvement in the death-rate from diseases and accidents of the puerperal state is recorded. Of such deaths 129 took place, being 5 less than for 1928. The rate per 1,000 live births was 4·82, which marks a slight fall on previous rate of 4·93. Dr. Jellett and Dr. Paget in their reports

deal very fully with medical issues arising out of their work in this sphere. The problem of maternal welfare received special prominence during the year, arising out of the appeal by Dr. Doris Gordon of the New Zealand Obstetrical Society for funds to endow a chair of obstetrics at the Medical School of the Otago University. This appeal was very successful, a sum of £31,700 being raised. I understand a Government subsidy will be payable on this amount.

Hospitals.

The report of Dr. Shore, Director, Division of Hospitals, will be read with interest. It is some seven years since the Department had a Director, Division of Hospitals, and Dr. Shore comes into this work with the enthusiasm generated by his new responsibilities. He will doubtless look upon our hospitals in a new light. Dr. Shore stresses the fact that, without sacrificing our high standard of efficiency, more economy in our hospital administration might very well be exercised. That is perfectly true, and especially just now when the Hon. the Prime Minister has fearlessly told the country the true state of affairs as regards our finances.

Appended to Dr. Shore's report is a list of the institutions of the Dominion established since 1914. By this it will be seen that though a number of maternity hospitals have been established in that period only eight hospitals proper have been opened during the last sixteen years.

In March last a conference of members of Hospital Boards and of the British Medical Association was convened by the Department. The resolutions of this important conference are duly set forth by Dr. Shore, and, if given effect to, as I hope will be the case, the medical service of our hospitals should be put on a more harmonious and substantial footing. It is the ardent desire of the Hospital Boards Association, the British Medical Association, and this Department that these happy ideals may soon be brought into being.

The amalgamation of the Wairau and Picton Hospital districts under one Board, known as the Marlborough Hospital Board, is a specially noteworthy achievement during the past year. The Minister is to be congratulated on bringing about this amalgamation, for which I had unsuccessfully strived for this last twenty years.

It is a pity that successive Governments have not given more encouragement to the St. Helens system. Where Hospital Boards can easily get the money for maternity hospitals the Department cannot. I need hardly say that I do not blame any particular Government for this unsatisfactory state of affairs. It is the system that is to blame, it being the practice of any Government to turn down application for institutions which under similar circumstances would be readily approved by Hospital Boards. I hope that this will not again affect our St. Helens Hospitals at Christchurch and Dunedin. The former is indeed, as I have stated, in a very unsatisfactory state, and it would be most discouraging not only to the Department, but to the Matron and nurses concerned, if the erection of a suitable St. Helens for Christchurch is again refused.

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

Special Investigations.

Included in the appendix is a report on the dysentery outbreak in the Auckland District; further results of investigations into the problems of still-births and neo-natal deaths; a survey of physical education in the Auckland schools; a study in comparative health of Maori and pakeha children; and a survey of the menstrual function of training-college students and high-school girls. A valuable contribution to our knowledge as to the incidence of goitre in school-children in relation to the amount of iodine in soil and water in certain districts of the North Island of New Zealand by Dr. Shore, of this Department, and Mr. A. L. Andrews, of the Dominion Laboratory, was published by this Department in conjunction with the Department of Scientific and Industrial Research.

School Medical Work.

The report of the Director of Schools, Dr. Ada Paterson, will be read with satisfaction by those specially interested in the health of our New Zealand school-children.

Dental Hygiene.

In the retirement of Mr. T. A. Hunter as Director of the Division of Dental Hygiene the Department loses an officer who has rendered outstanding service. It is ten years since the present scheme of dental treatment of school-children was inaugurated, and in spite of the magnitude of the task and the obvious difficulties presented the Director has, by his sound and tactful administration, achieved excellent results. The best wishes of the Department go with Mr. Hunter in his well-earned rest from official responsibility. In Mr. Saunders, who has been associated with this work for a number of years, the Department has an able successor to Mr. Hunter.

Nursing.

The Director's report outlines the work of the Nurses and Midwives Registration Board, and special reference is made to the post-graduate course for nurses. Miss Bicknell presents an interesting summary of a visit to the International Council of Nurses Conference at Montreal, at which conference she represented the nurses of New Zealand.

Maori Hygiene.

A feature in Dr. Ellison's report is the presentation of vital statistics in reference to the Maori race. It is interesting to note the fall in the death-rate of our Maori population. The birth-rate of 33·58 per 1,000 is in striking contrast to the rate of 19·02 for the European population. The evil of birth-control does not appear to have spread to the Native population.

Board of Health.

Quarterly meetings of the Board of Health were held during the year. Requisitions were served upon a number of local authorities requiring them in terms of section 22 of the Health Act to undertake the provision of certain sanitary works. Among other matters dealt with by the Board was the need for better facilities for the teaching of midwifery at the Medical School in Dunedin.

During the year Dr. W. Young was reappointed, his term of office having expired. Mr. J. S. Connett was appointed on the nomination of the New Zealand Counties Association in succession to the late Sir James Wilson, while Mr. W. J. Rogers, Mayor of Wanganui, took the place vacated by Mr. C. J. D. Norwood. The Board of Health continues to perform useful service, and the Government is indebted to the members of the Board for the services rendered by them

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 registrations, &c., are concerned.

——	1925.	1926.	1927.	1928.	1929.
Number on register on 1st January	1,204	1,211	1,283	1,320	1,357
Number added during year	78*	94†	54‡	45§	43‖
Number removed during year	71	22	17	8	18
Number on register at end of year	1,211	1,283	1,320	1,357	1,382

* Includes 59 with New Zealand qualifications. † Includes 69 with New Zealand qualifications. ‡ Includes 38 with New Zealand qualifications. § Includes 30 with New Zealand qualifications. ‖ Includes 29 with New Zealand qualifications.

Plumbers Registration Act, 1912.

Two meetings under the Plumbers Board constituted under this Act were held during the year. Examinations under the Act were held in May and November, a total of 526 candidates presenting themselves for examination; the result being that 149 passed in the theoretical portion and 129 in the practical test; 135 qualifying or completing in both portions of the examination were duly granted registration. The *Gazette* notice for 1929 contains the names of 1,389 plumbers.

Masseurs Registration Board.

Four meetings of the Masseurs Registration Board were held during the year. The present number on the masseurs roll is 481. The usual examinations were conducted.

The Board is at present considering the whole question of the training and examination of the massage students, with the intention of increasing the scope of the examination.

Opticians Registration Act.

This Act, providing for the training and registration of opticians, came into force on the 1st January, 1929. The first step to be taken was the appointment of a Registration Board as provided for in the Act. The Government was fortunate in securing as members of the Board the services of Dr. G. W. Harty and Messrs. H. S. Gilberd and T. G. Young. The inauguration of the registration system was widely advertised throughout the Dominion, and this resulted in a large number of applications for registration being received. The Board met frequently during the year, and up to the 31st March, 1930, 223 opticians had been granted registration. Three appeals against decisions of the Board are waiting to be heard and will be dealt with as soon as regulations have been issued providing for the setting-up of Appeal Boards.

Staff.

I regret to report the death of Mr. Hurley, for some twenty years Bacteriologist to the Department.

The best wishes of the Department are extended to Dr. Crawshaw, Medical Officer of Health, Dunedin, on his retirement after many years of loyal service.

Finally, to the Deputy Director-General, Dr. Watt, and to officers I wish to express my thanks for their very efficient and loyal service.

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, 1930.

SECTION 1.—VITAL STATISTICS.

POPULATION.

The mean population of the Dominion for 1929 (exclusive of Maoris) was estimated to be 1,406,942. This total represents an increase over the corresponding figure for the previous year of 16,258, or a percentage increase of population of 1·17.

BIRTHS.

The births of 26,747 living children were registered in the Dominion during 1929, as against 27,200 in 1928. The birth-rate for 1929 was thus 19·01 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, 1920–29.

Year.	Total Number of Births registered.	Birth-rate per 1,000 of Mean Population.
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
1928	27,200	19·56
1929	26,747	19·01

The birth-rate steadily declines. There were 26,747 births for a population of 1,406,942, and there were 12,314 deaths, the difference or natural increase being 14,433 persons, or 1·0 per cent. only of the total population. Back in 1870 the natural increase was 3·1 per cent.

DEATHS.

The total number of deaths (12,314) registered during the year 1929, as compared with 11,811 in 1928, shows an increase of 503.

Crude Death-rates.

Year.	Crude Death-rate per 1,000 Mean Population.	Year.	Crude Death-rate per 1,000 Mean Population.
1901	9·81	1925	8·29
1911	9·39	1926	8·74
1921	8·73	1927	8·45
1922	8·77	1928	8·49
1923	9·03	1929	8·75
1924	8·29		

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 1925–29.

Still-births (Number and Rate) in New Zealand, 1925–29.

Year.	Total Number of Still-births registered.	Rate of Still-births per 1,000 Live Births.
1925	861	30·6
1926	886	31·1
1927	878	31·5
1928	839	30·8
1929	870	32·5

There was an increase of thirty-one still-births compared with the previous year, and the still-birth rate has risen from 30·5 per 1,000 live births to 32·5 during the quinquennium. It is, however, of interest to note from the infant-mortality tables appearing later in this report that there was a reduction of thirty-three in the deaths of infants under one day old.

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

THE PRINCIPAL CAUSES OF DEATH.

The following table 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 1929, 12,314.

Causes.		Actual Deaths.
Heart-disease (all forms)		2,533
Cancer		1,467
Chest-diseases—		
Pneumonia	464	
Pneumonia secondary to influenza, whooping-cough, and measles	177	
Broncho-pneumonia	251	
Bronchitis	314	
	—	1,206
Violence		955
Tuberculosis (all forms)		642
Apoplexy or cerebral hæmorrhage		634
Kidney or Bright's disease		537
Senility		518
Disease of the arteries		428
Diabetes		201
Diseases and accidents of childbirth (*i.e.*, maternal mortality)		129
Hernia and intestinal obstruction		107
Appendicitis		100
Diarrhœa and enteritis		82
Epilepsy		46
Common Infectious Diseases.		
Influenza (all forms, including pneumonic)		297
Diphtheria		92
Scarlet fever		27
Typhoid fever		22
Whooping-cough		17
Measles		1
Infant Mortality.		
Infant deaths (under one year), all causes		912

The first six causes in the above list account for 7,437 deaths, or approximately two-thirds of the total. 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. It is only by the active co-operation of the public, the local authorities, the medical and nursing professions, and the Department of Health in definite disease-prevention in the home, school, and workplace environment of the people that great reduction in our death-rate will be made.

New Zealand has a low general death-rate—the lowest in the world—but its reduction has been far less rapid than that of the birth-rate.

Consideration of the above table indicates that there are prospects of considerable reduction in the number of deaths, provided the efforts of central and local governing authorities, including the Hospital Boards, the medical and nursing professions, and the general public, are united, and also that they are well directed.

Concentration upon further reduction of the already low infant-death rate, the still-birth rate, or the maternal deaths (129) will reduce deaths under these three headings, but the numbers are such that thereby no great reduction can be made in the general death-rate. Of the grand total of 12,314 deaths, 11,402 apply to persons over one year of age, and, of these, 11,273 were not associated with maternity.

Pregnancy and birth are events dangerous to both mother and child, and our intended efforts to reduce this danger cannot affect the general death-rate to any considerable degree.

It is obvious that we must widen our preventive effort to include persons of both sexes and all ages. 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.

A definite alliance rather than a "cordiale entente" with the army of general medical practitioners is advisable, and it is equally important that they should be definitely engaged in the prevention of disease. The ideal to strive for is that the local authorities and their Medical Officers of Health should be aiding the medical practitioners in disease-prevention by measures intended to improve the environment of the general public.

For several years past graduates from the Otago Medical School have received special training in preventive medicine.

It is both expensive and inadequate to send State medical officers and nurses from twenty to one hundred miles or more to introduce children from school or home to medical practitioners living in close proximity to those children.

National insurance for sickness and invalidity is one method already in operation in England, and throughout Europe and Asia, of partnership with the general medical practitioner for the purpose of disease-prevention, and I recommend advocacy of its adoption by New Zealand to your favourable consideration.

The Birth-rate.—Reference should be made to the steadily decreasing birth-rate.

(1) *Actual Reduction in the Number of Births in the past Three Years.*

Year.	Births.	Reductions.
1926	28,473	..
1927	27,881	592*
1928	27,200	681*
1929	26,747	453*

(2) *Actual Reduction in Infant Deaths for the same Period.*

Year.	Infant Deaths (under One Year).	Reduction.
1926	1,132	..
1927	1,080	52†
1928	984	96†
1929	912	72†

Quite a good way of increasing a population is the direct method. Early marriage induces large families. If by more and earlier marriages the birth-rate can be increased the infant-death rate will tend automatically to rise, but there will be a considerable net gain in population.

THE PRINCIPAL CAUSES OF DEATH ITEMIZED.

Heart-diseases (all forms)	2,533
Apoplexy or cerebral hæmorrhage	634
Diseases of the arteries	428
	3,595

These diseases of the heart and arteries account for 3,595, or nearly one-third, of the deaths. In the last half-century the death-rate from each of these three causes has increased very greatly—*e.g.*, that from heart-disease (all forms) has trebled, and that from apoplexy more than doubled. Quite a proportion of these deaths apply to persons under sixty years of age. Habit, environment, and infection are important causative factors. In the report for 1928 I discussed several causes of the various forms of heart-disease.

CANCER, 1,467.

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, 1920–29.

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.
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
1928	1,374	11,811	9·87	11·63
1929	1,467	12,314	10·43	11·91

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 actual 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.

* Despite an increased population. † Contributed to by reducing birth-rate.

CHEST-DISEASES, 1,206.

Pneumonia	464
Pneumonia secondary to influenza, whooping-cough, and measles ..	177
Broncho-pneumonia	251
Bronchitis	314
	1,206

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 measures 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.

The following table illustrates that a noteworthy feature during the prevalence of influenza is that the death-rate not only of pneumonic influenza, but also of acute primary pneumonia and pneumonia (all forms), rises, showing infection which should respond to preventive effort. It is believed, too, that epidemic pneumonia occasionally occurs unassociated with influenza.

Disease.	Number of Deaths.		
	1927.	1928.	1929.
Influenza	131	242	297
Influenzal pneumonia	43	100	120
Pneumonia	313	422	464
Broncho-pneumonia	207	230	251

Both during epidemic and normal periods living-habits and environment certainly have an influence upon the incidence and severity of chest-diseases.

VIOLENCE, 955.

Regarding the 955 deaths last year from violence, of which 725 were due to accident, 221 to suicide, and 9 to homicide, it is noteworthy that in the last eight years, whereas the death-rates from suicide and homicide have shown little variation, that from accident, especially motor-vehicles accident, has increased considerably.

In the last three years the number of deaths annually from motor-vehicle accidents have averaged 164.

TUBERCULOSIS (ALL FORMS), 642.

The following table indicates the course of this disease since 1872 :—

Tuberculosis (all Forms) in New Zealand, 1872–1929.

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	1901 ..	775	9·96
1873 ..	296	10·50	1902 ..	802	10·05
1874 ..	391	12·26	1903 ..	769	9·38
1875 ..	561	15·63	1904 ..	799	9·46
1876 ..	488	12·59	1905 ..	678	7·79
1877 ..	512	12·68	1906 ..	720	8·04
1878 ..	513	12·20	1907 ..	856	9·31
1879 ..	587	13·10	1908 ..	840	8·89
1880 ..	645	13·60	1909 ..	803	8·26
1881 ..	680	13·80	1910 ..	731	7·36
1882 ..	611	12·00	1911 ..	733	7·27
1883 ..	700	13·23	1912 ..	716	6·89
1884 ..	718	12·99	1913 ..	812	7·60
1885 ..	698	12·25	1914 ..	728	6·67
1886 ..	705	12·11	1915 ..	793	6·30
1887 ..	734	12·31	1916 ..	742	6·74
1888 ..	647	10·69	1917 ..	755	6·87
1889 ..	649	10·61	1918 ..	832	7·54
1890 ..	650	10·47	1919 ..	762	6·71
1891 ..	663	10·53	1920 ..	851	7·21
1892 ..	700	10·90	1921 ..	793	6·48
1893 ..	729	11·02	1922 ..	821	6·56
1894 ..	752	11·07	1923 ..	792	6·21
1895 ..	761	10·99	1924 ..	736	5·67
1896 ..	680	9·62	1925 ..	684	5·14
1897 ..	763	10·57	1926 ..	727	5·37
1898 ..	769	10·44	1927 ..	668	4·86
1899 ..	795	10·60	1928 ..	699	5·02
1900 ..	752	9·85	1929 ..	642	4·56

New Zealand has the lowest death-rate from tuberculosis in the world. In common with many other countries, including Great Britain, it has steadily reduced in the last half-century. This year's rate is remarkably low. Tuberculosis, however, still takes fifth place as a cause of death in New Zealand, and disables temporarily or permanently many more than it kills.

Of 642 deaths from tuberculosis last year, 524 were assigned to pulmonary tuberculosis, and 118 to other forms of this disease, comprising tuberculous meningitis and peritonitis, and tuberculosis of the bones, joints, glands, &c.

Pulmonary Tuberculosis.

The pulmonary cases are regarded by most authorities as conveyed from human sources. There were 1,374 notifications of fresh cases during the year, and although during the last few years the number has increased, while that of the deaths has reduced, there is reason to believe all are not yet notified. In the South Island particularly there is a growing tendency for special institutional treatment to be undertaken in the early course of the disease.

A distressing feature of this disease of adult—often early adult—life, and one which frequently assumes economic importance owing to the involvement of breadwinners in the process, is the protracted convalescence. Modern sanatorium practice is to retain cases in such an institution for long periods, owing to the frequency of relapses following short courses of treatment.

New Zealand has not yet embarked upon a colony to accommodate tuberculous adults with their families and enable them to earn a little under medical supervision at suitable occupations before they are fitted to engage independently in full-time occupation. If the Hospital Boards continue to develop sanatoria, some such provision will probably be found advisable.

Other Forms of Tuberculosis.

The 118 deaths last year from other forms of tuberculosis were made up as follows:—

Tuberculosis of meninges and central nervous system	46
Tuberculosis of intestines and peritoneum	14
Tuberculosis of vertebral column	11
Tuberculosis of bones	2
Tuberculosis of genito-urinary system	18
Tuberculosis of other organs	3
Disseminated tuberculosis	24
	118

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 New Zealand have shown the milk-supply to be remarkably free from bovine tubercle.

KIDNEY OR BRIGHT'S DISEASE, 537.

Since 1900, unlike heart-disease, apoplexy, and diseases of the arteries, the death-rates from which have greatly increased, that from kidney or Bright's disease has shown little variation.

DIABETES, 201.

There has been little variation in the death-rate from diabetes in recent years.

DISEASES AND ACCIDENTS OF CHILDBIRTH, 129.

MATERNAL MORTALITY.

The following table shows the number of deaths from puerperal causes, and the rate of such deaths per 1,000 births, for each of the five years, 1925–29:—

Deaths from all Puerperal Causes, 1925–29.

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.
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
1928	56	78	134	2·06	2·87	4·93
1929	49	80	129	1·83	2·99	4·82

In the report for 1928 I included a graph showing the periodic rises in maternal mortality, which have tended to recur every nine or ten years. The puerperal-septicæmia rate, although lower than last year's, is still an epidemic rate, and the rate from other puerperal causes has risen.

Puerperal Septicæmia, 49.

This disease usually accounts for approximately one-third of the maternal deaths, but during the epidemic of the last two years, now apparently waning, it has been responsible for nearly half the maternal deaths.

Local Distribution of Puerperal-septicæmia Deaths.

The following table gives the actual number of deaths from puerperal septicæmia in each hospital district during the four years 1926–29 inclusive :—

Hospital District.	Puerperal Septicæmia.				Hospital District.	Puerperal Septicæmia.			
	1926.	1927.	1928.	1929.		1926.	1927.	1928.	1929.
North Island.					*North Island*—contd.				
Mangonui	..	..	..	..	Wellington	4	4	6	7
Whangaroa	..	..	..	..	Wairarapa	1	1	1	3
Hokianga	..	1	..	..					
Bay of Islands	..	..	..	..		26	51	41	34
Kaipara	..	..	..	1	*South Island.*				
Whangarei	..	..	1	..	Wairau	..	..	1	..
Auckland	13	25	13	15	Picton	..	..	..	..
Waikato	5	3	4	3	Nelson	..	1	1	2
Taumarunui	..	..	..	..	Buller	..	..	..	3
Thames	1	..	..	..	Inangahua	..	..	..	..
Waihi	..	1	1	1	Grey	..	1	1	..
Coromandel	..	..	..	..	Westland	..	..	..	..
Tauranga	..	1	1	..	North Canterbury	7	6	6	5
Bay of Plenty	..	..	..	..	Ashburton	2	1	..	..
Opotiki	..	1	..	1	South Canterbury	..	1	2	..
Cook	..	1	2	..	Waitaki	..	..	..	..
Wairoa	..	..	..	..	Otago	1	5	..	4
Hawke's Bay	..	4	1	1	South Otago	..	..	..	..
Waipawa	..	2	..	..	Vincent	..	..	1	..
Dannevirke	1	..	..	..	Maniototo	..	..	..	..
Taranaki	1	2	4	1	Southland	2	4	3	1
Stratford	..	2	1	1	Wallace and Fiord	1	..	..	..
Hawera	..	1	2	..					
Patea	..	..	..	..		13	19	15	15
Wanganui	..	1	2	..					
Palmerston North	..	1	2	..	Total for New Zealand	39	70	56	49

It is noticeable that in the last three years most of the hospital districts have been affected.

Despite the endeavours of medical practitioners and nurses throughout the Dominion to prevent the occurrence of secondary cases of puerperal septicæmia, it is a definite fact that at approximately ten-year intervals an epidemic wave of puerperal septicæmia occurs, causing primary cases in most of the hospital districts and necessitating extreme caution to prevent further spread. Most infectious diseases display this periodicity. In 1929 the hospital districts of Wellington, Wairarapa, and Buller have suffered.

It is a loose habit, lacking justification, to ascribe the undue prevalence of puerperal fever in any given year to the coincident prevalence of other diseases, such as scarlet fever. Investigation of the deaths in New Zealand during the last half-century from scarlet fever, influenza, pneumonia, and the other common notifiable diseases shows that a high death-rate from these causes is not linked up with a high death-rate from puerperal septicæmia. The coincident prevalence in the last two years of scarlet fever and puerperal septicæmia is an unusual event.

Another theory sometimes advanced is that the undue prevalence of some other non-notifiable disease, such as streptococcic or staphylococcic infection, associated with a low degree of acquired immunity among women, causes the epidemic waves of puerperal septicæmia. This theory, though plausible, is unproved. The periodic epidemic wave of puerperal septicæmia may be a separate entity, as apparently is the case with diphtheria, influenza, infantile paralysis, scarlet fever, and other infectious diseases, which diseases also show periodic variations in incidence.

Other Causes of Maternal Deaths in 1929, 80.

	1928.	1929.
1. Puerperal albuminuria and convulsions	38	34
2. Puerperal hæmorrhage	15	10
3. Other accidents of labour	4	8
4. Accidents of pregnancy	11	12
5. Puerperal white-leg, embolus, and sudden death	9	14
6. Following childbirth (not otherwise defined)	1	2
	78	80

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.
Sweden	1920–24	1·15	1·36	2·51
Italy	1922–26	1·02	1·52	2·54
Netherlands	1923–27	0·59	2·03	2·62
Norway	1921–25	0·74	1·91	2·65
Uruguay	1922–26	1·67	1·01	2·68
Denmark	1922–26	0·95	1·81	2·76
Hungary	1922–26	1·43	1·57	3·00
Japan	1921–25	1·21	2·07	3·28
England and Wales	1923–27	1·48	2·52	4·00
Germany	1921–25	2·80	1·47	4·27
Spain	1922–26	2·25	2·09	4·34
Switzerland	1922–26	2·07	2·57	4·64
New Zealand	**1925–29**	**1·85**	**2·86**	**4·71**
Irish Free State	1923–27	1·67	3·05	4·72
Northern Ireland	1921–25	1·55	3·21	4·76
Union of South Africa	1923–27	2·03	2·96	4·99
Australia	1923–27	1·84	3·65	5·49
Belgium	1921–25	2·68	2·85	5·53
Canada	1923–27	1·80	3·98	5·78
Scotland	1923–27	1·78	4·47	6·25
Chile	1922–26	1·69	4·98	6·67
United States	1920–24	2·54	4·36	6·90
Trinidad	1923–25	3·58	5·68	9·26
British Guiana	1922–25	2·68	11·55	14·23
Ceylon	1923–27	7·40	11·75	19·15

It will be seen from this that New Zealand's puerperal death-rate, unlike her general death-rate, is 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 puerperal death-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. In previous reports, by graphs and tables, I have demonstrated that in New Zealand these other puerperal causes are less fatal to women residing in the fourteen principal urban areas than to women in the rural areas and the smaller towns. It is probable that not only in New Zealand, but also in the several other countries to which I have referred, this higher death-rate is in some measure attributable to the scattered distribution of population rendering ante-natal care and the procurement of skilled midwifery service more difficult of attainment.

Another factor which should be taken into account is that we have reason to believe that the collection of statistics is more accurately performed in New Zealand than in many European countries. The notification of puerperal septicæmia in New Zealand is so thorough as to have occasioned comment overseas, and the questionnaire of medical practitioners by the New Zealand Government Statistician regarding female deaths is searching.

SECTION 2.—THE COMMON INFECTIOUS DISEASES.

Influenza (all Forms), 297.

Number of Deaths from Influenza in New Zealand, 1924–29.

Year.	Number.	Year.	Number.
1924	90	1927	131
1925	86	1928	242
1926	288	1929	297

Pneumonic Influenza.

Pneumonic influenza, the deaths from which are included in "Influenza (all forms)," is a form of influenza which is compulsorily notifiable.

Pneumonic Influenza in New Zealand, 1924–29.

Year.	Notifications.		Deaths.	
	Number.	Rate per 10,000 of Mean Population.	Number.	Rate per 10,000 of Mean Population.
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
1928	354	2·55	100	0·72
1929	311	2·21	120	0·85

Diphtheria, 92.

Diphtheria in New Zealand, 1925–29.

Year.	Notifications.		Deaths.*	
	Number.	Rate per 10,000 of Mean Population.	Number.	Rate per 10,000 of Mean Population.
1925	1,518	11·42	52	0·40
1926	1,975	14·59	66	0·49
1927	1,446	10·52	58	0·42
1928	1,600	11·51	72	0·52
1929	1,687	11·99	92	0·65

* Figures include deaths from croup.

Scarlet Fever, 27.

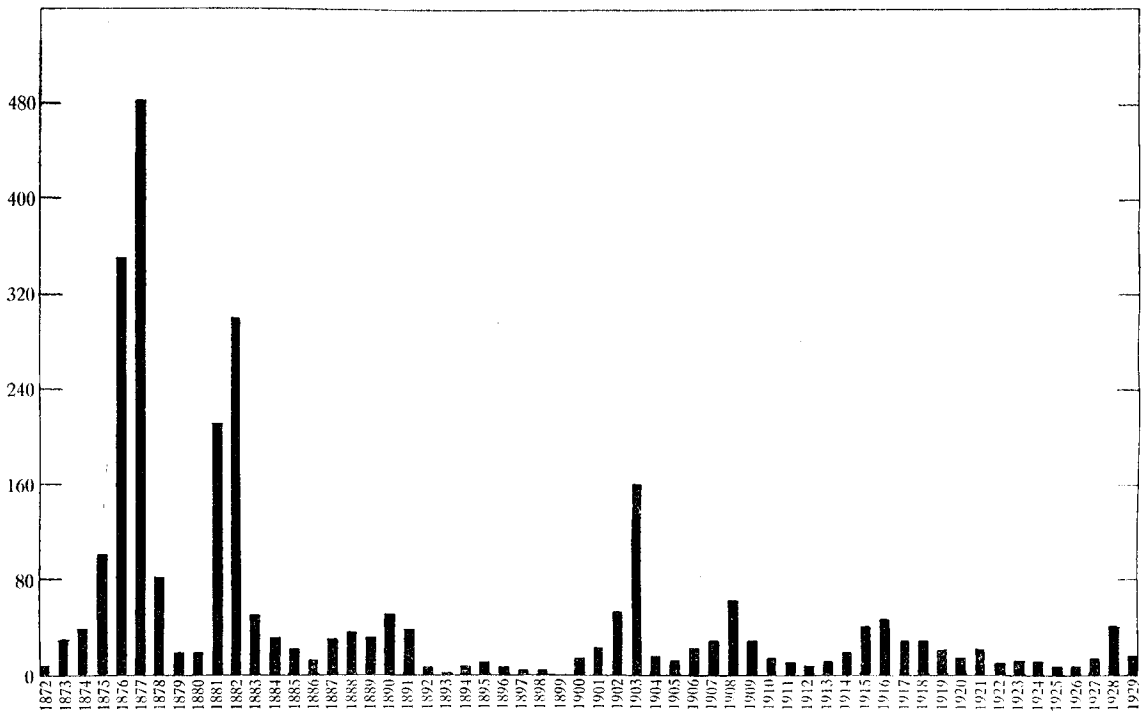
The course of scarlet fever in New Zealand is briefly shown in the table below.

Scarlet Fever in New Zealand, 1925–29.

Year.	Notifications.		Deaths.	
	Number.	Rate per 10,000 of Mean Population.	Number.	Rate per 10,000 of Mean Population.
1925	1,025	7·71	7	0·05
1926	1,583	11·70	8	0·06
1927	2,185	15·89	16	0·12
1928	6,127	44·06	55	0·40
1929	4,848	34·46	27	0·19

It will be seen from the above table that this disease has been definitely epidemic for the last three years, but that the epidemic is waning. Although the incidence was widespread and taxed the isolation accommodation of Hospital Boards severely, as well as keeping staffs busy in effecting isolation measures, fortunately the disease was very mild in character.

In order to more definitely gauge the import of the present epidemic I present hereunder a columnar graph giving the death-rate from this disease per 1,000,000 of population since the year 1872.



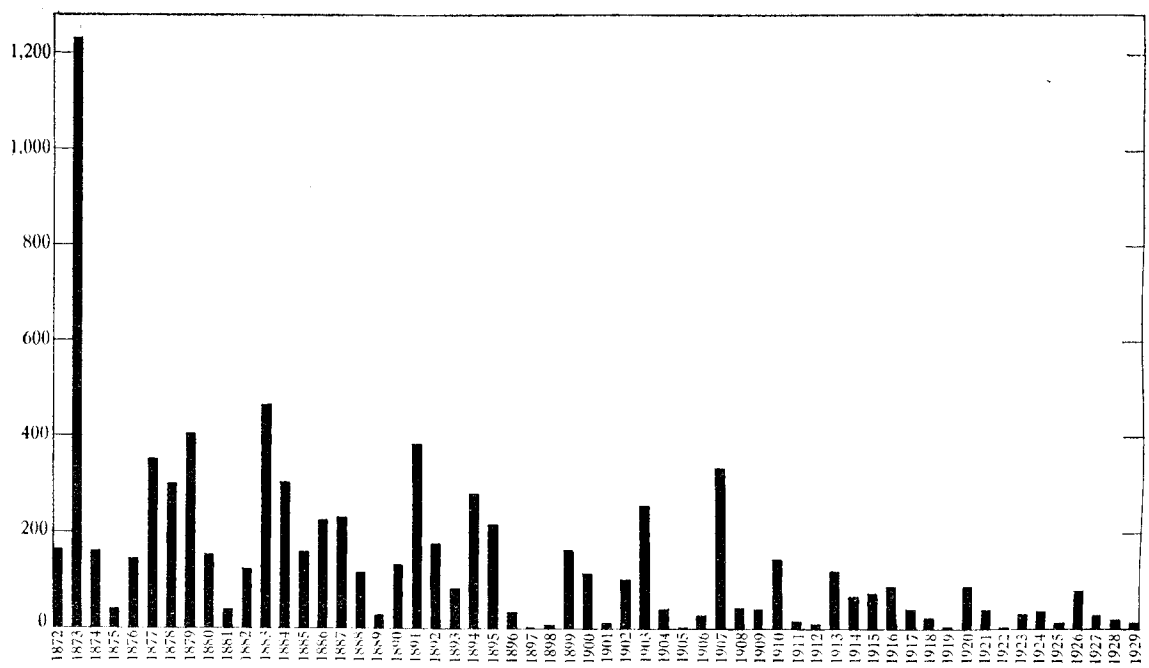
SCARLET-FEVER DEATH-RATE PER 1,000,000 OF POPULATION FROM 1872 TO 1929.

(NOTE.—No figures available for year 1899.)

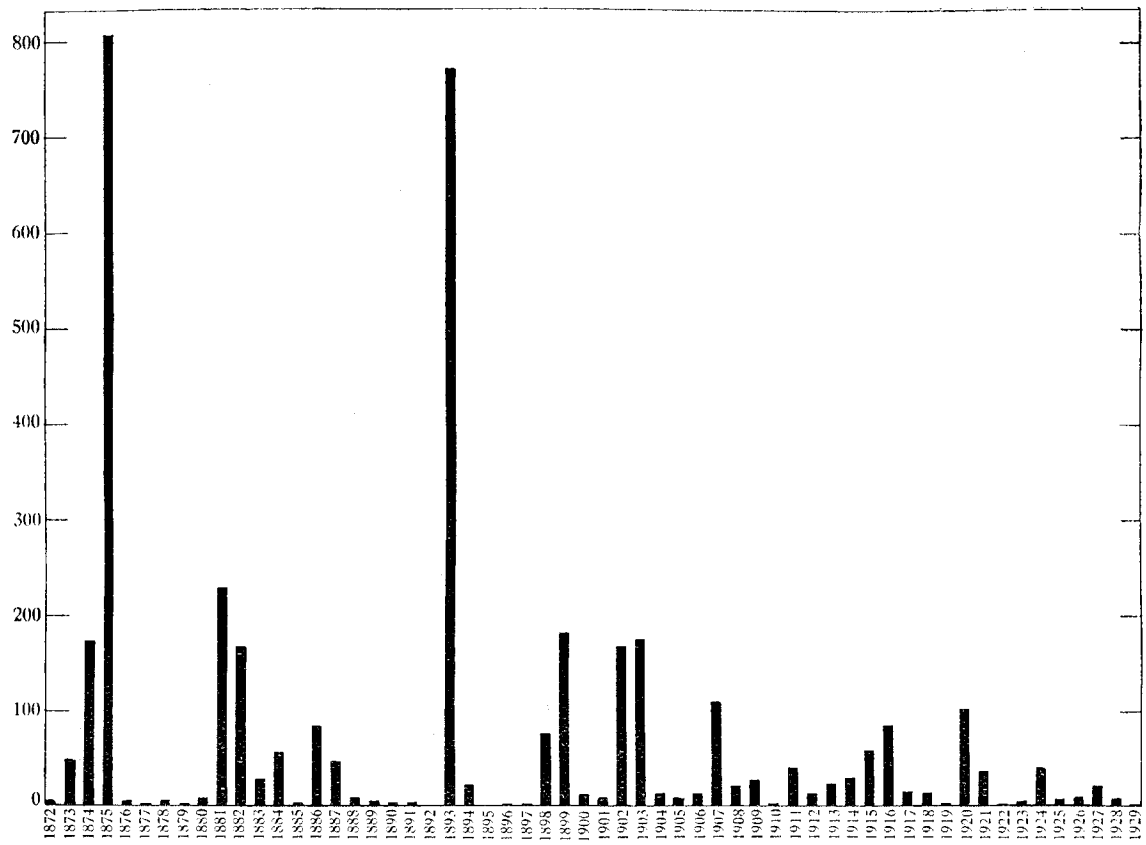
This graph shows from the annual deaths recorded that epidemics of scarlet fever tend to run a course of three or more years, and that this epidemic has been less fatal than previous visitations.

WHOOPING-COUGH, 17; MEASLES, 1.

The year 1929 was a light one for both whooping-cough and measles. Epidemics of these two diseases tend to recur every few years, but the death-rate over the last fifty years has reduced greatly. The death-rate from both these diseases during 1929 was extremely low. I present two columnar graphs showing the death-rates annually since 1872. They illustrate two interesting points: (1) That New Zealand is about due for a measles and whooping-cough epidemic (it usually occurs in the spring); (2) that the resultant death-rates from such epidemics have reduced very greatly.



WHOOPING-COUGH—DEATH-RATE PER 1,000,000 OF POPULATION FROM 1872 TO 1929.



MEASLES—DEATH-RATE PER 1,000,000 OF POPULATION FROM 1872 TO 1929.

TYPHOID OR ENTERIC FEVER, 22.

The position as regards this disease for the period 1925–29 is shown in the table below :—

Enteric Fever in New Zealand, 1925–29.

Year.	Notifications.		Deaths.	
	Number.	Rate per 10,000 of Mean Population.	Number.	Rate per 10,000 of Mean Population.
1925	278	2·09	16	0·12
1926	302	2·23	19	0·14
1927	270	1·96	11	0·08
1928	290	2·09	16	0·12
1929	278	1·98	22	0·16

It is also of interest to state that the death-rate from typhoid fever (average) for the last five years was approximately forty times less than a similar average taken fifty years ago.

SECTION 3.

Infant Mortality, 912.

The infant-mortality rate for 1929 was 34·10 per 1,000 births. This constitutes a low record for New Zealand and also for the world.

Infant Mortality in New Zealand, 1900–29 (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	1915 ..	29·2	20·8	50·0
1901 ..	29·8	41·6	71·4	1916 ..	27·0	23·7	50·7
1902 ..	32·2	50·7	82·9	1917 ..	27·9	20·3	48·2
1903 ..	31·7	49·4	81·1	1918 ..	26·7	21·7	48·4
1904 ..	29·4	41·6	71·0	1919 ..	28·4	16·9	45·3
1905 ..	30·1	37·4	67·5	1920 ..	30·8	19·7	50·5
1906 ..	29·6	32·5	62·1	1921 ..	30·7	17·1	47·8
1907 ..	30·4	58·4	88·8	1922 ..	27·2	14·7	41·9
1908 ..	31·2	36·7	67·9	1923 ..	29·1	14·7	43·8
1909 ..	29·9	31·7	61·6	1924 ..	24·0	16·3	40·3
1910 ..	30·2	37·5	67·7	1925 ..	26·4	13·5	39·9
1911 ..	28·5	27·8	56·3	1926 ..	25·46	14·3	39·76
1912 ..	30·1	21·1	51·2	1927 ..	25·83	12·91	38·74
1913 ..	29·7	29·5	59·2	1928 ..	25·41	10·77	36·18
1914 ..	28·9	28·5	51·4	1929 ..	23·26	10.84	34·10

It will be seen from the above table that the greatest decline in the death-rate in 1929 applies to infants under one month of age, and that some reduction is being made in these very early deaths. Examination of the table hereunder further shows that the reduction has been mainly for infants under one week old, and particularly under one day. On the other hand, as I have shown elsewhere, the number of still-born children has increased.

Analysis of Deaths of Infants under One Month of Age, 1929.

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	..	..	..	1	..	1
Syphilis	..	..	1	..	..	1
Meningitis	..	..	..	..	..	..
Convulsions	1	4	3	..	..	8
Broncho-pneumonia	..	2	..	4	1	7
Pneumonia	..	1	1	1	1	4
Diarrhœa and enteritis	..	..	..	2	4	6
Congenital malformations	20	46	10	7	7	90
Congenital debility	10	27	1	7	3	48
Injury at birth	28	45	4	3	..	80
Premature birth	115	102	19	10	15	261
Other diseases	18	51	4	3	2	78
Accidental mechanical suffocation ..	..	1	..	..	..	1
Other causes	5	16	6	3	7	37
Totals, 1929	197	295	49	41	40	622
Totals, 1928	230	325	80	30	27	692

Thus 492 of a total of 622 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 well over half of the infant deaths (in the first twelve months of life) occurred in this first week—*i.e.*, 492 in a total of 912.

TABLE A.—NOTIFIABLE DISEASES IN NEW ZEALAND, 1929, 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.	Chronic Lead Poisoning.	Dysentery.	Actinomycosis.	Leprosy.	Beriberi.	Totals.
January	381	128	16	94	..	3	14	69	25	16	13	3	..	3	3	3	3	5	..	5	..	..	..	784
February	402	121	41	106	..	10	18	56	15	9	12	2	..	2	1	5	1	2	..	27	..	1	..	831
March	486	115	30	95	..	14	14	78	30	9	13	3	2	7	..	2	1	5	1	53	..	..	..	958
April	644	174	24	110	2	9	12	52	22	16	14	7	4	3	1	3	4	1	..	196	..	..	..	1,298
May	605	191	18	120	6	6	28	83	28	18	10	7	4	3	2	1	1	..	..	49	2	..	..	1,182
June	500	164	27	97	3	6	30	95	32	8	3	10	...	2	2	6	1	..	1	7	1	..	..	995
July	447	175	20	114	3	1	60	214	53	16	10	8	1	4	1	2	1	1	..	3	1	..	..	1,135
August	380	163	12	131	5	3	38	247	37	21	12	10	2	5	4	2	5	..	2	6	..	..	..	1,085
September	296	105	12	130	1	2	25	204	34	14	6	5	1	3	..	5	3	..	..	5	..	..	..	851
October	233	141	32	151	2	..	42	238	36	14	6	6	1	4	..	..	1	..	..	2	..	..	1	910
November	263	95	26	114	3	1	26	112	10	17	7	14	4	5	1	2	1	..	1	8	..	..	..	710
December	211	115	20	112	3	..	4	69	19	15	11	5	4	2	..	2	2	..	..	2	..	..	..	596
Totals	4,848	1,687	278	1,374	28	55	311	1,517	341	173	117	80	23	43	15	33	24	14	5	363	4	1	1	11,335

Table B.—Notifications of Cases of Notifiable Diseases for Year ended 31st December, 1929.

Name of Disease.	North Auckland.	Central Auckland.	South Auckland.	Thames-Tauranga.	Taranaki.	East Cape.	Wanganui-Horowhenua.	Wairarapa-Hawke's Bay.	Central Wellington.	Nelson-Marlborough.	Canterbury.	West Coast.	Otago.	Southland.	Totals.
Scarlet fever	130	570	251	121	278	343	578	332	339	84	1,179	39	435	169	4,848
Diphtheria	67	315	80	30	116	96	100	100	395	29	159	151	12	37	1,687
Enteric fever	12	20	120	10	3	34	2	23	17	6	23	4	4	..	278
Tuberculosis	103	194	141	30	39	45	65	72	150	24	259	21	175	56	1,374
Cerebro-spinal meningitis	2	3	2	..	1	..	..	3	5	..	4	1	6	1	28
Poliomyelitis	4	4	11	3	3	10	6	5	7	..	..	1	..	1	55
Influenza	17	60	28	12	32	5	15	15	16	9	74	5	11	12	311
Pneumonia	66	186	94	54	172	76	145	168	259	7	177	2	86	25	1,517
Erysipelas	15	74	12	14	6	26	21	30	34	3	54	2	34	16	341
Puerperal fever—															
Ordinary	8	24	8	4	7	2	12	16	25	3	39	11	9	5	173
Following abortion or miscarriage	8	67	1	4	1	..	..	2	6	1	25	1	1	..	117
Eclampsia	6	3	7	8	3	2	5	9	12	1	16	1	4	3	80
Tetanus	..	6	2	3	..	2	3	1	1	..	1	..	4	..	23
Hydatids	..	..	2	..	..	1	3	10	2	..	16	..	8	1	43
Trachoma	3	2	6	..	..	2	..	..	2	..	..	..	..	..	15
Ophthalmia neonatorum	1	10	2	..	1	2	1	1	3	..	5	..	5	2	33
Lethargic encephalitis	2	1	..	..	2	3	1	2	4	..	6	..	2	1	24
Food poisoning	..	1	3	..	..	2	..	..	..	..	8	..	..	..	14
Chronic lead poisoning	..	..	..	..	..	..	..	..	5	..	..	..	..	..	5
Dysentery	9	163	164	8	..	8	..	10	1	..	..	..	..	..	363
Actinomycosis	..	..	..	..	..	..	..	..	..	..	2	..	1	1	4
Leprosy	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1
Beriberi	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1
Totals, 1929	453	1,703	934	301	664	659	957	800	1,284	167	2,047	239	797	330	11,335

TABLE C.—NOTIFIABLE DISEASES IN NEW ZEALAND, 1929, 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.		Not stated.	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.	M.	F.
Scarlet fever	24	16	539	512	718	1,007	301	502	125	236	70	205	38	136	41	103	32	76	27	46	18	33	4	16	3	7	1	8	..	1	..	2	..	1	..	..	..	1,941	2,907
Diphtheria	5	7	260	213	322	348	81	111	26	55	33	66	18	35	12	26	10	15	9	9	3	8	1	2	..	7	..	..	1	1	1	1	..	..	1	..	..	783	904
Enteric fever	..	..	12	8	28	19	27	14	18	13	26	17	13	9	8	6	13	6	6	6	4	3	9	2	3	2	2	1	1	..	2	..	..	..	..	..	..	172	106
Tuberculosis	1	..	6	6	17	14	26	23	69	90	95	158	99	120	99	105	57	58	55	39	56	31	44	17	22	16	18	9	3	4	8	3	3	..	3	..	..	681	693
Cerebro-spinal meningitis	1	3	4	2	4	2	1	2	1	..	2	1	..	1	1	..	..	1	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	16	12
Poliomyelitis	1	..	14	11	8	2	6	5	2	1	2	..	1	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	36	19
Puerperal fever—																																							
Ordinary	..	..	..	..	..	..	..	..	..	18	..	46	..	53	..	25	..	22	..	8	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	173
Following abortion or miscarriage	..	..	..	..	..	..	..	..	..	5	..	20	..	39	..	26	..	18	..	8	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	117
Eclampsia	..	..	..	..	..	..	..	..	..	15	..	20	..	29	..	7	..	6	..	2	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	80
Erysipelas	2	4	5	7	6	3	2	5	7	12	8	9	6	13	9	21	14	22	18	15	14	25	24	17	17	8	7	10	6	10	3	3	4	1	3	1	..	155	186
Ophthalmia neonatorum	17	16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	17	16
Influenza	1	3	12	11	13	9	12	8	13	9	9	14	14	15	13	11	12	11	18	18	10	13	11	12	5	3	6	4	1	4	5	4	3	1	2	1	..	160	151
Pneumonia	33	27	130	107	146	111	60	47	61	25	57	37	51	29	64	30	74	40	70	34	49	14	51	22	38	15	20	12	14	6	8	14	8	6	2	5	..	936	581
Lethargic encephalitis ..	..	1	2	4	1	1	1	..	1	..	1	..	1	2	..	2	..	1	1	1	..	1	1	1	..	..	..	..	1	..	..	..	..	..	..	..	..	10	14
Trachoma	..	..	1	2	3	1	1	..	..	..	..	..	2	..	1	1	1	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	11	4
Hydatids	..	..	..	..	1	..	5	..	2	2	1	..	2	2	2	3	5	..	3	1	2	4	..	1	1	2	2	2	..	..	..	..	..	..	..	..	..	..	26	17
Tetanus	2	1	4	..	6	..	5	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	2	..	1	..	1	..	..	..	..	..	..	..	..	..	..	21	2
Dysentery	7	4	54	49	49	41	11	14	6	14	12	4	5	6	5	10	6	5	7	1	5	7	6	2	3	2	1	10	2	1	4	4	3	1	1	1	..	187	176
Actinomycosis ..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	1
Food poisoning	..	..	..	..	..	2	1	..	..	..	2	1	..	..	..	1	1	1	1	1	..	1	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	5	9
Chronic lead poisoning ..	..	..	..	..	..	..	..	..	..	..	1	..	2	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	5	..
Leprosy	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..
Beriberi	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..
Totals ..	94	82	1,043	932	1,322	1,560	541	731	332	495	320	598	252	489	255	377	226	280	218	190	162	143	154	92	94	63	60	56	29	28	21	31	21	10	12	8	1	5,167	6,168

TABLE D.—VENEREAL DISEASE CLINICS.—CASES TREATED DURING THE YEAR ENDED 31ST DECEMBER, 1929.

——	Auckland.		Wellington.		Christchurch.		Dunedin.		Totals.	
Number of persons dealt with at or in connection with the out-patient clinic for the first time and found to be suffering from—	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Syphilis	85	27	76	35	21	10	41	13	223	85
Soft sore	11	..	2	1	4	..	2	..	19	1
Gonorrhœa	677	126	423	64	298	96	145	26	1,543	312
No venereal disease	94	33	318	148	28	15	29	10	469	206
Total attendance of all persons at the out-patient clinics who were suffering from—										
Syphilis	1,235	396	2,766	628	2,346	562	1,612	537	7,959	2,123
Soft sore	207	..	..	..	46	..	2	..	255	..
Gonorrhœa	18,681	1,067	21,776	1,644	8,614	2,807	4,124	400	53,195	5,918
No venereal disease	..	..	527	235	98	25	34	11	659	271
Aggregate number of in-patient days of treatment given to persons suffering from—										
Syphilis	433	163	820	..	..	..	..	..	1,253	163
Gonorrhœa	1,531	390	6,579	..	..	..	..	..	8,110	390

SECTION 4.—NUMBER OF VESSELS INSPECTED DURING THE YEAR ENDED 31ST DECEMBER, 1929.

Port.	Number of Vessels inspected.	Prohibited Immigrants.	Infectious-disease Cases.	V.D. Cases.	Mental-defective Cases.
Combined Auckland Health District—					
Auckland	342	138	2	..	..
Taranaki Health District—					
New Plymouth	13	..	..	..	..
East Cape Health District—					
Gisborne	2	..	..	..	..
Combined Wellington Health District—					
Wellington	144	4	5	19	1
Wanganui	4	..	..	..	..
Napier	3	..	..	..	..
Picton	2	..	..	..	..
Combined Canterbury Health District—					
Lyttelton	30	..	1	..	..
Timaru	3	..	..	..	..
Westport	12	..	..	..	..
Greymouth	11	..	..	..	..
Combined Otago Health District—					
Port Chalmers	30	..	..	..	..
Bluff	42	..	..	..	..
Totals	638	142	8	19	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, 1929.

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 ..	161	53	161	49	5	5	4	3	2	2
Central Auckland ..	999	334	992	159	78	56	72	18	5	2
South Auckland ..	202	49	202	49	6	5	3	5	2	1
Thames-Tauranga ..	30	10	30	6	3	..	2	..	1	..
Taranaki	77	28	59	28	2	1	..	1	2	..
East Cape	77	18	77	18	5	..	2	..	3	..
Wanganui-Horowhenua	118	126	107	83	4	12	..	4	4	8
Wairarapa - Hawke's Bay	273	118	265	109	5	2	..	..	5	2
Central Wellington ..	2,136	78	2,057	73	25	3	9	2	16	1
Nelson-Marlborough ..	183	89	170	85	2	2	..	..	2	2
Canterbury ..	1,203	90	1,142	80	43	11	29	9	14	2
West Coast ..	78	10	63	10	4	2	2	..	2	2
Otago	491	258	239	209	46	82	40	77	6	4
Southland	171	120	108	93	24	39	24	37	..	..
Totals	6,199	1,381	5,672	1,051	252	220	187	156	64	26

TABLE 2.—SHOWING INSPECTION OF PREMISES ENGAGED IN SELLING OR MANUFACTURING FOODSTUFFS DURING THE YEAR ENDED 31ST DECEMBER, 1929.

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	2,883	5	386
Central Auckland	1,319	87	256
South Auckland	3,074	7	280
Thames-Tauranga	548	..	151
Taranaki	776	55	86
East Cape	904	19	203
Wanganui-Horowhenua	247	53	55
Wairarapa-Hawke's Bay	392	3	18
Central Wellington	182	28	12
Nelson-Marlborough	671	5	24
Canterbury	563	2	2
West Coast	518	9	4
Otago	1,520	27	138
Southland	1,017	12	37
Totals	14,614	312	1,688

TABLE 3.—LEGAL PROCEEDINGS FOR YEAR 1929.

	Number of Prosecutions.	Amount. £ s. d.
Milk below standard	56	280 19 0½
Milk, added water	25	143 9 2
Ice-cream below standard	14	55 10 6
Butter below standard	2	6 8 0
Spirits not true to label	7	186 8 7
Spirits below standard	3	59 18 0
Cream below standard	2	7 16 10
Preservative in milk	1	5 18 6
Preservative in cream	1	4 13 0
Baking-powder below standard	1	11 0 8
Selling cream from unlabelled container	2	8 19 6
Food Premises (Reg. H. 125)	6	16 11 0
Plumbing and Drainage Regulations	1	5 10 0
Private Hospitals Regulations	1	3 11 0
Plumbers Registration Act	2	2 12 0
Section 11, Poisons Act	1	3 13 0
	125	£802 18 9½

PARTICULARS OF WORK CARRIED OUT AT THE GOVERNMENT VACCINE-STATION, WELLINGTON, DURING THE YEAR ENDED 31ST MARCH, 1930.

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

Calves inoculated, 8; calves rejected, nil; amount of lymph prepared, sufficient for 22,000 tubes; vaccine issued in tubes, 7,200; vaccine lymph in stock, equivalent to 18,000 tubes.

It will be noted that the number of calves inoculated is considerably less than we were in the custom of doing before the Frigidaire was available. There has not been a great demand for vaccine lymph, and the only unusual supply that was asked for was when the case of smallpox was discovered on the "Aorangi."

From time to time one receives complaints of the loss of potency in the vaccine lymph, but I think where lymph is stored in anything but ideal conditions the potency is very quickly lost. The lymph when it leaves the laboratory is active for the human and active for the rabbit in a dilution of 1 in 1,000. This is the standard demanded by the new therapeutic regulations at Home. We have always found that lymph used immediately after supply is active, and that only through inadequate storage does it become inactive.

Fortunately we have had no reports of any cases of encephalitis following vaccination. In view of the small number of vaccinations carried out in New Zealand, I doubt whether this nervous complaint will ever become a problem in this country.

SECTION 6.—ADMINISTRATION.

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

The policy of most 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.

During the year a number of special reports have been compiled for the information of the Local Government Loans Board, dealing with loan proposals for sanitary works.

There are now three Medical Officers of Health stationed at Auckland, three at Wellington, two at Christchurch, two at Dunedin, and both at New Plymouth and Gisborne one Medical Officer of Health combines the duties of Medical Officer of Health and School Medical Officer.

Unfortunately, owing to illness, Dr. Crawshaw has been compelled to relinquish his duties at Dunedin. Dr. T. R. Ritchie has replaced Dr. J. H. Crawshaw there. Dr. F. S. Maclean, of Dunedin, replaces Dr. Ritchie in the Wellington District, and to complete establishment Dr. D. Cook has been appointed, *vice* Dr. Maclean, at Dunedin.

The annual refresher course for the instruction of Health and Sanitary Inspectors was held this year in Christchurch during February, and comprised a number of informative subjects.

Food and Drugs.—The usual amount of routine sampling has been carried out, and the results indicate that, in general, no serious manipulation or adulteration of foodstuffs is prevalent. Importers are becoming more alive to the necessity of making inquiries before importing new lines, thereby avoiding difficulties in meeting regulation standards and labelling requirements.

The City Councils of Wellington, Christchurch, and Dunedin each have their own officers specially appointed under the Sale of Food and Drugs Act for the purpose of regular milk-sampling in collaboration with the respective Medical Officers of Health.

The weighing of foodstuffs, including bread, is being continued by the Department of Labour in conjunction with its regular activities under the Weights and Measures Act. It has been decided recently to annul the special arrangement entered into in 1924 with the master bakers, which allowed slight concessions in weight for special loaves, and to revert to the requirements of the Sale of Food and Drugs Act, 1908, which demand full 2 lb. and 4 lb. weights for all loaves exceeding 1 lb.

Amendments are to be gazetted during the coming year governing the standards and labelling requirements for household soap, disinfectants, baking-powder, and cheese, which are expected to simplify the control of the sale of these articles.

Thanks are again due to the Comptroller of Customs and the Dominion Analyst and their officers for valuable assistance and advice. The officers of this Department are particularly indebted to Dr. J. S. Maclaurin, D.Sc., F.C.S., who retired from the position of Dominion Analyst, for his most helpful co-operation for many years past. Dr. Maclaurin's expert advice in the drafting of our food and drugs laws proved of great value.

Dangerous Drugs.—In the administration of the regulations under the Dangerous Drugs Act, 1927, scrutiny has been kept of the importations and distribution of the habit-forming drugs concerned. Indications are that there is no noticeable development of drug-addiction in the Dominion.

I desire to accord 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, 1930.

Staff.

The permanent staff consists of a Director, twelve School Medical Officers, and thirty-one school nurses. In addition, Dr. Mecredy acts in the dual capacity of Medical Officer of Health and School Medical Officer for Taranaki, Dr. Turbott acting similarly for the separate health unit created with its centre at Gisborne, Poverty Bay. Dr. Helen Dougall acted as Junior School Medical Officer (temporary capacity) until the 31st December. Dr. Phyllis Moir was appointed as Junior School Medical Officer (temporary capacity) on the 1st June, 1929, for a period of one year. There were no alterations in the personnel of the permanent staff during the year. Dr. Collier, School Medical Officer, Hawke's Bay, was transferred back to Southland, Dr. Catherine Anderson going from Southland to Hawke's Bay.

There have been several resignations from and appointments to the school nursing staff during the year. An additional appointment was made in Auckland, Miss Milroy joining the staff, and undertaking the double duty of nurse attached to the Sunshine School as well as follow up work with regard to tuberculosis and other infectious diseases.

Figures relating to Work accomplished in 1929.

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

Schools inspected—		
Of roll under 100	1,280	
Of roll 100 to 500	397	
Of roll over 500	164	
		1,841
Children examined—		
Complete examinations	73,668	
Partial examinations	40,729	
		114,397
Number of notifications sent to parents		52,265
Number of addresses to school-children		1,024
Number of parents interviewed		12,360
Number of lectures or addresses to parents		40

The figures for the work of the school nurses are as follows :—

Number of days assisted Medical Officer in schools	1,933½
Number of children examined for medical schedule (H. 529)	97,133
Number of days engaged wholly in clerical work	1,354½
Number of children re-examined after Medical Officer's inspection	41,677
Number of visits to homes in—	
Large towns	10,099
Small country towns	2,908
Scattered districts	2,322
	15,329
Number of children taken personally to hospital	429
Number of children taken personally to dental clinic or dental hospital	805

SUMMARY OF 67,389 COMPLETE EXAMINATIONS.

Number of children examined	67,389
Percentage found to have defects	79·51
Percentage with defects other than dental	54·23
Percentage of children showing evidence of—	
Subnormal nutrition	7·06
Pediculosis	1·75
Uncleanliness	1·5
Skin—	
Impetigo	1·93
Scabies	1·6
Ringworm	0·2
Other skin-diseases	0·8
Non-vaccination	66·01
Heart—	
Organic disease	0·69
Functional disturbance	0·96
Respiratory disease	0·73
Total deformities of trunk and chest	15·81
Mouth—	
Deformity of jaw or palate, including irregularity	5·04
Dental caries	51·73
Extractions of permanent teeth	6·81
Fillings	31·46
Perfect sets of teeth	4·11

Percentage of children, &c.—*continued.*	
Nose and throat—	
Nasal obstruction	3·62
Enlarged tonsils	18·01
Enlarged glands	12·19
Goitre—	
All degrees	13·97
Incipient	11·33
Small	2·38
Medium	0·23
Large	0·03
Eye—	
External eye-disease	1·62
Total defective vision	3·32
Corrected	1·49
Uncorrected	1·83
Ear—	
Otorrhœa	0·33
Defective hearing	0·4
Defective speech	0·73
Mental—	
Feeble-mindedness	0·31
Epilepsy	0·03
Other nervous defects	0·26
Tuberculosis—	
Total	0·05
Pulmonary	0·03
Other tissues	0·02

It is satisfactory to note an increase in the amount of work actually accomplished. Not only have more children been examined and a greater number of parents interviewed than in previous years, but the scope of the work has been widened, attention having been given to special aspects concerning which more information is given below.

The percentage of defects noted differs very little from that in previous years, the general tendency, however, being to show a slight decrease.

Further evidence with reference to the improved physical condition of New Zealand pre-school and school children is to be found in the last issue of the Official Year-book as follows :—

"The pronounced fall in New Zealand's infant-mortality rate during the last two decades has not been accompanied by an increase in the death-rate of children between the ages of one and ten years. There has, on the contrary, been a substantial fall, as is shown by the following figures covering the last thirty-five years, the numbers and rates given refer to annual averages for the quinquennia mentioned :—

Quinquennium.	1 and under 5.		5 and under 10.	
	Number of Deaths.	Rate.*	Number of Deaths.	Rate.*
1894–1898	440	68	185	22
1899–1903	504	76	194	23
1904–1908	444	37	172	19
1909–1913	447	49	193	18
1914–1918	547	53	266	22
1919–1923	465	44	245	19
1924–1928	403	38	203	15

* Per 10,000 children at ages shown.

SCHOOL NURSES.

The returns indicate also a definite increase in the amount and scope of the work accomplished by the school nurses.

The work of the school nurses is of vital importance to the success of the School Medical Service. The number of home visits paid by them during the last year equals 15,529, a slight increase on the year previously. This ensures greater parental co-operation, better treatment returns, and wider health education.

School nurses have also given assistance in demonstrating health exhibits displayed at various shows throughout the North Island during the year. These include Wanganui, Palmerston North, Hamilton, Wellington, Masterton; and form a practical method of health education.

In Taranaki the system of co-operation with the Red Cross Society continues to be successful. Dr. Mecredy states:—

"The year was notable by its being the first completed in co-operation with the Red Cross Society's nurses. As a result of the success of this scheme, it was possible to recommend its continuance for another year on the same terms.

"The two Red Cross nurses were able to do very valuable work in visiting country schools, by removing children for treatment to hospitals, re-examining children with defects, the organization of Junior Red Cross Circles, by lecturing on various aspects of hygiene, the supervision of infectious skin-diseases, and advising mothers as to simple treatments required by their children. This very extensive field was only covered with the help of the cars which the society supplies to its officers.

"Practically every school in the two districts allotted to the Red Cross nurses was revisited by them at least once in addition to their visit in company with the School Medical Officer. As a result of the work, there is undoubtedly a great interest in matters of hygiene and public health growing up in the country districts concerned. Lectures to parents in several districts on first aid and home nursing drew large and well-attended classes of mothers. There is no doubt that this is a most valuable achievement, and the close contact established between these Red Cross nurses and the parents concerned enlisted the co-operation of the latter in getting their children treated where necessary. I have to thank both Sisters Ingles and Corkill for their enthusiastic acceptance of this experiment, and for their co-operation in carrying it out successfully."

In Taranaki Miss Wise, Nurse Inspector, also exercises supervision over a group of schools, and has done excellent work in her talks to the children, re-examinations, and in the investigations of outbreaks of skin-disease, &c., where a personal visit by the School Medical Officer was not possible.

Native Schools.

The number of Native schools examined increases annually. In the East Cape district especially, where Dr. Turbott has acted as Medical Officer of Health and School Medical Officer for the past two years, this work has been greatly extended, twenty-eight Native schools being examined in the last year. In this area the district nurses act as school nurses, preparing the school beforehand and following up after the medical inspection. In addition, these nurses make monthly independent visits to Native schools, inspecting for and treating verminous conditions, common skin-diseases, &c. The home conditions of the pupils nullify much effort on their behalf. The scheme of utilizing the services of district nurses has proved especially satisfactory in that more intensive work has been possible in this scattered health district. This result is readily realized from the following: Number of notified defects followed up, 96·1 per cent.; number treated (Native schools), 74 per cent.

It is with regard to preventive tuberculosis work that special difficulty is met. Maori tuberculosis is to a great extent not under medical supervision, and hence is not notified. The community life at the pa, with its attendant evils of overcrowding and poor ventilation of living-quarters, makes impracticable any attempt at segregation of sufferers from tuberculosis. Dr. Turbott has continued his interesting study, "Maori and Pakeha" (see last year's report); further details of which will be found in the appendix of this report.

The Pre-school Child.

The School Medical Service now undertakes the medical examination of children attending the free kindergartens throughout the Dominion. This means that a considerable body of pre-school children is given consideration. The percentage of defects found does not differ greatly from that of children entering the primary schools, the balance being somewhat in favour of the kindergarten children.

In St. Andrew's Kindergarten, Christchurch, a departure was made from the usual procedure by instituting sun-bathing for the children. This has proved to be a very popular feature of the daily programme, its inauguration being primarily due to Miss Cora Wilding, a Christchurch resident, who had observed sunshine treatment under Rollier, Leysin, and Sir Henry Gauvain, England, while Dr. Phillipps acts in the capacity of supervisor.

In the Wanganui district Dr. Elizabeth Gunn has continued the system of examining pre-school children when opportunity offers. During the year five such clinics were held, the response on the part of parents being very good. The findings resulting from the examination of pre-school children afford strong evidence as to the necessity of this age group also being under regular medical supervision.

Tuberculosis.

The percentage of children found suffering from tuberculosis in routine examination equals 0·08. The percentage of children found suffering from subnormal nutrition equals 7·06, which group, it must be recognized, includes a number affected by latent tuberculosis. In establishing preventive measures special consideration has to be given to children who are known to have been exposed to infection as by the presence in their own homes of a tuberculosis patient. School Medical Officers are notified of contact cases by the Medical Officer of Health for the district. During the past year approximately 1,200 contacts (children) have been kept under supervision. In the main centres these children are seen regularly by the school nurse, who keeps a record of the height, weight, and age-ratio, and refers cases making unsatisfactory progress to the School Medical Officer; the School

Medical Officer, in turn, sending them on to the tuberculosis specialist at the hospital clinic when expert examination is indicated. The homes are visited by the school nurse in order to ascertain if environmental conditions are satisfactory, and the parents are as far as possible interviewed by the School Medical Officer. In Wellington where Nurse Bulkely has been detailed to undertake this work, tuberculosis contacts have been seen by her and weighed monthly. In order to permit of the inclusion in the scheme of a larger number of children it is proposed in future, however, to adhere to the three-monthly weighings. Supervision is necessarily less complete for children in remote areas though for these cases an effort is made (with varying success) to have a periodic height and weight record forwarded by the teacher. The benefit of all this care is not directly apparent, as in very few cases has active tuberculosis been found on expert examination. There is no doubt, however, but that the measures taken have ensured in general greater attention at home to the requirements of good nurture. More effort has been given to the removal of remedial defect. All districts record such special measures for the benefit of children contacts as residence in convalescent homes or health camps or attendance at open-air schools, &c. Dr. Bakewell in her report for Wellington states: "This group would appear to contain a much larger percentage of the poorer classes who have a struggle to maintain the minimum standard of decent living which obviously handicaps progress. The nurse finds herself more frequently called upon to deal with the resulting problems of lack of clothing, unsuitable food, lack of finance to pay for treatment; all of which require more time and more visiting, besides which her personal escort to hospital clinic or convalescent home is more often required."

Nurse Hodges, School Nurse, Waikato, states: "In nearly all cases parents have been agreeable and apparently pleased to have their children under observation. Conditions vary. On visiting some homes it is obvious that the visits are not really necessary so long as the children's progress is satisfactory. Everything possible is being done and the children frequently being watched by their family doctor. Other homes need constant supervision. While most parents try to do their best regarding diet, the idea of ventilation and particularly sufficient hours of sleep seem foreign to them. Overcrowding in bedrooms even when quite unnecessary seems common. Some parents who are tuberculosis patients, possibly discharged from the sanatorium, conscientiously safeguard their families, while others, although they actually sleep out of doors, spend their days in small unventilated rooms with the families. I certainly think some homes require frequent visits."

In various parts of the Dominion there is evidence of an increased public sense of responsibility towards delicate children. In the Wellington District Mr. Byron Brown has donated a splendid site of four acres and a half at Otaki Beach to provide for a permanent convalescent home and periodical health camps. The Bryant Home at Raglan and the Hamilton Health Camp Association (Auckland District) make provision for undernourished children. In Auckland the Community Sunshine Association, among its other activities, has inaugurated the Community Sunshine School, the object of which is "to attempt to improve the health of the children, especially those of school age who are undernourished or who suffer from frequent illness which interferes with their education and with their development into healthy men and women." An open-air school building has been erected on the Nelson Street property of the organization. The children are selected by the Honorary Medical Director (Dr. Ludbrook), recommendations for admission being made by School Medical Officers, private medical practitioners, and hospital and charitable aid authorities. The Health Department's representative (Dr. Henderson, School Medical Officer) works in association with the Honorary Medical Director, being responsible with him for the supervision of the work of the school nurse and the general work of the school. The Health Department has granted the services of a school nurse, who is on duty the greater part of the school-day, and also visits the homes of the children concerned. Supervised rest and feeding, sun-bathing, and a much modified school curriculum are among the features at the school, where at present approximately thirty children are in attendance.

The association also arranged for a health camp at Waiheke Island during the summer for a group of underweight children. The Health Department assisted in camp arrangements, providing nursing supervision, and also granting a subsidy towards expenses.

Wanganui Health Camp.

It is with great regret that we record the death last year of Mr. B. Lethbridge, of Turakina, whose generosity made possible the inauguration of the annual health camps run so successfully since 1919 under Dr. Elizabeth Gunn, School Medical Officer, Wanganui. Mr. Lethbridge not only set aside a portion of his estate for camp purposes and erected thereon semi-permanent buildings which greatly simplified its management, but gave liberal donations of mutton, farm-produce, &c., in aid of it. The kind interest and practical generosity of both Mr. and Mrs. Lethbridge will have given to many Wanganui children not only added health, but life-long memories of happy days at Turakina.

This year the Awapuni Racing Club gave the use of the racecourse buildings and grounds at Palmerston North, and Dr. Gunn ran a successful camp there in February for 128 children, Wanganui district. The duration of the camp was four weeks three days.

Physical Education.

The area to be covered by both School Medical Officers and the physical instructors of the Education Department, together with the widening scope of the School Medical Service, makes co-operation between these officers increasingly difficult. In one or two districts—*e.g.*, Wellington—remedial classes have been arranged, children for which are selected by the School Medical Officer, in consultation with the Physical Instructress, owing to the existence of postural deformities. There is always a difficulty in getting a teacher assigned to a special group of this kind, but results justify the effort.

During the year an investigation was carried out by Dr. Mary Champtaloup, School Medical Officer, upon approximately one thousand children attending Auckland schools. Its object was to form an estimate of physical condition, postural deformities, and the effect of remedial treatment. The first section of the report is to be found in the appendix. This deals with observations on (1) the incidence of postural deformities; (2) nutrition and posture; (3) angle of pelvic inclination and lordosis; and (4) respiratory excursion.

The schools selected were four large city schools, a school with a roll number of one hundred in a small community outside Auckland, and a junior high school in Auckland itself. The children concerned are therefore largely Auckland city children. The latter half of the report (which is not appended) deals with the effect of various types of drill in correcting faulty posture.

In Taranaki Dr. Mecredy reports as follows:—

"*Exercise and Physical Training.*—Swimming formed part of the physical training in forty-two of the country schools and eight of the town schools. In the latter the presence of public baths facilitated this teaching. Of course, proficiency of the pupils depended on the skill of the teacher in this art, and therefore varied very considerably. In general it may be said that swimming was enjoyed everywhere a river could be dammed to form a pool in reasonable proximity to the school.

"Folk-dancing continues to form a large proportion of the physical training in forty-one country schools, and apparently to a lesser extent in six of the town schools. In the country schools it is the rule for both boys and girls to form joint classes for this valuable form of exercise. In the town and larger schools, the boys are only infrequently taught, the pastime apparently being considered one for girls only. I regard this distinction as unfortunate and unwarranted in view of the benefits which have been found to obtain from boys and girls dancing together in the country schools. Lepperton and Okau list eurythmics in their programme of physical training. Problems of physical training are frequently discussed with Miss Blackie, Physical Instructress at Taranaki, who has always extended the maximum of co-operation to our officers."

Goitre.

Statistics from the routine examinations gave the incidence of goitre as follows: All degrees, 13·9; incipient, 11·33; small, 2·38; medium, 0·23; large, 0·03.

The system of recommending the use of iodized salt for all cases found on medical inspection has been followed. All degrees of goitre but the incipient are further referred for medical advice. Dr. McLaglan in Canterbury, comparing recent findings with those of 1920, draws the following conclusions: "(1) the total number of *normal* thyroids has in Christchurch, Timaru, and Ashburton increased (13 per cent. to 25 per cent.); on the West Coast it is practically stationary; (2) the improvement manifested in the Canterbury figures is due to an all-round improvement, but is chiefly manifest in the small, medium, and large goitres—that is, in the more serious types—whereas on the West Coast the figures throughout are curiously the same as in 1920, leaving its preponderance largely to the more serious types of goitre." It is too early to draw definite conclusions from these findings, but it appears probable that the intensive propaganda carried out in Canterbury for the past ten years, resulting not only in earlier remedial but in general preventive measures, such as a wide use of iodized salt, is now beginning to show benefit. The efforts of Dr. McLaglan in this respect merit special recognition.

Medical Examination of Teachers.

In view of inquiries received on the subject, it may be stated here that the ultimate selection of successful candidates to the teaching profession is the business of the local Education Board, but the Education Board is guided in its choice by the recommendations of the Senior Inspector of Schools, and its selection is limited to those candidates found physically fit by School Medical Officers. An unsuccessful candidate is not always an ineligible one. All that can be said is that when the applications are considered, the Board, on the advice of the Senior Inspector and Medical Officer, selects those applicants best qualified in all respects. A strict examination is made, and, apart from mere absence of any special defect, candidates should show positive evidence of good physique, physical appearance, and personality.

A questionnaire was again this year submitted to all applicants for entrance into the teaching profession in order to obtain information regarding the physical and mental demand made by school life. It is again apparent that in many cases excessive study is carried on out of school hours. A return given for 258 applicants from various parts of New Zealand shows that seventy-one of their number spent three hours and over daily outside school in study. With regard to the physical condition of those appointed, approximately 28 per cent. are classified as excellent, 55 per cent. as good, and 24 per cent. as fair. Several School Medical Officers remark that they have found an improvement in the general health and physique of applicants this year. It is to be noted, however, that 14 per cent. suffer from defective eyesight.

Reasons for Rejection.—In a return with regard to twenty-three candidates for entrance into the teaching profession rejected as physically unfit the reasons given are as follows: Poor physique and personality, defective eyesight, general debility, deafness, neglected and septic teeth, goitre, history of pleurisy, poor physique with nervous temperament.

As in previous years, an opportunity was given to secondary-school pupils wishing to take up teaching to come up for medical examination a year previous to the termination of their school career. This privilege is freely utilized in some educational districts, but in others the Principals of secondary schools do not appear to recognize the arrangement as a standing one, and require a notification of it annually. It is disappointing moreover to find candidates coming up for the second examination without having secured treatment for defects pointed out to them at the preliminary examination. This should, and often does, prejudice the applicant's chance of success.

An effort is made to keep training-college students under medical supervision, those showing disability being referred to the School Medical Officer for examination. In Auckland Dr. Wilkie arranges to see all women students at the beginning and end of each college term.

In the main centres School Medical Officers give a course of lectures to training-college students on child-welfare and school hygiene. It is to be regretted that the crowded college curriculum makes an extension of this work impracticable.

School Buildings.

There has been a great improvement from the hygienic standpoint in the school buildings erected during recent years, allowing as they do ample cross ventilation and good lighting.

In order that more exact information might be obtained with regard to school buildings and sanitation a special report form was drawn up for the use of School Medical Officers. The usual procedure in reporting defects in school buildings and sanitation to the proper authority has been carried out, but fuller information on the subject of school environment has been made available, and forwarded to the Senior Inspector of Schools for the district.

The annual reports of School Medical Officers contain a mass of detailed information regarding school buildings and upkeep which it is not practicable to summarize for the purposes of this report. It is intended, however, to send the information to the Director of Education for distribution to the local Education Boards. From a perusal of the reports from various districts, however, certain conclusions may be drawn.

There is no doubt but that the standard of cleanliness in the primary schools has improved in recent years. There is also no doubt but that it still falls, except in the minority of schools, far below a standard which would be considered satisfactory in the average home. The personality and influence of the teacher are evidenced to a great extent by the school environment. Where, as occurs in a certain number of country schools and in Native schools, the children (under supervision of the teacher) are responsible for the care of the school a higher standard of cleanliness was noted. A (fortunately decreasing) number of teachers appear to have little sense of responsibility in the matter, and allow lumber and dust to accumulate without taking any action. One cannot speak too highly of the efforts of others to secure school surroundings that are not only clean and orderly but attractive. School-cleaners relinquish with difficulty old-fashioned methods. Dry sweeping is extremely common. A few schools use a vacuum cleaner.

School-grounds in general show improvement, but in many places progress is slow, and no effort is made to attain anything beyond the minimum essential for order and cleanliness. Playing-areas, as might be expected, are better in large city schools. School-gardens, generally speaking, receive better attention in recent years, and in an increasing number of instances add greatly to the beauty of the school environment.

A common defect is faulty drainage of the grounds. Outbuildings are often a long distance away at the end of a grassy stretch, necessitating wet feet for the pupils. The standard of cleanliness of outbuildings is often low. Where no water carriage exists common defects are blockage of the pipes from the boys' urinal, resulting in a nuisance; and inadequate protection against flies, as by the provision of automatically-closing lids or by the use of kerosene.

Drinking Supply: There is an increasing number of bubble fountains in use, but especially in country schools the menace of the common mug still persists. Tanks are inadequately or infrequently cleaned out. In some areas there is no record of the school-tank ever being cleaned; in others this is done only every two or three years.

Washing facilities: Common defects are, an inadequate number of basins, and the indifferent way in which these are kept. No towel is provided or the common towel is used, thus assisting to spread common skin-diseases as impetigo and scabies. A few schools use paper towels and in others the teachers are to be congratulated on successfully instituting the individual towel.

Cloak-room accommodation is often inadequate. The pegs are too few and too close together, thus assisting in the spread of verminous conditions and common skin-diseases by means of clothing. The want of proper facilities for drying damp clothes is to be noted in most schools.

Overcrowding, defective ventilation, and defective lighting are to be found in a minority of schools. Provision is being made gradually to obviate these conditions. Many schools with adequate means of ventilation are stuffy because of the failure of the school-teacher to use facilities at his disposal.

Open-air Schools.

The open-air schools movement continues to progress. New types of open-air schools have been erected in Taranaki and in Auckland. With reference to the open-air school at Fendalton, Dr. Phillipps reports: "In examining the children I noted the following points—(1) the throats of the children had a more healthy appearance than the average—that is to say, there was little infection, and the tonsils were small; (2) children tend to wear fewer clothes than in the ordinary schools; (3) the posture was better than the average; (4) the children appeared brighter and more alert. On leaving the class-room they always ran in getting from point to point of the playground—an expression of abundant vitality."

Kew Open-air School.—Dr. Stevenson gives returns for the pupils attending the open-air school for children of subnormal nutrition at Kew, Dunedin. The statistics given indicate that the school is doing good work, definite improvement in the nutrition of the pupils being noted.

Diphtheria Immunization.

Immunization against diphtheria was carried out in the Manurewa School, Auckland, toxin-antitoxin (Commonwealth Serum Laboratories) being used. Dr. Wilson inoculated 146 children without incident. Several children of pre-school age were among those receiving the immunization.

Special Investigations.

Special investigations of considerable interest were carried out by various School Medical Officers. It is unfortunately impossible to print these in full. Notes on the first three are to be found in the appendix. Information with regard to others is given briefly below:—

(1) "Maori and Pakeha" continued from last year's report, Dr. Turbott, Medical Officer of Health and School Medical Officer, Gisborne. See appendix.

(2) "Observations on the Physical Condition and Postural Deformities, New Zealand School-children, 1929," Dr. Mary Champtaloup, School Medical Officer, Auckland.

(3) A Survey of the Menstrual Function of Training-college Students and Senior High-school Girls," Dr. Grace Stevenson, School Medical Officer, Otago.

(4) Dr. McLaglan forwards result of an investigation—"Notes on Nutrition in an Orphanage." This investigation included observations with regard to diet, work done, amount of sleep, rigidity of discipline. The height-weight-age ratio was used as a basis for estimating nutrition. It was noted that care had been taken for the removal of remedial defects; the teeth were particularly good: tonsils and adenoids had been removed when necessary at the hospital. In 1928, 89 per cent. of the children were below normal weight for height, 5·4 per cent. normal, and 5·4 per cent. above weight for height. As a result of recommendations made to the Superintendent, the diet was made more liberal, more milk and eggs being used, and more rest and less work prescribed. The result of this is that in 1929 there was definite improvement, 65 per cent. being below weight for height, 7·7 per cent. practically normal, and 27·5 per cent. being above weight for height. The children were also reported to look better, and seemed much livelier. Heredity and the previous personal history have also to be considered as factors influencing the nutrition of the children.

(5) Mentally retarded children was the subject of an investigation by Dr. Wilkie—home conditions, physical defects, family and personal history being investigated. The methods used at the special classes in the Auckland District for the training of the pupils are outlined. Special care is taken to ensure the removal of remedial defect.

(6) Dr. Mary Wilson conducted an inquiry into the result of removal of tonsils and adenoids. Two groups were observed: (1) Children who had been operated upon for enlarged tonsils and adenoids; (2) children who were suffering from enlarged tonsils and adenoids. Home conditions, diet, &c., were thoroughly investigated. Each group contained about 100 children. A distinct improvement was to be noted in the group where children had had their tonsils and adenoids removed. "This improvement is more marked the longer the time has elapsed since removal. For instance, those who have had their tonsils and adenoids removed say four years previously show a bigger increase in height and weight than those who have had them removed only one or two years previously." They are on the average taller and heavier and have superior nutrition to the second and neglected group.

(7) Dr. Phillipps, School Medical Officer, forwards observations on infectious disease epidemics in Canterbury, with special reference to carriers in scarlet fever.

(8) Dr. Wilkie forwards observations contrasting a group of children in ordinary class-room with those in one with Vita glass windows. Findings are as yet inconclusive.

The School Hygiene Division wishes to express appreciation to the Education Department, various Education Boards, School Committees, and teachers for much valuable co-operatin.

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

PART IV.—HOSPITALS.

Since my appointment as Director of the Division of Hospitals, in August, 1929, many of the hospitals of the Dominion have been visited. Generally speaking, our hospitals maintain a high standard of efficiency; both professional and lay staff exert their utmost endeavours towards maintaining this standard. In some instances, however, one finds that without in any degree lowering the standard of efficiency more economy might be exercised. It will be endeavoured to indicate in the future, as in the past, during the course of inspections where and how these economies can best be effected. That "economy" is not always one of the watchwords of a Hospital Board was amply indicated as the result of an inquiry which was held in connection with certain matters of expenditure of the Grey River Hospital Board. Here it was found that the expenditure on certain items was obviously far beyond the requirements of the Board's institution. It was found, for instance, that the purchase of alcoholic liquor in comparison with the amount used in the hospital was several hundred per cent. in excess. At the same time the control of the issue of this item was so lax that the hospital authorities could not in any way account for the great discrepancy. Again, not only were the purchases of drugs and surgical dressing greatly in excess of the requirements of the hospital, but the drug bill was further unnecessarily increased by the excessive purchase of expensive proprietary lines which in general have no advantage over standard official preparations. In order to assist to improve the administration, several recommendations were placed before the Board for adoption. With the exception of one, all of the recommendations were adopted. Unfortunately, the one the Board refused to adopt was considered to be the most important. Its adoption involved dismissal of the officer responsible for the maladministration, and this the Board refused to do. As the departmental legal authority in this respect is very limited, it can only be hoped that subsequent inspections of this hospital will show that the Medical Superintendent realizes his responsibility for the economic running of the institution. This is not the only hospital in which the drug bill is unnecessarily increased by the purchase and use of proprietary medicines in preference to standard official preparations.

Hospital Policy.

Medical Staffing.

In March, 1930, an important conference *re* the medical staffing of public hospitals was held. This conference was attended by representatives of the British Medical Association, the Hospital Boards Association, and the Department of Health. After complete discussion the following resolutions were adopted:—

(1) That all members of the community requiring treatment in hospital be eligible for admission to public hospitals.

(2) That patients in public hospitals who need, because of the nature of their illness, accommodation other than in the larger wards shall be provided for by an adequate number of one- to four-bedded wards.

(3) That patients voluntarily availing themselves of such special accommodation shall pay the full cost of maintenance, including overhead expenses, provided that no distinction is made in the case of patients unable to pay.

(4) That the medical attendance on patients be in the hands of a visiting staff, with the assistance of a requisite number of resident medical officers.

(5) That each Hospital Board must determine the number of the visiting staff, but it be recommended that in arriving at a decision the Board shall, consistent with the convenience and smooth running of the institution, appoint as many of the medical practitioners residing in the district as possible.

(6) Subject to the approval of the Board, that the right of attending their own patients admitted under resolution (3) be extended to all practitioners except such as may for special reasons be deemed unsuitable.

(7) That in making appointments to the visiting staff and in determining the suitability or otherwise of practitioners for the privilege of attendance on patients the Hospital Board should be guided by the advice of a special consultative body, or, in the case of the smaller hospital districts, by the advice of the Director-General of Health.

(8) That such special consultative body comprise the consulting staff, if any, of the hospital, or in other cases should comprise the senior members of the medical profession of the district, selected by the Hospital Board with the approval of the Director-General.

(9) Patients unable to pay the ordinary hospital fees shall be attended by the visiting medical staff in an honorary capacity.

(10) Patients entering the hospital able to pay for medical attendance in addition to maintenance fees shall make their own terms with their medical attendant, who will be responsible for collection of his own fees.

I do not propose to offer any comment on these various resolutions except to say that it will be obvious that their adoption involves very radical departures from the present practice, but the primary consideration will be, as always, the medical needs of the patients.

Establishment of New Hospitals.

The following list gives the names and main functions of public hospitals that have been opened since 1914–15 :—

Governing Board.	Hospital.	Number of Beds.
Whangaroa ..	Whangaroa (General)	10
Kaipara	Otamatea (Maternity and Emergency)	6
Auckland	Alexandra Convalescent Home	13
	Franklin Memorial (Maternity and Emergency)	13
	Warkworth (Maternity and Emergency)	6
Waikato	Kawhia (Maternity and Emergency)	4
	Matamata (Maternity and Emergency)	6
Tauranga	Te Puke (Maternity and Emergency)	6
Bay of Plenty ..	Whakatane (Maternity and Emergency)	33
Matakaoa	Te Araroa (General)	4
Taumarunui ..	Taumarunui (Maternity)	8
Cook	Tolaga Bay (Maternity and Emergency)	9
Hawke's Bay ..	McHardy (Maternity)	20
Taranaki	Opunake (Maternity and Emergency)	6
Wanganui ..	Raetihi (General)	9
Waipawa	Rathbone (Maternity)	6
Wellington ..	Macarthy Convalescent Home	22
Wairau	Wairau (Maternity)	12
Nelson	Motueka (Maternity)	10
Grey	Rewa (Maternity)	9
North Canterbury ..	Children's Fresh-air Home, Christchurch	32
	Waikari (Maternity and Emergency)	8
	Oxford (Maternity and Emergency)	10
	Amuri (Maternity and Emergency)	9
	Rangiora (Maternity)	10
	Ellesmere (Maternity and Emergency)	9
Ashburton ..	Malvern (Maternity)	7
	Rakaia (Maternity)	5
	Methven (Maternity)	5
South Canterbury ..	Fairlie (Maternity and Emergency)	6
	Geraldine (Maternity)	4
Otago	Prince Edward Convalescent Home	24
	Middlemarch (Maternity and Emergency)	6
	Roxburgh (Maternity and Emergency)	4
	Waikari (Infectious Disease)	35
South Otago ..	Milton (Maternity and Emergency)	12
	Owaka (Maternity and Emergency)	12
	Balclutha (General)	34
Southland ..	Lumsden (Maternity)	4
Mangonui	Kaitaia (Maternity)	5
Waikato	Huntly (General)	15
	Te Kuiti (General)	21
Hawke's Bay ..	Hastings Memorial (Maternity)	20
Palmerston North ..	Palmerston North (Maternity)	12
Buller	Kawatiri (Maternity)	7
North Canterbury ..	Cheviot (General)	7
	Chatham Islands (General)	2
	Darfield (Maternity)	5
	Lincoln (Maternity)	4
	Little River (Maternity)	2
Waitaki	Kurow (Maternity)	5
Otago	Palmerston (Maternity)	7
Thames	Paeroa (Maternity)	7

It will be observed that most of these hospitals are purely maternity hospitals or maternity hospitals with emergency beds, only eight being general hospitals.

There has also during this same period been a tendency towards divisions of hospital districts, and this, as a natural corollary, leads to the establishment of further hospitals. This subdivision is greatly to be regretted, and there is distinctly more need for amalgamation in some areas. This would undoubtedly lead to greater economy and efficiency. As a direct result of subdivision three general hospitals were established.

During the same period four small hospitals—at Arrowtown, Kumara, Otira, and Totara—have been closed.

Deaths under Anæsthetics.

The statistics under this heading have not been grouped for the Dominion since 1922. Appended are the figures for the years 1923 to 1929.

Total anæsthetic deaths for years ending 31st December: 1923, 13; 1924, 25; 1925, 22; 1926, 20; 1927, 20; 1928, 21; 1929, 17: total, 138.

Place.	1923.	1924.	1925.	1926.	1927.	1928.	1929.	Total.
Public hospitals	8	16	17	14	13	14	9	91
Private hospitals	2	6	2	4	3	5	6	28
Government hospitals	..	1	..	..	2	..	..	3
Dental surgeries	2	1	2	1	1	..	..	7
Medical surgeries	..	1	..	..	..	..	2	3
Private houses	1	..	1	1	1	2	..	6
Totals	13	25	22	20	20	21	17	138

Nature of Anæsthetics.

Anæsthetic.	1923.	1924.	1925.	1926.	1927.	1928.	1929.*	Total.
Chloroform	4	2	..	4	4	2	..	16
Chloroform and ether	4	9	8	7	6	8	7	49
Ether	2	9	9	7	8	5	5	45
Ethyl chloride and ether	..	..	1	..	1	1	3	6
Ethyl chloride	..	..	..	1	..	1	1	3
Novocain and nitrous oxide	..	..	..	..	..	1	..	1
Novocain and nitrous oxide and oxygen ..	..	..	1	..	..	..	..	1
Novocain and ether	..	..	..	..	1	..	..	1
Nitrous oxide and oxygen	1	4	3	1	..	3	..	12
Nitrous oxide and ether	1	..	..	..	..	..	..	1
Aposthesine	1	..	..	..	..	..	..	1
Cocaine	..	1	..	..	..	..	..	1
Totals	13	25	22	20	20	21	16	137

* Anæsthetic in one instance not stated.

The above data is compiled from inquest papers relating to deaths during anæsthesia, forwarded by the Justice Department, and return supplied by the Registrar-General of Births, Deaths, and Marriages.

N.B.—In the returns submitted by the Medical Superintendents for five years ending 31st March, 1929, no deaths are given for chloroform alone, which does not agree with information compiled from the inquest papers.

The following tables are compiled from the annual medical report (Form H.P. 36) submitted by Medical Superintendents of public hospitals:—

Table showing Number of Deaths associated with Anæsthesia in comparison with Total Number of Anæsthetic Administrations in Auckland, Wellington, Christchurch, and Dunedin Hospitals for Years ended 31st March.

—	1924–25.		1925–26.		1926–27.		1927–28.		1928–29.		Total.	
	Anæs-thetic.	Deaths.	Anæs-thetic.	Deaths.	Anæs-thetic.	Deaths.	Anæs-thetic.	Deaths.	Anæs-thetic.	Deaths.	Anæs-thetic.	Deaths.
Auckland ..	4,333	0	5,629	0	5,958	1	6,492	0	7,088	1	29,500	2
Wellington ..	2,411	3	3,233	2	3,241	2	2,869	2	3,695	3	15,449	12
Christchurch ..	3,582	3	3,528	5	2,930	4	3,034	3	2,955	1	16,029	16
Dunedin ..	1,978	2	2,765	1	2,653	1	2,379	0	2,477	2	12,252	6
Totals ..	12,304	8	15,155	8	14,782	8	14,774	5	16,215	7	73,230	36

Fatality-rate per 10,000: Auckland, 0·68; Wellington, 7·77; Christchurch, 9·98; Dunedin, 4·89.

Total fatality-rate: 4·92 per 10,000.

Yearly fatality-rate: 1924–25, 6·50; 1925–26, 5·27; 1926–27, 5·41; 1927–28, 3·39; 1928–29, 4·32.

Table showing Anæsthetics administered in Public Hospitals of the Dominion during the Quinquennial Period 1924–29, and Deaths in Relation to Anæsthetics used (Years ended 31st March).

Anæsthetics.		1924–25.		1925–26.		1926–27.		1927–28.		1928–29.		Total.	
Induction.	Maintenance.	Number.	Deaths.	Number.	Deaths.	Number.	Deaths.	Number.	Deaths.	Number.	Deaths.	Number.	Deaths.
Chloroform ..	Chloroform ..	479	..	527	..	670	..	560	..	389	..	2,625	..
Chloroform ..	Ether	1,897	1	2,220	1	2,582	..	1,379	..	1,008	1	9,086	3
Chloroform ..	Chloroform and ether	256	..	69	..	163	..	43	..	21	1	552	1
Ether	Ether	5,916	4	4,005	3	4,610	7	5,800	5	5,593	1	25,924	20
Ether	Chloroform and ether	1	..	23	..	23	..	..	..	2	..	49	..
Ether	Chloroform ..	7	..	..	..	..	..	3	..	..	..	10	..
Ether (rectal) ..	..	..	..	17	..	11	..	12	..	20	..	60	..
Ether and oxygen ..	Ether and oxygen	1	..	1	..	..	..	77	..	42	1	121	1
Chloroform and ether	Ether	7,400	2	12,227	5	11,050	2	12,757	8	13,555	2	56,989	19
Chloroform and ether	Chloroform and ether	1,664	1	2,750	2	1,868	1	2,123	..	1,458	..	9,863	4
Chloroform and ether	Ether and oxygen	..	..	..	..	..	..	..	..	168	..	168	..
Chloroform and ether	Nitrous oxide and oxygen	..	..	..	..	..	..	..	..	1	..	1	..
Alcohol and chloroform	Chloroform and ether	..	..	..	..	..	..	34	..	..	..	34	..
Chloroform and ether	Chloroform ..	180	..	192	..	47	1	108	..	3	..	530	1
Chloroform and oxygen	Oxygen ..	..	..	..	..	..	..	9	..	..	..	9	..
Ethylchloride ..	Ether	1,463	..	3,257	2	3,197	..	4,296	1	4,917	2	17,130	5
Ethylchloride (general)	Ethylchloride ..	55	..	131	..	160	..	160	..	109	..	615	..
Nitrous oxide and oxygen	Nitrous oxide and oxygen	370	..	1,086	1	1,333	..	1,951	..	2,249	2	6,989	3
Nitrous oxide and oxygen	Ether	..	..	72	..	16	..	19	..	36	..	143	..
Nitrous oxide and oxygen	Ether and oxygen	..	..	8	..	..	..	101	..	248	..	357	..
Nitrous oxide ..	Ether	16	..	1	..	..	..	..	..	2	..	19	..
Nitrous oxide ..	Nitrous oxide ..	229	1	526	..	78	..	31	..	..	..	914	1
Nitrous oxide, oxygen, and ether	Nitrous oxide, oxygen, and ether	..	..	26	..	16	..	16	..	7	..	65	..
Nitrous oxide ..	Chloroform and ether	1	..	..	..	..	..	..	..	..	..	1	..
Spinal (anæsthetic not given)	..	81	..	98	..	338	..	68	..	154	..	739	..
Stovaine (spinal) ..	..	..	..	90	1	6	1	63	..	98	..	257	2
Stovaine	Ether	..	..	..	..	..	..	..	..	13	..	13	..
Spinal	Nitrous oxide and oxygen	..	..	..	..	..	..	11	..	..	..	11	..
Spinal	Ether	12	..	..	..	..	..	41	..	..	..	53	..
Local	Nitrous oxide and oxygen	15	..	..	..	..	..	10	..	1	..	26	..
Local	Ether	38	..	..	..	..	..	8	..	26	..	72	..
Local	..	587	..	1,749	..	2,225	1*	2,245	1†	2,577	1‡	9,383	3
Totals ..	..	20,718	9	29,075	15	28,393	13	31,925	15	32,697	11	142,808	63

* Novocaine. † Nitrous oxide and oxygen and novocaine. ‡ Novocaine.

Yearly fatality-rate per 10,000: 1924–25, 4·34; 1925–26, 5·16; 1926–27, 4·57; 1927–28, 4·69; 1928–29, 3·36.

Quinquennial fatality-rate per 10,000: 4·41.

Table showing Anæsthetics used at Auckland, Wellington, Christchurch, and Dunedin Hospitals for the Year ended 31st March, 1929.

Anæsthetics.		Number.	Deaths.
Induction.	Maintenance.		
Chloroform	Chloroform	88	..
Chloroform	Ether	365	..
Ether	Ether	1,753	..
Ether and oxygen	Ether and oxygen	40	1
Chloroform and ether	Ether	6,007	2
Chloroform and ether	Chloroform and ether	714	..
Chloroform and ether	Ether and oxygen	142	..
Chloroform and ether	Gas and oxygen	1	..
Ethyl chloride and ether	Ether	3,380	2
Ethyl chloride	Ethyl chloride	71	..
Nitrous oxide and oxygen	Ether	36	..
Nitrous oxide and oxygen	Ether and oxygen	248	..
Nitrous oxide and oxygen	Nitrous oxide and oxygen	1,372	1
Nitrous oxide and oxygen	Local	14	..
Nitrous oxide	Ether	18	..
Local	Gas and oxygen	3	..
Spinal		110	..
Stovaine (spinal)		4	..
Locals		1,849	1*
Totals		16,215	7

* Novocaine, tracheotomy for laryngeal diphtheria.

Table showing Deaths in relation to kind of Anæsthetics used (Quinquennial Period).

Anæsthetics.		Instances.	Deaths.	Rate per 10,000.
Induction.	Maintenance.			
Chloroform	Ether	9,086	3	3·30
Chloroform	Chloroform and ether	552	1	18·12
Ether	Ether	25,924	20	7·71
Ether and oxygen	Ether and oxygen	121	1	82·64
Chloroform and ether	Ether	56,989	19	3·33
Chloroform and ether	Chloroform and ether	9,863	4	4·05
Chloroform and ether	Chloroform	530	1	18·86
Ethyl chloride	Ether	17,130	5	2·92
Nitrous oxide and oxygen	Nitrous oxide and oxygen	6,989	3	4·29
Nitrous oxide	Nitrous oxide	914	1	10·94
Stovaine (spinal)		257	2	77·82
Novocaine		9,383	3	3·19

Summary.

	Fatality-rate per 10,000.
Chloroform and ether mixtures	3·68
Ether (including ether and oxygen)	8·06
Ethyl chloride and ether	2·33
Nitrous oxide, with or without oxygen	5·06
Novocaine	3·19

The nature of 739 spinal anæsthetics is not recorded in returns.

Chloroform and ether, followed by ether, is the favoured procedure of producing anæsthesia (56,989 instances), resulting in a fatality-rate of 3·33 per 10,000. Ether, on the other hand, with its 25,924 administrations, shows the much higher rate of 7·71 per 10,000. Ethyl chloride and ether (17,130 times) shows the lowest rate—namely, 2·33 per 10,000. However, it seems that the predominant cause of these deaths is rather the nature of the operation, the condition of the patient, and the skill of the anæsthetist rather than the kind of anæsthetic used.

The total fatality-rate for the five years in the four main hospitals—4·92 per 10,000—and the rate of 4·41 per 10,000 for all public hospitals appears to reveal a satisfactory standard of technique in regard to administration of anæsthetics in public hospitals.

The Royal Prince Alfred Hospital, Sydney, annual reports record the following deaths during anæsthesia :—

	Number of Anæsthetic Administrations.	Deaths.
1923–24	6,990	6
1925–26	7,512	3
1926–27	7,283	2
1927–28	7,409	5
1928–29	7,629	6
Totals	36,823	22

(Report for 1924–25 missing.)

Fatality-rate per 10,000, 5·98.

Ether, the reports state, is the chief anæsthetic used at this hospital ; chloroform infrequently.

The New Zealand public-hospitals rate of 4·41 compares favourably with the rate for this institution, as also does the figure of 4·92 for the four main hospitals. On the other hand, the rates for Christchurch and Wellington Hospitals, of 9·98 and 7·77, are higher. The consistently remarkably low fatality-rate for Auckland Hospital is a feature of this return, besides being a distinct factor in lowering the average rate for the four main hospitals. In reference to Auckland Hospital it may be of interest to quote the nature of the chief anæsthetics used. Out of the total of 29,500 administrations at Auckland Hospital for the five-yearly period, chloroform and ether, then ether, was given 17,782 times ; chloroform and ether mixtures, 2,808 ; ether, 1,835 ; and nitrous oxide and oxygen, 2,147 times. Ether and oxygen mixture accounted for one death, and chloroform and ether mixture for the other. However, this anæsthetic fatality-rate is one liable to be subject to sudden fluctuations, as even under the most skilful medical supervision a few deaths may occur which would considerably influence the rate. The question of administration of anæsthetics appears a subject for discussion when the Medical Superintendents of the four main hospitals meet in conference.

For statistical purposes it is essential, in reference to deaths during anæsthesia, that Medical Superintendents should submit fuller details when forwarding their annual returns. The details given in some cases are very meagre, the main source of our information being the inquest papers. It might be stated that the majority of these deaths in public hospitals are usually associated with serious conditions in which the risk of operation had to be taken. In others post-mortem examination often revealed abnormal growths, or status lymphaticus difficult of diagnosis prior to operation. The increasing number of serious accident cases admitted to our hospitals often present an added risk of death during operation.

R. A. Shore, Director, Division of Hospitals.

PART V.—DENTAL HYGIENE.

In connection with the work of my Division, I beg to submit a report for the year ending 31st March, 1930 :—

SECTION 1.—STAFF, CLINICS, ETC.

Staff.—The allocation of the staff of the Division is as follows : Mr. J. L. Saunders, B.D.S., Deputy Director, Division of Dental Hygiene ; Mr. R. D. Elliott, Inspecting Dental Officer ; Mr. F. B. Rice, B.D.S., Inspecting Dental Officer ; Mr. J. B. Bibby, Lecturer and Clinical Instructor ; Mr. A. D. Brice, B.D.S., Lecturer and Clinical Instructor ; Mr. M. S. Taylor, B.D.S., Lecturer and Clinical Instructor ; Miss M. E. Collie, Clinical Demonstrator ; Miss E. M. Haines, Matron.

In the field, eight dental officers and ninety-three dental nurses, stationed as follows : Dental officers—One at Christchurch, one at Dunedin, one at Motueka, one at Nelson, one at North Auckland, one at Tikitiki, one at Timaru, one at Te Paro-totara. Dental nurses—One at Avondale, two at Beresford Street, one at Cambridge, one at Dannevirke, one at Dargaville, one at Edendale, one at Eketahuna, one at Eltham, one at Feilding, two at Gisborne, two at Grey Lynn, one at Greytown, two at Hamilton, one at Hastings, one at Hawera, one at Henderson, one at Hornby, one at Huntly, one at Kurow, one at Levin, one at Lower Hutt, one at Marton, two at Masterton, one at Matamata, one at Milton, one at Morrinsville, two at Napier, two at New Plymouth, one at Ohakune, one at Onehunga, one at Otahuhu, one at Paeroa, one at Pahiatua, one at Palmerston North, one at Papakura, one at Petone, two at Ponsonby, one at Pukekohe, one at Southbridge, one at Stratford, one at Takaka, one at Taumarunui, one at Tauranga, one at Te Aroha, one at Te Awamutu, one at Te Kuiti, one at Thames, one at Waihi, one at Waipukurau, one at Wairarapa, one at Wairoa, two at Wanganui, one at Wyndham, one at Alexandra, one at Ashburton, one at Balclutha, one at Beckenham, two at Blenheim, one at Christchurch East, one at Dunedin, one at Greymouth, two at Invercargill, one at Lyttelton, one at Mosgiel, one at Nelson Suburban, two at Oamaru, one at Otautau, one at Palmerston South, one at Reefton, one at St. Albans, one at Sydenham, one at Tapanui, one at Temuka, one at Timaru, one at Waimate, two at Westport, one at Winton, one at Woolston, one at Wyndham.

Owing to resignations from the Service and officers being absent owing to sickness, the clinics at Dunedin South and Gore have been recently closed temporarily, while at present Palmerston North has the service of only one nurse, but these positions will be filled early in April.

Number of main treatment centres, 88; number of sub-bases, 59; number of schools under systematic treatment, 740; number of children receiving systematic treatment, 60,289.

New Clinics.—Since the 31st March, 1929, new clinics have been established at the following places: Eketahuna, Levin, Matamata, Ohakune, Otahuhu, Petone, Pukekohe, Te Aroha, Te Paroa-totara, Waihi, Wairoa, Hornby, Kurow, Milton, Southbridge, Takaka, Wyndham.

During the next few weeks, clinics will be opened at Patea, Ormondville, Shannon, Upper Hutt, Taihape, Manurewa, Helensville, Devonport, Mount Eden, Ellerslie, Birkenhead, Mount Roskill, Rangiora, Linwood, Papanui, Geraldine, Rakaia, Clinton, and Ranfurly.

The clinics at the following places are being reinforced: Whangarei, Onehunga, Hastings, Lower Hutt, Gisborne, Wanganui, Hamilton, Napier, and Edendale.

Training of Dental Nurses.—At the commencement of the year under review—1st April, 1929—there were seventy-four probationer dental nurses in training. Of these, forty were in the first year of their training and thirty-four in their second year. During the year these numbers have been reduced to thirty-nine and thirty-two respectively. Thirty nurses of the Senior Division passed the final examination held in March, 1930, and became available for staffing school dental clinics in various parts of the Dominion. Three more will sit for their final examination at a later date. At the date of this report (31st March, 1930) the number of dental nurses in training is seventy-eight, of whom thirty-nine are entering on their second year, and thirty-nine are new probationers who commenced duty on the 25th March, 1930.

As in previous years, Dr. M. H. Watt and Dr. Ada Paterson were the examiners for the primary examination (anatomy and physiology), which was held in November, 1929. It is satisfactory to note that all the candidates were successful in passing the examination.

The final examination was held in the middle of March, 1930, the examiner being Mr. Millen Paulin, B.D.S., assisted by a member of the instructional staff. It is satisfactory to note that in his report Mr. Paulin referred to the high standard that was being maintained in the training of the dental nurses.

The instructional staff is now as follows: The Deputy Director, Mr. J. L. Saunders, B.D.S., who is Superintendent and Chief Instructor; Messrs. J. B. Bibby, A. D. Brice, B.D.S., and R. M. S. Taylor, B.D.S., Lecturers and Clinical Instructors.

Despite the more stringent conditions governing entrance to the Service, the number of applicants for appointment as probationer dental nurses was even greater this year than in previous years. This must be regarded as very satisfactory, as it enables a high standard to be maintained in the personnel of the service.

Reference was made in my last annual report to the revision of the syllabus of training. During the past twelve months the training has been carried out in accordance with the revised syllabus with satisfactory results.

Treatment performed during 1929.—The following is a summary of the operations performed from the 1st January to the 31st December, 1929, by dental officers, dental nurses, and probationers in training: Fillings—permanent teeth, 72,102; deciduous teeth, 118,832; extractions, 71,128; other operations, 108,012: total operations, 370,074. Of the above treatment the dental nurses in the field have performed the following: Fillings—permanent teeth, 56,681; deciduous teeth, 94,929; extractions, 60,276; other operations, 76,496: total operations, 288,382.

SECTION 2.—DENTAL HEALTH EDUCATION, ETC.

I regard this part of our work of the utmost importance. Both Mr. Saunders and myself have acceded to a number of requests from different societies to give addresses on the subject.

Officers and nurses throughout the Service are instructed to take every opportunity to instruct parents and children with regard to the prevention of dental disease on the lines laid down by the Department. That good results have been obtained there can be no doubt, but it is to be regretted that parents do not to a larger degree put into practice the simple rules taught them on the question. If the problem of dental disease is to be solved, and there is going to be any great dimunition in the amount of dental disease among the people of this Dominion, it can only be by their altering their present-day diet and dietetic habits, and until that is so the problem that the Department is faced with will always be a very big one.

Equipment.—Although it can be said that our equipment is now fairly well standardized, it is still being found necessary to make some slight alterations, more particularly to that part of it being used for mobile purposes. In this connection I hope to be of service during my contemplated visit to England by assisting the High Commissioner's Office in the selection of suitable equipment to fill the order just sent Home.

I would take this opportunity of paying a tribute to the very able and loyal service rendered by my Deputy, Mr. Saunders, and the officers of my Division. I cannot speak too highly also of the keenness displayed by the members of the instructional staff, and the Inspecting Dental Officers. The spirit displayed generally by officers and dental nurses throughout the Service is a matter for congratulation.

I again wish to express my sincere appreciation of the assistance and co-operation generally I have received from the Education Department, Education Boards, teachers, School Committees, and Dental Clinic Committees, all of whom have helped materially towards our success.

In conclusion—and as this will be my last opportunity prior to my retirement—I wish to place on record my sincere appreciation of the ready assistance that has been given me at all times by yourself, heads of Divisions, and your staff generally.

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

PART VI.—NURSING.

I beg to submit my annual report for the year ending 31st March, 1930.

NURSES AND MIDWIVES REGISTRATION ACT, 1925.

At the two general nursing examinations held in June and December there were 362 candidates, of whom 327 were successful, while from overseas twenty-two nurses were admitted to the register.

A forward movement is being made with regard to nurse-training by the approval of certain small hospitals as limited training-schools by which means pupil-nurses may have a year spent in a small training-school counted as six months towards her three-years training in a larger institution.

It is also hoped in time by amending regulations to institute a system of affiliation between Hospital Boards enabling a nurse to take two and a half years of her training in one institution, with the remaining six months in a larger hospital. This plan was strongly recommended by the Committee of Nursing Education of the International Council of Nurses at the Montreal Conference in July as a means of ensuring a greater degree of uniformity in the standard of nursing throughout the world. It serves to overcome the disability under which nurses trained in a very small hospital suffer when brought in contact with those who have had the benefit of wider experience.

There were three examinations during the year for the State registration of midwives—in April, August, and December—when 130 were added to the register. From overseas only one midwife was admitted to the register.

In examinations held at the same time for maternity nurses 107 were successful and became registered.

NURSES AND MIDWIVES REGISTRATION BOARD.

There were four meetings of the Board held during the year.

Personnel.—The personnel of the Board is the same as for the previous year—*i.e.*, Dr. M. H. Watt (Chairman), Dr. W. Young, Miss E. P. Tennent, Miss H. Newman; and Miss J. Bicknell, Registrar.

Teaching-apparatus for Training-schools.—The Board gave consideration to the question of teaching-apparatus, and a list of suitable charts and models was forwarded to all training-schools for midwives and maternity nurses, with a request that certain items in the list be procured and a recommendation that others should be procured where possible.

Training-schools.—Various hospitals and annexes were approved as training-schools for nurses, midwives, and maternity nurses, the approval of the Board having to be withdrawn from one or two institutions which had proved unsuitable as training-schools.

Appointment of Examiners.—Various medical practitioners and nurses were appointed examiners under the Nurses and Midwives Registration Act, 1925.

Limited Training-schools.—A syllabus of training was adopted for use in hospitals approved as limited training-schools.

Training of Nurses.—The Board gave lengthy consideration to the question of the amount of unskilled work being done by probationer nurses during their training, and the matter was referred to the Department of Health for investigation and is to be dealt with again by the Board.

Training of Midwives and Maternity Nurses.—This question has received considerable discussion and consideration, and as a result of this the Board has decided to make very considerable alterations in the training of midwives and maternity nurses, which alterations will considerably restrict those institutions permitted to train midwives. The regulations providing for these alterations are in course of preparation.

POST-GRADUATE COURSE FOR NURSES.

The second post-graduate course commenced on the 1st March, 1929. Nineteen nurses enrolled. Of these, three had bursaries from the Health Department, and eight bursaries from Hospital Boards, the remainder coming at their own expense. The standard of work throughout the year was good, and the students were keenly interested in the wide avenues of their profession which were opened before them.

The Department again wishes to express its gratitude for the whole-hearted co-operation given by the Wellington Hospital Board, the Mental Hospitals Department, and the various nursing organizations in Wellington. This enables the students to obtain a comprehensive knowledge of hospital administration in its various branches and of public health work.

It has been very gratifying, in visiting the various hospitals and health districts where students from this course are located, to hear those in charge of them speak very highly of their work. Increasingly it has come to my notice that, despite the financial outlay involved, nurses throughout New Zealand interested in the advancement of their profession are planning ahead to enable them to take this course.

INTERNATIONAL COUNCIL OF NURSES CONFERENCE AT MONTREAL.

In July, by the generosity of the Government, I was privileged to attend the quadrennial meeting of the International Council of Nurses in Montreal, to represent the nursing profession of New Zealand. There were present between six and seven thousand nurses from about forty countries, and a great deal of business was discussed. Many round-table conferences were held, a paper being read first. Special committees were appointed to deal with matters brought up for discussion, and these, especially the committees on nursing education and public health, had a large amount of work to do.

Perhaps the most important committee was that on nursing education, which was entrusted with the task of drawing up a minimum basis for nurse-training from information obtained from all the countries belonging to the International Council of Nurses. With widely varying sizes and conditions, it will be understood that this was no easy task, but the discussions were very interesting and helpful in considering our own problems. In some countries only two years' training is desired, it being thought that the tendency is to waste the pupils' time in performing the same acts over and over again after a reasonable amount of practice may be supposed to have rendered her sufficiently expert. The practice of giving the pupil-nurse an undue amount of domestic work during the whole term of training has been largely discontinued in many countries, especially those in which the trainee has to pay a premium for the privilege of training. It was also felt that a higher standard of education was becoming more and more essential, as science is entering so much more into the nurse's work that it is difficult for an ill-educated girl to keep abreast of present-day requirements. Affiliation between large and small hospitals was strongly supported. The preliminary-training school has been instituted in many countries. The importance to the nurse of some experience in mental nursing was emphasized, and also the value of the social-service department, as bringing her into touch with the home conditions of the patient.

One of the chief objects of the Conference was to assist the younger countries in attaining to a better standard of nursing than has been possible for them in the past. It was gratifying to realize that nursing in this Dominion was regarded so highly, and much appreciation was expressed of the fact that New Zealand had been the first country to obtain State registration for nurses and that so high a standard had been maintained since the passing of the Nurses Registration Act in 1901. At the same time, other countries have made great progress since I had the opportunity of exchanging views with their leaders in 1923, and we are now somewhat in danger of remaining more or less at a standstill unless we take steps to bring our very small training-schools under some scheme of affiliation with larger institutions.

While the discussions on problems affecting nursing were most helpful, the greatest value of the Conference consisted in meeting so many leading women from over forty countries represented, and exchanging views concerning the work in which all were alike interested. The Conference of the International Council of Nurses at Montreal in July, 1929, is said to have been the largest meeting of women ever held in the history of the world, and I felt it was a great privilege to have been permitted to attend. After the close of the Conference I went, in company with many other delegates, on the invitation of Dean Annie Goodrich, of the Yale University School of Nursing, to Newhaven, to study the conditions under which nurse-training is there carried out in conjunction with a university course. This scheme is being tried out as an experiment, and is based on the conviction that a medical school requires a good school of nursing associated with it. It is also designed to attract well-educated girls who, while desirous of following nursing as their life-work, are also anxious to pursue a university course and secure a diploma. The Dean of Nursing and the Dean of the Medical School are both on the executive committee. The scheme had its origin in the fact of the Rockefeller Foundation having some years ago 50,000 dollars to spare, which it was proposed should be devoted to nursing education. Accordingly a diploma for nursing was established at the Newhaven Hospital in conjunction with the Yale University under the following conditions: (1) The course was to be given in the shortest possible period of time; (2) theory and practice of nursing were to be co-ordinated; (3) the instruction was to be placed on a basis of preventive medicine throughout.

In order to carry out the first condition, the course of training was made one of twenty-eight months, instead of the usual three years, the students having attended at least two, preferably four, years at a secondary school, and having had some training in the principles of psychology. To comply with the necessity for co-ordinating theory and practice, a very thorough system of case-study has been evolved, the students making a detailed record of their patient's case and studying throughout the relation between his condition and the treatment ordered. The third condition was complied with by the fact of the School of Nursing being in close co-operation with the Medical School. This scheme was of special interest, as it was apparently a successful effort to carry out a project similar to one proposed for New Zealand nurses in connection with the Otago University which was found too ambitious for our young country and was superseded by the existing very successful post-graduate course. An interesting feature of the hospital was the fact that all patients in private wards were nursed entirely by fully-trained nurses.

In Toronto I had an opportunity of learning something of the very efficient social-service work carried out by the Public Health Department from its headquarters in the City Hall under the direction of Miss Dykes. The staff consists of seventeen nurses, who visit all the hospitals in the city—with the exception of the Toronto General, which has its own social-service department—and see each patient prior to discharge regarding his home conditions and the necessity for any further treatment or assistance. In addition to the executive office in the City Hall, there are four district offices from which nurses go out, the city having been mapped out into areas for the convenience of the work. In order to make nurses understand the importance of preventive work, each pupil-nurse during her first year in training is sent for one week of observation to the Social-service Department.

During her third year she spends one month in a district office, when she is taken visiting to schools and health centres. The actual nursing of patients in their own homes is largely carried out by the Victorian Order of Nurses or the St. Elizabeth Nurses. This scheme is one which relieves in a great measure the burden of providing hospital accommodation for patients who no longer require constant nursing, but may be attended in their own homes.

While in the city I also visited the Western Hospital, which has a very successful out-patient department, where the patients attending its five special clinics are carefully followed up in their own homes.

The Toronto General Hospital, as before mentioned, has its own particularly efficient social-service department, which it is interesting to note began in 1911 with one nurse. It has now ten special committees. Space does not permit of entering into detail, but the social-service work carried out in the City of Toronto is known the world over as being of a very high standard, and it was most interesting to be able to study it at first hand.

During my three months' absence Miss Bagley, Assistant Inspector of Hospitals and Superintending District Nurse from the Auckland District Health Office, took my place, and my thanks are due to her for carrying out the duties so efficiently.

St. Helens Hospitals.

Wellington.—Number of beds in hospital, thirty, of which an average of twenty-two were daily occupied. The outside cases attended numbered fifty. The trained staff, including the Matron, consists of seven, while there are twenty-one pupil-nurses. During the year nine maternity nurses and seventeen midwives qualified.

Miss Bagley and Miss Macdonald still hold the positions of Matron and Sub-Matron.

The ante-natal work at this institution is making good progress.

Auckland.—The number of beds in this hospital is thirty-two, with a daily average of 26·72 occupied beds. The staff consists of eight trained nurses in addition to the Matron, and thirty trainees. The only permanent members of the staff were the Matron and Sub-Matron, Miss Broadley and Miss Potts.

The work of the ante-natal clinic has been carried on successfully.

Christchurch.—Number of beds in hospital, fifteen; daily occupied beds, 13·06. There were 180 cases attended by the extern department during the year, this branch of the work being developed through the numbers of in-patients having to be restricted to a maximum of fifteen. The trained staff consists of the Matron and five others, and the pupil-nurses number fifteen; of these, six qualified as maternity nurses and nineteen as midwives. With the exception of the Sub-Matron, Miss M. Jones, the entire personnel of the nursing staff was changed during 1929. Miss M. H. Ward succeeded Miss Trotter as Matron in May.

The ante-natal clinic has progressed favourably. The Matron comments as follows: "With great regret we lost the services of our Ante-natal Sister, Miss F. Wilson, at the end of November. Miss Wilson has worked up the ante-natal clinic to a high degree of efficiency, and I feel that it is largely due to her personality that our patients have been persuaded to attend so willingly. Her place has been filled by Miss Aileen Knight, who shows great interest and keenness in the work, and gives promise of maintaining the excellent standard of the past. The nurses in training are obviously all keen to avail themselves of teaching and experience in this part of the work; each trainee has a consecutive three-weeks course at the ante-natal clinic, so that she is able to concentrate on that branch of the work for the time being."

Dunedin.—With fifteen beds, this institution has a daily average of 6·9 occupied, and fifty-six patients attended outside. The nursing staff consists of the Matron (Miss V. Oppenheim), Sub-Matron, and one staff nurse, with eight pupils in training. There were five maternity nurses and four midwives trained. One member of the trained staff was off duty through illness for a period of fourteen days; otherwise the health record was excellent. Miss Sparkes, Sub-Matron, was granted six months' leave of absence as from the 1st March, 1930, in order to undergo the post-graduate course in Wellington, her place being taken in the meantime by Miss K. Corbett.

The ante-natal clinic, the Matron reports, has been well attended.

Invercargill.—Twelve beds for patients, with a daily average of 9·1, and five patients on the district. Nursing staff: Matron, Sub-Matron, and staff nurse, with nine pupil-nurses. There were five maternity nurses and five midwives qualified during the year. The staff changes have been many, both the Matron (Miss Arnold) and the Sub-Matron (Miss Paterson) having been granted four months' leave in order to undergo Plunket training, so that for eight months relieving nurses had to be employed. Apart from this, and the case of one pupil who was off duty for a week on account of a severe attack of influenza, the health of the nurses was excellent throughout the year.

The ante-natal clinic has made definite progress.

Wanganui.—Number of beds, eleven, with 6·3 daily occupied. Twelve cases attended on the district. The trained staff consists of the Matron (Miss Boyce), Sub-Matron, and staff nurse, and there are fourteen pupils in training. Two maternity nurses and seven midwives qualified during the year. No changes took place in the nursing staff beyond the appointment of a staff nurse in addition to the Matron and Sub-Matron.

Ante-natal clinic: The clinic was well attended, showing a decided increase in the number of visits paid. The first visits numbered 151, and the return visits 375. Thirty-five visits were paid to patients' homes. Nine patients were admitted to the hospital for treatment prior to confinement.

Gisborne.—Fifteen beds in hospital, with eleven daily occupied. Four cases attended on the district. The trained staff consists of the Matron (Miss Clark), Sub-Matron, and staff nurse, with nine pupil nurses. Four maternity nurses and nine midwives qualified during the year. Miss Clark is still in charge, ably assisted by Miss Knight as Sub-Matron. The health record for the year has been good on the whole, though one pupil-nurse was obliged to have two months' sick leave. The permanent staff is to be congratulated upon its enthusiasm and devotion to duty at all times. The outstanding feature of the past year has been the development of the ante-natal branch of the work, which has come to be recognized as so important a factor in midwifery practice.

The ante-natal clinics in connection with our State hospitals are becoming more and more popular as patients appreciate the very real help they render. There is no doubt from the experience gained that such ante-natal supervision has proved most effective in preventing to a large extent many of the symptoms peculiar to the puerperal state.

District Nurses to Maoris.

The work has proceeded satisfactorily in the districts. The policy approved by the Hon. the Minister in June of 1928 regarding fresh appointments to be made under the Hospital Boards, the Department paying the nurse's salary and a certain amount towards quarters and travelling-expenses, has been applied only in the case of Wairoa, Hawke's Bay, there having been no new positions created during the year.

The following is a list of the districts served by nurses, with headquarters of each :—

District.	Headquarters.	Nurse.	District.	Headquarters.	Nurse.
Hokianga ..	Rawene ..	E. D. Leslie and S. Trewby.	Rotorua ..	Rotorua ..	C. Blackie.
			Opotiki ..	Opotiki ..	R. Cameron.
Bay of Islands ..	Kawakawa ..	M. Hall.	Te Kaha ..	Te Kaha ..	A. F. Wallace.
Mangonui ..	Kaitaia ..	A. Jewiss.	Waiapu ..	Kahukura ..	W. Wehipeihana.
Kaipara ..	Dargaville ..	M. Vost.	Cook	Te Karaka ..	R. Turner.
Auckland ..	Auckland ..	G. Uniacke.	Hawke's Bay ..	Hastings ..	D. Oliphant.
Thames ..	Paeroa	N. Jamieson.	Wanganui ..	Kohimi, Wanganui River	E. Beswick.
Tauranga ..	Tauranga ..	B. Whittaker.			
Waikato ..	Hamilton ..	L. M. Oakden.	Horowhenua ..	Otaki	P. Wereta.
King-country ..	Taumarunui ..	M. Smale.	Wairoa ..	Nuhaka ..	I. Bennett.
Taupo ..	Tokaanu ..	M. Mangakahia.	Wairoa ..	Frastertown ..	—. Banks.
Whakatane ..	Whakatane ..	L. A. Hill.	Relief Nurse ..	Auckland ..	M. Scott.

J. Bicknell,
Director, Division of Nursing.

PART VII.—MAORI HYGIENE.

I have the honour to submit the annual report for the year ended 31st March, 1930.

General Health.

Despite the fact of a severe and widespread epidemic of dysentery in the Auckland Central and South Health Districts, and typhoid in the Rotorua and Murupara districts, and also in the East Coast Health District, with a consequent toll of life, the progressive improvement in the living-conditions and in sanitation make the general outlook as regards the health of the Maori exceedingly hopeful.

Statistics will indicate clearly the results which have been obtained by the preventive campaign of past years, and the present satisfactory trend.

The infantile death-rate, which in the past has been exceedingly high, in the year under review showed a remarkable and gratifying fall, while the birth-rate remained high.

Under the Native Minister's land policy thirty-one settlement schemes are already in progress in various parts of New Zealand. This, while absorbing and providing employment for many who would otherwise be destitute, must in the near future tend to improve the general welfare and increase the productivity of the country. The Department can view with complacency and satisfaction this policy of concerted action in land-development, which, with the improved housing and living conditions, better food, better clothing, good water, and improved sanitary measures must mean improved general health and diminished tubercular incidence. The Hospital Boards, too, should applaud such development.

Up-to-date sanitary conveniences have been installed at five important pas. Only one applied for a subsidy from the Native Department. The dysenteric outbreak served forcefully to bring the matter before the people. Propaganda, too, played its part, as did a definite campaign along those lines. We can expect several other pas to follow the example set in the near future.

Privy accommodation at the individual homes proceeds as a routine measure. Thanks to the aid of the Native Department, many such conveniences were erected in the Waikato district, in the hope that a recrudescence of dysentery might be prevented. There was no recrudescence. Vast improvement is also taking place in the northern districts. Strict supervision will be called for, and personal touch will be necessary to retain the confidence of the race and so obtain the results hoped for.

Several water-supplies have been installed in the pas, subsidies being granted to demands considered most urgent from a health point of view. This has materially helped to reduce the enteric incidence.

The improved supervision of our Native schools, thanks to the activities of the Director of School Hygiene and her staff, together with the continued sympathetic care exerted by the teachers, is an important factor in the improvement noticed in the younger generation.

The extension of the Dental Hygiene Division's services to Native schools, recently commenced in the East Coast and Bay of Plenty, must also have its effect felt in the future years.

The distribution continues, through Native schools, Health Inspectors, nurses, and Maori Councils, of pamphlets (in the Maori language) on various ailments, such as tuberculosis, typhoid, dysentery, influenza, skin-diseases, &c. I have good reason to believe that the information given is closely studied and followed. There is but one Maori paper of note, the *Toa o Takitini*, issued monthly, and this, too, has been used for the same purpose. Two dailies—one in Hawera and one in Wanganui—began publishing columns in Maori, and received material from this Office. Unfortunately, after a few months, publication of the Maori columns ceased.

Much clinical work was done by myself when appealed to, partly to regain the confidence of the Maori in medical science, partly to obtain further information on disease-incidence—especially tuberculosis, cancer, goitre, and trachoma—mainly, however, to undermine the insidious activities of tohungas, herbal doctors, and unqualified nurses.

The improved housing and the better economic conditions prevailing from the continued individualization and consolidation of land-titles, and the agricultural, pastoral, and dairying activities which this has enabled, assist materially in the marked improvement of to-day.

Statistics will reveal this as a record year, and, judging from the absence of epidemics, one can hopefully anticipate further improvement in the current year.

Maori Health Councils.

A number of these Councils still continue to do useful work, and they are well deserving of praise for their unselfish endeavours to improve the conditions under which the people live. These Councils chiefly labour under the lack of finance. Fines they can levy for breaches of by-laws, but this has led to the anomalous position of the most law-abiding Council districts being the poorest. Judging from the number of mongrel dogs which roam the pas and escape taxation, I consider it unfortunate that the privilege of collecting the dog-tax should have been taken from the Councils. Its restoration, especially in areas where the County Councils find it too expensive to collect, would be welcomed. In the Wairoa district alone six water-supplies were installed from money so collected—a saving to the Department and not missed by the County Council. The mass of public inertia is reduced in proportion to the number of Councils which actively function.

It is pleasing to note that the Ratana element, which once harassed and obstructed the Maori Councils at every turn, now seeks representation on the Councils and Village Committees, and assists in their work, the misguided element having become more amenable to reason and to the wishes of the Department.

Population, Births, and Deaths.

The following figures show the population, births, and deaths for the past ten years. A steady annual increase in the population is revealed. There was a record number of births, while the deaths show a fall of 218 on the previous year.

Maori Population, Births, and Deaths.

Year.	Population.	Births.	Deaths.	Natural Increase.	
				Number.	Per Cent.
1920	49,776	1,006	913	93	0·87
1921	52,751	1,056	842	214	0·41
1922	53,231	1,442	913	529	0·99
1923	53,642	1,181	762	419	0·78
1924	53,983	1,246	773	473	0·88
1925	54,669	1,716	867	839	1·55
1926	60,773	1,536	919	617	1·02
1927	64,375	1,495	1,033	462	0·72
1928	65,050	1,845	1,124	721	1·11
1929	65,983	2,216	906	1,310	1·99

The following will show the death-rate per 1,000 of Maori mean population, a record for the ten years 1920–29. Though still high as compared with the New Zealand rate (8·75 per 1,000) it must nevertheless be considered highly satisfactory.

Maori Deaths.—Numbers and Rates, 1920–29.

Year.	Number of Deaths.	Death-rate per 1,000 of Maori Mean Population.
1920	913	18·34
1921	842	15·96
1922	913	17·15
1923	762	14·21
1924	773	14·32
1925	867	15·86
1926	919	15·12
1927	1,033	16·05
1928	1,124	17·28
1929	906	13·73

The following show the birth-rates for the ten years 1920–29. The rate of 33·58 per 1,000 of Maori mean population is again the highest figure reached during the period. It might indicate an absence of V.D. complications and of birth-control. In 1920 the rate was as low as 20·21 per 1,000, probably due to the depressing and other far-reaching effects of the influenza epidemic of that year. The low figures for 1921 may possibly be likewise explained. The high birth-rate as compared with the European figures (19·09 per 1,000) more than counterbalances the higher death-rate.

Maori Births.—Numbers and Rates, 1920–29.

Year.	Total Number of Births registered.	Birth-rate per 1,000 of Maori Mean Population.
1920	1,006	20·21
1921	1,056	20·02
1922	1,442	27·09
1923	1,181	22·02
1924	1,246	23·08
1925	1,716	31·39
1926	1,536	25·27
1927	1,495	23·22
1928	1,845	28·36
1929	2,216	33·58

The infantile death-rate per 1,000 live births for the five years 1925–29, though showing a remarkable rate-fall of nearly 40 per 1,000 must still fall a great deal to approach the wonderful figures (34·10 per 1,000 live births) of the New Zealand infantile death-rate. Still, the results are gratifying, and reflect credit on those district nurses who have not neglected that phase of preventive work. Sir Truby King has contributed adaptations from his booklet, "Expectant Mother and the Baby's First Month," and this when translated will be distributed widely. Many mothers are now taking advantage of the advice of Plunket nurses.

Infantile Mortality.—Numbers and Rates, 1925–29.

Year.	Number of Deaths of Maoris under One Year.	Death-rate per 1,000 Live Births.
1925	184	107·23
1926	180	117·19
1927	236	157·86
1928	218	118·16
1929	174	78·52

Figures hereunder for the period 1920–29 show the deaths during the puerperal state. Apparently we were labouring under a misconception when we assumed that the maternal death-rate from all causes was so low as to be negligible. It is possible that the figures warrant correction. Many may not be based on a medical certificate or on reliable information.

Puerperal State.—Deaths.—Numbers and Rates, 1920–29.

Year.	Number of Deaths.	Rate per 1,000 Live Births.
1920	23	22·86
1921	10	9·47
1922	15	10·40
1923	13	11·01
1924	10	8·03
1925	11	6·41
1926	15	9·77
1927	13	8·70
1928	25	13·55
1929	13	5·87

Infectious Diseases.

The main infectious diseases which continue to take toll are typhoid, influenza, and tuberculosis. The cancer figures have been included. Dysentery was severe and widespread, but did not reappear last summer.

Typhoid Fever.

The deaths and rates per 1,000 of mean Maori population are herewith given, showing an appreciable fall. It has been practically endemic in the Rotorua district, but now appears to be rooted out. In the East Coast it was successfully confined, and due credit must be given that tribe for its co-ordination and attention to departmental instructions. The improved sanitary conditions and better water-supplies are important factors in the improved figures, while educative propaganda and the continued T.A.B. inoculations are proving effective preventive measures.

Deaths from Typhoid.—Numbers and Rates, 1920–29.

Year.	Deaths from Typhoid.	Rates per 1,000 of Mean Maori Population.
1920	17	0·34
1921	28	0·53
1922	25	0·47
1923	21	0·39
1924	30	0·56
1925	28	0·51
1926	23	0·38
1927	25	0·39
1928	33	0·51
1929	20	0·30

Dysentery.

The epidemic of 1929 mainly affected the Auckland Central and Auckland South Health Districts, the causative organism being definitely determined as the Shiga bacillus, though Flexner's bacillus was noted in the Taupo area. In the 203 cases reported there were forty-eight deaths. To combat the epidemic no new officers were appointed, but a temporary concentration of officers on the area affected was decided on. All cases were quickly transported to hospital, and contacts kept under close supervision. The epidemic began to wane towards the end of May, and there has been no recrudescence. To effect this end a scavenging campaign was carried out in the affected areas, mainly with the help of the Native Department. The whole area was subjected to a thorough clean-up. Rubbish was burnt or buried, w.c.s erected, old ones destroyed and buried after treatment with lime, tanks or bores provided, and water-supplies improved. Additional water-supplies have since been installed and others projected. This has been the worst dysenteric outbreak on record.

Influenza.

The figures for the ten years 1920–29 are here given. Pamphlets on influenza in the Maori language have been freely distributed and are beginning to be more closely followed—thus averting complications.

Deaths from Influenza.—Numbers and Rates, 1920–29.

Year.	Deaths from Influenza.	Rates per 10,000 of Mean Maori Population.
1920	103	20·69
1921	31	5·88
1922	41	7·70
1923	42	7·83
1924	21	3·89
1925	20	3·66
1926	44	7·24
1927	35	5·44
1928	74	11·38
1929	41	6·21

Tuberculosis.

The ravages of this disease are causing much concern. It will be a subject for close investigation during the current year, in the hope that the incidence may be materially reduced and propagation stayed.

Tuberculosis (all Forms).—Deaths.—Numbers and Rates, 1920–29.

Year.	Number of Deaths.			Rate per 10,000 of Population.		
	Pulmonary.	Other Forms.	All Forms.	Pulmonary.	Other Forms.	All Forms.
1920	170	14	184	34·15	2·81	36·96
1921	170	22	192	32·23	4·17	36·40
1922	184	25	209	34·57	4·70	39·26
1923	179	23	202	33·37	4·29	37·66
1924	154	19	173	28·53	3·52	32·05
1925	184	32	216	33·66	5·85	39·51
1926	184	27	211	30·28	4·44	34·72
1927	205	37	242	31·84	5·75	37·59
1928	201	38	239	30·90	5·84	36·74
1929	193	39	232	29·25	5·91	35·16

Cancer.

The statistics showing the number of deaths per 10,000 of mean population is here given for the years 1920–29 inclusive.

Cancer.—Deaths.—Numbers and Rates, 1920–29.

Year.	Number of Deaths.	Rate per 10,000 of Population.
1920	16	3·21
1921	9	1·71
1922	12	2·25
1923	20	3·73
1924	13	2·41
1925	22	4·02
1926	25	4·11
1927	19	2·95
1928	22	3·38
1929	23	3·49

Subsidized Medical Officers.

These services still proceed and in many instances are quite satisfactory, whilst in others the Department does not receive full service for the amount expended.

Nursing Service.

It is with pleasure I again have to report upon the highly valued services of these officers.

The Maori Mission nurse at Koriniti, Wanganui River, has become a full-time departmental officer. Her services will still be utilized in that district, though it is proposed to have her transferred to Wanganui, where transport facilities will greatly increase her radius of activity.

The Maori Purposes Board has agreed to subsidize further district nurses to the extent of £900 per annum. It has enabled the appointment of a district nurse at Tokaanu (Taupo). Other appointments will be made as the position permits.

Native Health Inspectors.

These officers continue to give useful service, their knowledge of the customs and language materially helping them in their work. Examinations are being arranged for these officers, so that they may be better equipped to deal with the various phases of the work.

Water-supplies.

Eighteen water-supplies, at a total estimated cost of £1,064 10s., have been laid out in Maori settlements during the year, three of which have been duly installed. The remainder will be completed as details of finance are finalized. Six of these proposals are by pipe supply from natural springs or streams, three are from roof catchment with tanks, and nine are by divined underground supply, with bore and mill attached. The continued installation of these most necessary supplies is reflected in the vastly improved conditions of health and of sanitation generally.

Sanitary Schemes.

One of the most pleasing features of the year has been the ready response (financial circumstances permitting) to the appeal for better and more permanent sanitary services in pas where large gatherings are wont to be held. Estimates for these up-to-date sanitary schemes, involving a cost of £1,200, were drawn up, one of these, at Te Kuiti, being completed; the others, at Ngaruawahia and Whakarewarewa, are at present being further discussed with a view to the arrangement of finance.

The Te Kuiti conveniences, completed at a cost of £225, consist of four up-to-date w.c.s with water carriage and urinals housed suitably and connected with the borough sewer.

At Waitara a sanitary block was installed, making provision for two w.c.s, &c., for each sex, with water flushing and septic tank.

At Papawai there is a similar sanitary installation, with water carriage and connections to the borough sewerage.

At Kaiti (Gisborne) and at Waiomatatine (East Coast) two splendid sanitary blocks have been installed, solely at the people's own expense, providing four w.c.s for either sex, urinals, shower-baths, wash-hand basins, &c., housed in buildings with through-and-through ventilation, cement foundations, and iron roofing. The former is connected to the borough sewerage, the latter to septic tanks.

I have again to thank the Directors of the different Divisions and the Medical Officers of Health and their staffs for the valuable assistance rendered in the co-ordination of their services with those of my Division. I wish also to express appreciation to the officers under my control, who have at all times given of their best and assisted materially in bringing about such excellent results.

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

PART VIII.—MATERNAL WELFARE.

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

I have the honour, once again, to present my annual report on the work done by me as Consulting Obstetrician to the Health Department, and on such matters as seem at the moment to concern the campaign against maternal mortality.

My routine work has continued as heretofore, and has somewhat increased except in one respect. As I mentioned in my report for 1928, I have tried to get in touch with medical practitioners in regard to obstetrical deaths and certain other obstetrical cases of special interest. The necessary correspondence in such cases was at first carried out through the different Medical Officers of Health. An objection, however, was raised by the Obstetrical Society to the practice, on the ground that it entailed unnecessary publicity and the permanent record of their patients' history. Accordingly, it was arranged, with the society's approval, that practitioners should reply directly to me in answer to a request for information on my behalf by the Medical Officer of Health. This change ensured complete privacy, and it was hoped would also lead to a more ready response from practitioners. This hope, however, has not been realized; and, in fact, the proportion of replies is smaller. This is particularly the case in respect to one district, and as this district has been associated during the past year with a high rate of maternal mortality, the failure to get reports, and the consequent inability on my part to be of service to practitioners, is the more unfortunate. At the same time whenever I have explained my objects to meetings of medical practitioners, my efforts have been approved, subject to the condition that all communications were confidential. This condition has been strictly observed.

The Training of Maternity Nurses and Midwives.

The Nurses and Midwives Registration Board has recently made certain changes which will, I think, effect considerable improvement in the training of maternity nurses and midwives. The respective courses have been lengthened. It is proposed to limit the hospitals which train midwives to the largest available. A prospect has been opened of improving materially the training of maternity nurses. At the same time, the altered courses have facilitated the work of those responsible for practical and theoretical teaching. I have called attention for several years to the fact that the training of maternity nurses in the smaller hospitals is unsatisfactory, and I propose shortly to suggest to the Board two things which may lead to its improvement. The first is that small and unsatisfactory hospitals shall no longer be recognized as complete training-schools, and that they shall only be entitled to receive pupils for a small proportion of their course, and that these pupils shall come from the nearest main centre for maternity training.

Dame Janet Campbell in her admirable Australian report, to which I shall later refer, writes as follows on this subject in regard to Australian conditions: " . . . in many of the small institutions recognized as training-schools it must be impossible to carry out the requirements fully. Not only may the number of cases be insufficient to produce the 'obstetric atmosphere' needed for efficient teaching, but the variety of experience must necessarily be unduly limited. . . . Further,

the theoretical and clinical instruction in many of the smaller training-schools is bound to be inadequate. The possession of a medical qualification or a midwifery certificate does not mean a capacity to teach, and, when the lecture or coaching is merely an incident in the life of a busy practitioner or Matron, it cannot be expected to be of high quality."

The second suggestion which I propose to make is that next year I should be authorized to inspect the larger maternity-training schools instead of the midwifery schools, which for the moment do not want inspection. I think that, so far, my inspections have led to the consolidation of and to improvement in midwifery training, and I hope a similar result may follow similar efforts in the case of maternity training.

There is a possible danger which invests the proposed changes. The midwifery training centres, though ample for the needs of the country, can only train a certain number of pupils. If the present practice of "generally" trained nurses seeking midwifery certificates, irrespective of whether or not they propose subsequently to practice midwifery, is to continue, it is probable that there will be an excess number of candidates. In such a case the woman who definitely proposes to practice midwifery may be unable to get a training. To obviate this I submit that two steps are necessary. The first is to persuade Hospital Boards that it is both unnecessary and inadvisable to prescribe a midwife's certificate as a necessity for candidates for the majority of hospital posts. Training in maternity nursing is undoubtedly advisable for such posts, but midwifery training is wholly unnecessary, unless the post involves the teaching or practice of midwifery. I find that, rightly or wrongly, there is an impression that the Health Department is responsible for the unnecessary demand for midwifery certificates, and I think it might be well if this impression was definitely removed, and the opposite course recommended. The second step is to raise the repute of the maternity nurse by enabling her to register in Great Britain and other countries. The present training of the maternity nurse, and still more the training which will shortly come into force, is, if anything, above the standard adopted for midwives in Great Britain in all but one particular—namely, that she does not obtain the minimum number of conductions prescribed by the Central Midwives Board. When the new system is adopted there is no reason why maternity nurses should not obtain these conductions. Consequently, if this is the only barrier to their recognition, it can and should be removed, and recognition applied for. Once this has been obtained, it will tend more than anything else to reduce the number of unnecessary applicants for midwifery training. My only other remark under this heading is that the establishment of ante-natal clinics, in all hospitals recognized as complete training-schools for maternity nurses, is essential, and will, I hope, be carried into effect.

The Training of Medical Students.

I should like to congratulate the Obstetrical Society on the able and successful manner in which it has come to the aid of the Medical School of Otago University, and has brought practical help to the efforts which this Department has made for the past eight years. The effort, which has resulted in the creation of a full-term professorship, came as the necessary climax to all other efforts to incite its establishment. When the new maternity hospital at Dunedin is built, the foundations will have been laid of a new system of training, which will enable the past efforts of Professor Riley and his teaching staff to be brought to the completion which these gentlemen have so long desired, and which, if the financial position of the school had allowed, would long before this have been reached.

I trust that in the making of the new arrangements one point will not be forgotten. Clinical instruction will still be necessary in places other than Dunedin, and the teachers who will provide it at the different St. Helens Hospitals must be paid sufficiently to enable them to devote the necessary time to it. Such payment must come either from the general funds of the school or from the surplus funds collected by the Obstetrical Society. When one or other of these is available, it should be possible to devote the money, now allocated by the Department to the payment of their medical officers in respect of the teaching of medical students, to payment for their increased work in the teaching of midwives and in the general duties of the hospital.

Pari passu with the changes in the Dunedin school, and the improved clinical teaching in St. Helens Hospitals, should come the use of the obstetrical material in general hospitals for the instruction of students attending them, and of the junior hospital staff. I have urged many times the necessity for the recognition of this, and for the appointment of obstetricians and of gynæcologists to the staff of the large general hospitals. Such a step is necessary, both for the instruction of students and for the welfare of patients. At the time of writing my last report neither in the Auckland nor in the Wellington General Hospital did such an appointment exist. Since then, a Consulting Obstetrician has been appointed on the staff of the Wellington Hospital. It is obvious that such an appointment is not a satisfactory solution, either in regard to the treatment of the cases of difficult labour, which are admitted to the Hospital, or in regard to the teaching of the students and junior staff of the Hospital. I therefore sincerely hope that the Board will reconsider the matter, with a view to bringing their system into accordance with modern practice and with the obstetrical needs of the country.

Dame Janet Campbell's Report on Maternal and Child Welfare in Australia.

This most valuable report will well repay study by all those interested in maternity and child welfare. Its preparation and the investigation which proceeded it are the most important events that have occurred in the obstetrical world of the Southern Hemisphere during the past year. I have already made a short quotation from it, and if space allowed I could include many others with advantage. The conditions existing in Australia differ markedly from those existing in this country, and I think I may congratulate you, Sir, on the fact that many of Dame Janet's most important suggestions have been either already adopted here, or their wisdom and necessity recognized.

The Future of Obstetrical Practice.

In my report of last year I made certain suggestions regarding the direction in which the practice of obstetrics was likely gradually to trend. I subsequently repeated them in an extended form in my address as President of the Obstetrical Section of the recent Medical Congress at Sydney. It is unnecessary again to emphasize them here, as they will be found *in extenso* in my recent book on "The Causes and Prevention of Maternal Mortality."

There is, however, one point to which I wish to refer. The British Medical Association has adopted in Great Britain a scheme for obstetrical practice which very closely resembles that suggested by me. There is, however, one essential difference. In the scheme of the Association it is proposed to hand over the care of the pregnant woman to the midwife both during pregnancy and normal labour, and it is left to her to refer the patient to the medical practitioner during pregnancy, should she consider it advisable. My proposal, on the contrary, was that the entire responsibility for the care of the patient during pregnancy and labour should rest on the medical practitioner; that his special duties should be ante-natal care and diagnosis, assistance at abnormal labour, and post-natal care; and that he should be free to delegate such part of ante-natal care and of the management of normal labour to the midwife as he considered well. I do not think it is advisable to relieve medical practitioners of ante-natal care and diagnosis. These matters are essentially medical, and depend on many other things than a technical knowledge of midwifery. I believe that marked reduction in maternal mortality will not result until some such scheme as I have outlined comes into effect, but, when it does, I trust it will not imitate that part of the British scheme which hands over ante-natal care to the midwife.

Dr. Hector's Investigations.

Dr. Hector has, during the year, continued his investigation into still-births and neo-natal deaths. He has examined a considerable amount of material, and has drawn up a report which appears elsewhere. Naturally, in the short time at his disposal, the material examined is insufficient to enable him to arrive at definite conclusions. I should be very glad to see him given the opportunity of continuing his work, if it was possible to arrange for him to do so.

Post-natal Clinics.

The establishment of post-natal clinics in maternity training hospitals has not, so far, become effective, although the fact that such clinics are working satisfactorily in similar institutions shows that it is feasible. The importance of these clinics is recognized, and it is quite time that they were generally established. Even if they did not, for the present, go further than the routine examination of patients before they left hospital, and the treatment of those who needed treatment, much good would be done. The difficulty of initiating even this examination is, however, considerable in large hospitals such as the Wellington and Auckland St. Helens, because of the increased work it throws on the medical officers. I think the difficulty would be removed by the appointment of clinical assistants, who would relieve the medical officers of this and possibly other routine work. Such appointments should be honorary, and would, I fancy, be acceptable to many practitioners who desired to increase their knowledge of obstetrical and gynæcological practice. The appointment of a resident medical officer to these hospitals is urgently wanted, but, as there is at present a lack of the necessary accommodation, it is impossible. The appointment of clinical assistants would be the most effective means of providing the necessary additional assistance until this accommodation was available. As things are at present there is a danger that, in consequence of the increased demands on the time of the medical officer for the teaching of midwives and medical students, the purely clinical work of the hospital may be hampered.

I think, further, that the time has come to place on a definite footing the status and duties of the medical officers of the St. Helens Hospitals, in order that these hospitals may more nearly conform to the modern idea of an obstetrical teaching hospital. There are no difficulties that I know in the way of so doing, and a readjustment would, I think, add both to the efficiency and the status of the hospitals.

Eclampsia.

The analysis of the eclamptic returns for the past year are somewhat similar to those of the previous year. The statistics of the last three years are as follows:—

Table "A."—Eclampsia.

	Lived.			Died.			Total.		
	1927.	1928.	1929.	1927.	1928.	1929.	1927.	1928.	1929.
Ante-partum eclampsia—									
(*a*) Conservative treatment ..	27	42	44	1	7	14	28	49	58
(*b*) Accouchement force	1	..	3	2	..	1	3	..	4
(*c*) Caesarean section	5	3	4	2	3	..	7	6	4
(*d*) Induction of labour ..	5	5	8	4	2	..	9	7	8
Post-partum eclampsia	10	21	10	5	3	..	15	24	10
Total notifications ..	..	..	..	..	..	..	62	86	84

Death rate, 1927, 22·9 per cent.; 1928, 17·2 per cent.; 1929, 17·9 per cent.

It will be noted that while the death-rate in ante-partum eclampsia was increased, there was no mortality amongst the cases which started after delivery. I regret to see that *accouchement force* is still sometimes practised. There are two standard methods of carrying out the conservative treatment of eclampsia—Stronganoff's method and Tweedy's, or the Dublin, method. Both methods have been thoroughly tested, and have given excellent results in large numbers of cases. I think it would tend to improve the treatment of eclampsia in this country, and its results, if practitioners would familiarize themselves with one or other method, and adopt it consistently in preference to the somewhat heterogeneous mixture of methods which is at present popular.

The Use of the Midwifery Forceps.

The tendency to abuse the midwifery forceps, though confined to an ever-lessening number of maternity hospitals, is still sufficient to need careful watching. It is difficult to understand the mentality of the practitioner who adheres to methods which have been criticized and condemned in every obstetrical school in the world. Such people are impervious to suggestion, and I am afraid that, before we shall get away from the harm they do, a new generation must rise.

The following figures taken from the monthly returns of maternity hospitals show how practice differs in different places :—

Table "B."

Hospital.	Number of Full-term Labours.	Percentage of Forceps Application.
St. Helens Hospitals	2,333	4·37
Whangarei Public Hospital	172	1·74
Stratford Public Hospital	145	5·52
Palmerston North Public Hospital	175	1·14
Private Hospital, Auckland	103	1·94
Private Hospital, Auckland	91	5·49
Private Hospital, Wellington	155	2·58
Private Hospital, Wellington	63	4·76
Private Hospital, Canterbury	112	5·36
Private Hospital, Canterbury	77	3·90
Timaru Public Hospital	103	0·97
Public Hospital, Inangahua	19	57·89
Public Hospital, Westport	65	30·77
Public Hospital, Rangiora	100	30·0
Private Hospital, Auckland District	19	47·06
Private Hospital, Auckland District	30	37·04
Private Hospital, Auckland District	14	46·15
Private Hospital, Wellington District	15	40·00
Private Hospital, Wellington	27	37·04
Private Hospital, Wellington	151	36·42
Private Hospital, Canterbury	22	36·36

These figures represent the extremes. On the whole, the position is improving, and we can, I think, look forward to a time when all practitioners will realize that the proportion of women who cannot deliver themselves safely and satisfactorily is very small.

The following table shows the position for the last three years as regards the country at large :—

Table "C."

Hospitals of	Number of Full-term Labours.			Percentage of Forceps Deliveries.		
	1927.	1928.	1929.	1927.	1928.	1929.
50 confinements and under ..	3,794	3,907	3,829	15·06	12·33	11·07
From 51–100	5,589	5,162	4,880	12·63	11·43	10·7
From 101–150	3,044	2,566	2,593	16·29	12·7	8·83
Over 150	4,229	4,858	5,680	7·35	8·13	8·06
Dominion totals ..	16,656	16,493	16,982	12·51	10·87	9·6

In forty hospitals the forceps rate is 20 per cent. or over, and of these hospitals twenty-six are found in Group I—*i.e.*, in hospitals with less than 51 confinements annually. This group contains the highest proportion of hospitals whose equipment is poor, and whose powers of obtaining a positive asepsis are therefore limited. It is obvious that, under these conditions, the dangers of the application of the forceps are greater than in the many larger hospitals, which are almost able to dispense with this instrument.

I regret to have to draw your attention to the high proportion of public maternity hospitals in Canterbury in which the use of the midwifery forceps is excessive, but it is so marked a feature that it calls for attention. The contrast which exists between the practice of these hospitals and of the hospitals which form the midwifery-training schools is very great. Thus in St. Helens and the Essex Home taken together the percentage is 3·8, while in the other public hospitals of Canterbury it is 14·2. If it was possible to bring to the notice of those concerned the ill effects, both in practice and in example, of unnecessary forceps application it might be of value.

The following table shows the present position both in regard to Canterbury and to the only other public hospitals in the Dominion in which the rate exceeds 25 per cent. :—

Table "D."—Forceps Application in certain Public Maternity Hospitals.

Hospital.	Group.	Percentage, Forceps Rate.
Otaki	I	33·33
Lincoln	I	27·7
Amuri	I	25·0
Cheviot	I	33·3
Lyttelton	I	30·45
Inangahua	I	57·89
Westport	II	30·7
Cromwell	II	27·45
Rangiora	III	30·0
Average for New Zealand		.. 9·67

The average rate of forceps-application in public hospitals in the Canterbury Health District is as follows : Group I, 18·48 ; Group II, 16·12 ; Group III, 13·59 ; Group IV, 3·4. In Group III there are three hospitals of which one has a percentage of 30.0, and another of 0·97. The number of patients confined in each hospital was practically identical. The total fœtal mortality in the former hospital was seven, and in the latter three.

Finally, an analysis of the statistics of all hospitals in Group IV gives the following result : —

Table "E."

Class of Hospital.	Percentage of Forceps Rate.	Percentage of Infant Mortality.	Percentage of Maternal Mortality.
Public	2·2	1·49	0·2
Private	15·81	1·82	0·26

From these figures it is obvious that a sevenfold increase in the forceps rate has not been associated with improvement in either the infant or the maternal mortality.

The General Statistics of Maternity Hospitals.—A new form of monthly return for use in all maternity hospitals was introduced at the beginning of 1929, with the result that, for the first time, it is possible to arrive at the true mortality of these institutions. These records possess great value, and when they include the statistics of a number of years, I believe they will form one of the most important guides available to the results of maternity-hospital practice. Dr. Paget has had a valuable summary of these returns prepared with which he will himself deal. There is, however, one subject to which I wish briefly to refer—namely, the maternal death-rate. The recorded rate now includes not merely the patients who die in maternity hospitals, but also all those who died after transference to another institution. It is, therefore, as faithful a record as can be got of the total deaths.

The following table shows the relative mortality rates in maternity hospitals and outside them :—

Table "F."—Birth-rate and Maternal Death-rate, 1929.

——	Live Births.	Deaths.	Death-rate per 1,000 Live Births.
Maternity hospitals	17,224	66	3·83
Elsewhere	9,523	63	6·62
Total	26,747	129	4·82

As Dr. Paget shows in his report, these figures for maternity hospitals and for "elsewhere" are not comparable, since the figures given for the latter group include cases of septic abortion and ectopic gestation. As these conditions are not treated in maternity hospitals, it is necessary to exclude them when making a comparison. Twenty-six deaths occurred from these causes, and when they are deducted from the sixty-three deaths which occurred "elsewhere" a death-rate of 3·87 per 1,000 live births is found instead of one of 6·62. Perhaps it is necessary to add that the inference must not be drawn from these figures that the maternal-mortality rate of the country is below 4 per 1,000 live births. In calculating this maternal death-rate it is necessary to include both septic abortions and ectopic gestations, in order that it may be comparable with the rate obtaining in other countries. Consequently, figures obtained by their exclusion are artificial, and are solely for the purpose of enabling the comparison of two sets of domestic statistics. That such a rate is considerably higher than is necessary can be seen by comparing it with the results obtained, not merely in the St. Helens Hospitals, but in many of the other larger maternity annexes to general hospitals, and particularly in those which are also recognized as training schools for midwives. The number of cases recorded is insufficient to afford positive data, and it will be necessary to wait for some five years or so to obtain sufficient numbers. Still, one thing is clear, that in the year 1929 the death-rate amongst patients confined in the maternity hospitals of the country was slightly less than amongst those confined in private houses. For this satisfactory state of affairs the efforts of Dr. Paget to bring private maternity hospitals up to a proper standard are largely responsible.

Dr. Paget has analysed in his report the results of hospitals devoted solely to midwifery and of hospitals which take also medical and surgical patients. He shows that in the latter group a rate of mortality occurred during the past year which must be regarded as very serious. Whereas in the unmixed maternity hospital the mortality rate for the country was 3·03 per 1,000 labours, the rate in the mixed hospitals was 8·23 per 1,000 labours.

As I have suggested already, I think that obstetrical prognosis will be largely improved when the care of normal women is left to midwives during labour, because the risk of infection brought by a practitioner whose practice is "mixed" is greater than that brought by the woman who only practices midwifery.

A similar argument applies even more strongly to the "mixed" maternity and general hospital with its "mixed" environment, equipment, and nursing staff. Personally I have always been opposed not merely to mixed hospitals, as Dr. Paget classifies them, but also to maternity hospitals possessing one or more wards for emergency cases. Dr. Paget's figures strongly support opinions which I have given in the past on this point, and I now hope that the attention of the Department will be focussed on the evil which he has proved. The abolition of mixed obstetrical and general practice by practitioners can only come slowly, and through public opinion, but the abolition of the more dangerous "mixed" hospital is within the powers of the Department.

It is customary to talk and write at the present time as if it was impossible to trace the causes of an unduly high rate of maternal mortality. This seems to me to be a wrong attitude to adopt. The causes are, I think, realized by most thinking people, but the inertia of existing conditions is too great to allow them to be overcome. The inertia itself is a product of many factors—economics, popular beliefs, custom, tradition. Some day it will collapse like a house of cards, and the mortality of five and six per 1,000, which we find in sections of the statistics of the past year, will be reduced to a rate comparable with that found during the same period in institutions whose practice rests on a logical basis.

Ante-partum Baths in Maternity Hospitals.—I am glad to say that the much-needed abolition of ante-partum baths has come several steps nearer fulfilment, and, in a number of public hospitals, such baths have been forbidden. The practice of the obstetrical world is tending rapidly in this direction. In the new maternity hospitals in Sydney there are no bath-tubs provided for ante-partum patients. A similar course has been followed in most newly built maternity hospitals, and will be followed in the new hospital at Christchurch, and also, I hope, at Dunedin. Professor B. P. Watson, formerly Professor of Midwifery in Edinburgh University, and now of the Sloane Hospital, New York, writes as follows: "None of our patients ever receive a tub-bath ante-partum; all our bathing is done on a sloping slab with running water. I believe with you that the full tub-bath is a menace to the patient."

Now that the Obstetrical Society has expressed its approval of the abolition of such baths, it is hoped to be able to begin measures to stop the practice in all hospitals, public and private. Dr. Paget will, I hope, shortly direct his efforts in this direction. It is well to remember that, the poorer the type of hospital, the greater is the danger from "full baths," and that consequently, unless the practice is stopped in private as well as in public hospitals, the resulting benefit will be insufficient.

The New St. Helens Hospitals.

There is one other matter to which I must refer, because it is intimately connected with some of the most important suggestions which I have made to you, Sir, from time to time. So long ago as 1925 I urged the importance of creating in the large centres maternity hospitals of sufficient size to develop into really good training-schools for midwives and medical students, and into post-graduate schools for medical practitioners. At the time an opportunity was present of creating such a hospital in Wellington. It was, however, unfortunately lost in spite of the efforts of the Department, largely owing to the fact that the Trustees of the Alexandra Home thought their single girls might not be so well looked after in an enlarged St. Helens Hospital. Now, a similar scheme is on the verge of successful accomplishment in Christchurch. A site has been obtained. An agreement of amalgamation

of the Essex Home and the St. Helens Hospital has been arrived at. The careful work of the technical side of your Department has produced, after much consideration, plans for an excellent hospital of the best type. At the last moment opposition has again developed, but this time on grounds the exact reverse of those brought forward in Wellington. The opposers of the scheme consider that the presence of the single girls will overthrow the object for which the St. Helens Hospitals were created. At the same time, and, so far as I know, with the approval of many of the people who oppose the Christchurch scheme, the Government is being urged to adopt a similar course in Dunedin. It is proposed and I understand decided, to create in this centre a large maternity hospital which will embrace the existing St. Helens and the Batchelor Home. It is thus clear that the curious position has arisen that a scheme, opposed in Wellington on certain grounds, is opposed in Christchurch on grounds that are directly opposite, while an identical scheme is received with general approval in Dunedin.

In addition to this, opposition has been started to the teaching of medical students in the St. Helens Hospitals of Christchurch, Wellington, and Auckland. At the same time no objection of which I have heard has been received to the teaching of medical students in either the present St. Helens Hospital in Dunedin or in its enlarged successor.

I am sure that much of the opposition which has been raised is due to insufficient knowledge of the necessities of the case. If you, Sir, could bring home to the general public the fact that much of the improved teaching, which should result from the rearrangement of the obstetrical side of the Dunedin Medical School, will be lost unless at the same time full facilities are provided for clinical work I believe all real opposition would cease. At the same time, it would be well to emphasize the fact that the new hospital at Dunedin cannot provide all the facilities that are wanted.

Conclusion.

Finally, Sir, I should like to bring to your notice the valuable assistance which has been so freely given to me by Dr. Elliott, as editor of the *New Zealand Medical Journal*. In every issue of this *Journal* he has found room for the various notes and comments on obstetrical matters with which I have provided him, with the result that it has been possible to bring before the notice of the medical profession many matters of interest and importance.

I am also much indebted to the officers of the Department for their most kind and valuable assistance, and especially to the officers and staff of the Christchurch Health Office for help in the production of this report, and in many other ways.

ST. HELENS HOSPITALS.—GENERAL STATISTICS SUBMITTED BY THE CONSULTING OBSTETRICIAN.

The work of these hospitals has continued to yield the usual excellent results, and to be an object lesson to the other hospitals of the country.

The gross maternal mortality during the year was five—*i.e.*, 2·08 per 1,000 labours. Amongst these five deaths are included one due to pleurisy, and two in-patients who were not actually confined in the hospital. I only mention this matter to show that every death of any patient who has once been admitted to the hospital is included.

It is very desirable that the extern work of the hospital be increased. This is especially so in view of the facts that extern work plays an important part in the training of midwives, and that in future the four larger St. Helens Hospitals will alone be responsible for such training.

St. Helens Hospitals.—General Statistics, 1929.

—	Auckland.	Christchurch.	Dunedin.	Gisborne.	Invercargill.	Wanganui.	Wellington.	Total.	Percentage of Total Deliveries.
Total admissions	690	368	173	230	268	177	673	2,579	..
Total deliveries	662	352	171	200	255	172	586	2,398	..
Primiparæ	223	87	40	42	63	40	177	672	..
Multiparæ	439	265	131	158	192	132	409	1,726	..
Presentations—									
Vertex	623	320	148	177	237	158	466	2,129	88·78
Occipito-posterior	25	16	11	16	9	8	21	106	4·42
Face	1	2	2	1	2	..	2	10	0·42
Brow	..	1	..	1	..	2	1	5	0·21
Breech	19	12	6	4	7	5	16	69	2·88
Transverse	2	1	2	3	..	..	..	8	0·33
Twins	8	..	3	2	1	1	10	25	1·04
Complications of pregnancy—									
Hyperemesis	..	..	..	2	..	..	2	4	0·17
Hydramnios	2	2	17	13	2	4	4	44	1·84
Pre-eclamptic toxæmia	12	2	..	2	2	2	40	60	2·5
Eclampsia	1	1	..	1	2	1	..	6	0·25
Nephritic toxæmia	16	..	2	14	9	3	1	45	1·88
Vesicular mole	..	..	..	..	..	..	1	1	0·04

St. Helens Hospitals.—General Statistics, 1929—continued.

	Auckland.	Christchurch.	Dunedin.	Gisborne.	Invercargill.	Wanganui.	Wellington.	Total.	Percentage of Total Deliveries.
Hæmorrhages—									
Unavoidable	2	3	3	3	1	2	1	15	0·64
Accidental, external	3	1	2	2	..	2	2	12	0·5
Accidental, internal	..	..	..	..	..	..	..	..	..
Post-partum, atonic	17	3	13	4	1	1	3	42	1·75
Post-partum, traumatic	2	..	..	..	..	..	..	2	0·08
Post-partum, internal (hæmatoma vulvæ)	3	..	..	..	1	..	..	4	0·17
Lacerations of genital tract—									
Perinæum	180	33	19	18	38	20	94	402	16·79
Cervix	4	..	1	..	1	..	..	6	0·25
Uterus	..	..	..	..	..	..	..	..	..
Contracted pelvis, inlet	5	1	1	3	..	..	3	13	0·54
Contracted pelvis, outlet	5	1	..	2	..	1	..	9	0·37
Prolapse of cord	1	1	..	1	2	1	1	7	0·29
Complications of puerperium—									
Sepsis, local	3	..	..	2	1	5	1	12	0·5
Sepsis, general	2	2	..	..	..	..	2	6	0·25
Pulmonary embolism	1	..	..	..	..	..	..	1	0·04
Insanity	..	..	..	..	..	..	..	..	..
Crural phlegmasia, venous	..	..	..	..	..	..	..	..	..
Crural phlegmasia, lymphatic	..	..	..	..	..	..	..	..	..
Mastitis	9	1	..	3	1	1	5	20	0·83
Operations—									
Internal pelvimetry	2	..	..	..	..	..	..	2	0·08
Induction of labour	5	10	7	2	..	4	1	29	1·21
Forceps	29	9	5	7	12	8	32	102	4·25
Version	5	1	8	5	..	1	..	20	0·83
Manual removal of placenta	5	..	3	5	8	..	7	28	1·17
Cæsarean section—									
Abdominal, conservative	5	..	..	..	..	..	..	5	0·21
Abdominal, radical	..	..	..	..	..	..	..	..	..
Pubiotomy	..	..	..	..	..	..	..	..	..
Craniotomy	..	..	..	..	..	..	..	..	..
Cleidotomy	..	..	..	..	..	..	..	..	..
Decapitation	..	..	..	..	..	..	..	..	..
Morbidity—Total	14	6	..	8	2	10	23	63	2·63
Mortality—Total	2	..	..	..	2	..	1	5	0·21
Infant statistics—									
Total births	670	352	174	202	256	173	595	2,422	..
Premature—									
Alive	17	5	10	4	5	7	14	62	2·56
Dead	4	..	2	4	2	1	8	21	0·87
Full term—									
Alive	639	331	156	195	244	163	563	2,291	94·5
Dead	10	16	5	2	5	2	10	50	2·06
Children born alive who died in hospital	7	1	2	1	4	1	6	22	0·91
Total born dead or died in hospital	21	17	9	7	11	4	24	93	3·84
EXTERN DEPARTMENTS.									
Total attendances	163	180	56	4	4	12	50	469	..
Primiparæ	..	20	2	..	..	1	..	23	4·91
Multiparæ	163	160	54	4	4	11	50	446	95·09
Forceps applications	6	7	3	..	..	..	3	19	4·05
Total morbidity	2	2	..	..	..	..	..	4	0·85
Total mortality	..	..	..	..	..	..	..	..	..

St. Helens Hospitals.—Mortality Statistics, 1929.

Hospital.	Patient's Initial.	Place of Death.	Cause of Death.	Remarks.
Auckland ..	C.H.	District hospital ..	Ruptured pelvic abcess	..
,, ..	E.B.	,, ..	Septicæmia; general peritonitis	..
Wellington ..	E.McC	,, ..	Pleurisy with effusion	This death is apparently not due to puerperal causes.
Invercargill	C.C.	,, ..	Uræmia	Acute nephritic toxæmia-Cæsarean section.
,,	L.M.	,, ..	Cerebral œdema ..	Induction of labour in District Hospital.

Ante-natal Work, 1929.

——	Auckland.	Christchurch.	Dunedin.	Gisborne.	Invercargill.	Wanganui.	Wellington.	Total.
First visits—primiparæ ..	241	155	41	39	65	36	150	727
First visits—multiparæ	544	373	128	105	171	115	342	1,778
Return visits	2,772	1,435	282	173	514	375	1,851	7,402
Outside visits	29	59	24	5	..	35	113	265
Obstetrical outfits sterilized ..	93	289	2	5	6	?	72	467
Total deliveries—								
Primiparæ	223	87	40	42	63	40	177	672
Multiparæ	439	265	131	158	192	132	409	1,726

SECTION 2.—REPORT OF THE INSPECTOR OF PRIVATE AND MATERNITY HOSPITALS.

T. L. Paget, L.R.C.P. (Lond.), M.R.C.S. (Eng.).

I have the honour to submit my annual report for the year ending 31st March, 1930.

The 358 hospitals which it is my duty to inspect consist of the seven St. Helens Hospitals, providing 128 beds; seventy-six public maternity hospitals or wards attached to public hospitals; 146 licensed private maternity hospitals; forty private hospitals licensed for maternity and medical and surgical cases, the two together providing 884 maternity beds; also eighty-nine medical and surgical hospitals, providing 1,407 beds. From personal inspection and from reports by Medical Officers of Health and Nurse Inspectors, I have to report that a reasonably high standard of efficiency is maintained in the majority of these hospitals, and that the standard of efficiency in the smaller maternity hospital is improving. The mixed medical, surgical, and maternity hospital continues to cause me much anxious thought. I deal specially with this question elsewhere.

During the past year four medical and surgical, five mixed hospitals, and twenty-one maternity hospitals of the smaller class have been closed. The closure of these has been due, in most instances, either to economic conditions or their failure to maintain a reasonable standard of efficiency. Owing to the demands for a high standard of efficiency by medical practitioners using medical and surgical hospitals and to the better economic conditions under which these institutions work, it is comparatively easy to ensure that they are conducted satisfactorily. On the other hand, in the case of maternity hospitals there is considerable difficulty in many instances in ensuring a desirable standard. This difficulty is due partly to the fact that the economic conditions are unsatisfactory, and, I regret to say, is considerably influenced by the willingness of a certain minority of practitioners to accept, and in a few isolated instances even to encourage, the practice of a very low standard of efficiency in maternity hospitals, particularly in regard to the practice of asepsis.

The economic conditions governing the small private maternity hospitals are in many instances, as far as I can see, unalterable, and their influence upon the quality of these hospitals can only be relieved by their replacement with small public maternity hospitals supported partly by the fees from the patients and partly from public funds.

I publish in this report a table showing the results of a systematic research into the existing conditions of the maternity hospitals of New Zealand and the results to the 17,845 patients whose confinements took place therein during the year ended 31st December, 1929.

Before discussing the results shown, it is advisable to explain the method of collecting the figures shown in the table and the method of classifying the hospitals which has been adopted.

In addition to the personal inspection of all maternity hospitals by Nurse Inspectors, Medical Officers of Health, and myself, every maternity hospital at the beginning of each month sends in a form as suggested by Dr. Jellett giving detailed information of all cases attended in the hospital or transferred to other hospitals during the previous month. These detailed particulars are compiled from the register which with its attached temperature charts it is compulsory for every hospital to keep. On receipt of these reports in the District Health Office they are checked, and, if necessary, further information added to them by the Medical Officer of Health and the Nurse Inspectors; and the results, when complete, are entered in an annual summary sheet which is drawn up in the form of the table appended hereto.

Particular attention is given to the tracing of all cases transferred from maternity hospitals to others for treatment, and the maternal mortality-rate is calculated not only from the deaths of patients in the hospital, but from the deaths of all patients which occur after transfer to any other hospital, whether this transfer takes place before or after delivery. I feel that the maternal mortality figures compiled by this method may be regarded as substantially correct. I have particularly refrained from using the figures showing the morbidity-rates, because I am convinced from personal inspection that they are not sufficiently reliable. It is obvious that, unless these figures are reliable and accurate and are used properly, they are of no use as information on the important subject of the influence of hospital treatment on maternal mortality for which purpose they are required. Another precaution is also necessary in connection with these figures if they are to correctly show the condition inquired into—that is, that the percentage rate should be drawn from sufficiently large numbers. I consider that the figures used in this table and from which deductions are drawn comply with the first essential—namely, accuracy—and are for the most part drawn from a sufficiently large number of cases to warrant their use in helping to decide the relative merits of different classes of hospitals as an influence upon the maternal death-rate of this Dominion. That the influence of hospital treatment and environment upon maternal welfare in New Zealand is of great importance as will be recognized from the fact that out of 27,341 confinements which took place in New Zealand in 1929, 17,845 took place in hospitals and 9,496 elsewhere. Consequently, the result of hospital cases must have a preponderating influence on the maternal-mortality rate for this country.

The number of deaths from puerperal causes occurring in New Zealand for 1929 as returned by the Government Statistician was 129, giving a mortality-rate of 4·82 per 1,000 live births. From these figures it is possible to calculate the true maternal mortality-rate per 1,000 confinements. Of the 129 deaths forty took place in the maternity hospitals where the patients were confined; twenty-six took place after transfer from maternity hospitals to other hospitals, either before or after delivery. All these sixty-six cases are used in calculating the maternal mortality-rate for the 17,845 cases confined in maternity hospitals or maternity wards of public hospitals. Great care has been taken to trace all transferred cases. The remaining sixty-three deaths from puerperal causes, occurring elsewhere than in the above-mentioned 269 hospitals, are not all attributable to the risks of the remaining 9,496 confinements. They include twenty-two abortions, and four ectopic gestations. Since they have no relationship to the confinements under consideration, these must be deducted from the sixty-three remaining deaths from pureperal causes. This leaves thirty-seven deaths in 9,496 confinements, the maternal-mortality rate being 3·90 per 1,000. With this rate established we are now in a position to compare the results of hospital and non-hospital cases as shown by the maternal-mortality rate 3·70 of women attended in maternity hospitals with the 3·90 among those attended elsewhere.

The maternal-mortality rates for all hospitals taken together and for hospitals divided into different groups are given in Table 1, and are also useful as a comparison of the influence on different classes of hospitals upon maternal welfare. Though these figures may not show the influence of the different groups of hospitals on maternal welfare with absolute accuracy, I am inclined to give very considerable weight to the conclusion drawn from them, because they confirm the opinion I have formed from five years' experience of inspecting these hospitals.

The methods of classifying the hospitals in most cases are made obvious by the form in which the table is drawn up, and this classification has been chosen because I consider it indicates that there is a difference in conditions under which the average hospital in each class is conducted.

The seven St. Helens Hospitals are staffed by a stipendiary Medical Officer, a staff of midwives and pupil midwives, and pupil maternity nurses. The majority of the confinements are attended by the midwives and nursing staff only. Much of the ante-natal work is also done by the midwives and nursing staff, but it is supervised and checked by the Medical Superintendent.

In public maternity hospitals the arrangements for attending patients differ considerably. In some cases all patients are attended by their own private practitioners; in others by the Medical Superintendent of the hospital.

The private hospitals have the same quality of nursing staff as the public hospitals though not always in the same numbers. There is, as far as I can judge, on the whole little, if any, difference in the quality of the medical attention given in the majority of the public and of the private hospitals.

The smaller private hospitals having one hundred or less confinements annually are in some instances less conveniently planned and equipped, and on the average the quality of their nursing service is probably not as high as that in the larger private and public hospitals. The main difference however in the classes of hospitals lies between the maternity hospital which takes labour patients only and the mixed maternity and medical and surgical hospital, and that difference is markedly shown by the inferior results shown in mixed hospitals. In my opinion this is not in any way due to an inferiority in the knowledge or training of the staffs of these hospitals. In most instances they have the same degree of knowledge and skill as elsewhere. There can, I think, be no doubt that the inferior results are due to the influence of environment and to surgical cases being nursed, at any rate occasionally, by the same nursing staff as the maternity cases. All private mixed hospitals are classed as such since the conditions under which they are licensed are the same. The decision as to which public hospitals to class as mixed hospitals is more difficult, and I have adopted the principle of classifying all hospitals as mixed in which the maternity side of the hospital was not conducted as an entirely separate unit. I have not taken into consideration the fact as to whether or not the maternity block or ward formed part of the same building as a general hospital, as, in my opinion, it has very little influence on the welfare of the patient. With regard to the medical staff of these hospitals, I do not consider that they are any more liable to convey infection from their patients than the general practitioner is, and in all instances maternity hospitals in New Zealand are staffed by medical men who are not solely obstetricians, but are engaged in other branches of practice besides that of obstetrics.

The table showing the maternal mortality-rate in the different groups of maternity hospitals also shows that the best rate is to be found in the seven St. Helens Hospitals, at which 2,402 confinements were attended with five deaths, giving a maternal-mortality rate of 2.08.

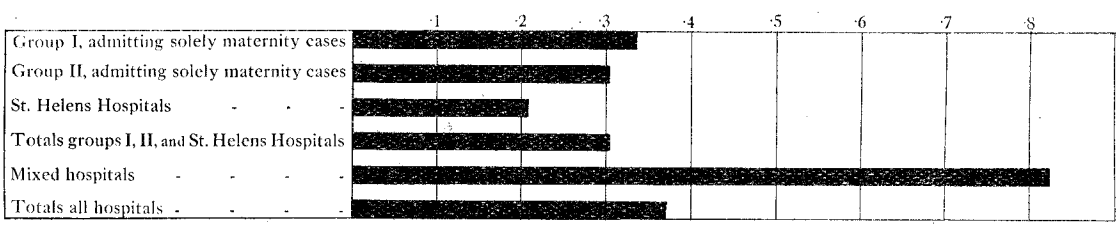
Next in order of merit is Group II, consisting of forty-two hospitals, having 101 cases or more annually, but not including St. Helens Hospitals. This group with 6,263 cases and nineteen deaths has a maternal-mortality rate of 3.03.

Following close on Group II comes Group I, consisting of 149 hospitals, each hospital having one hundred cases or less per annum and being responsible for 6,869 confinements with twenty-three deaths, giving a maternal-mortality rate of 3·35.

Last on the list comes the result of forty private and thirty-one public mixed hospitals. In these seventy-one mixed hospitals, there were 2,310 confinements, with a maternal mortality rate of 8·23 per 1,000. While the small variations in the mortality-rate for Groups I and II cannot be taken as throwing any light on the influence of these hospitals on maternal welfare, it cannot be disputed that the great increase in the mortality rate for mixed hospitals must be regarded as condemning such hospitals under present conditions as being an undesirable part of our hospital system. The more exact knowledge afforded me by the figures drawn from this investigation confirms the opinion which I have formed on less exact data. It also will afford me a very welcome and a necessary support in advocating and instituting certain reforms in the management of this class of hospital that, lacking the exact knowledge I now have, I found it impossible to carry out as completely as I should have wished.

The problem of how to deal with these mixed hospitals is an urgent and very difficult one. It is certain that fairly drastic alterations will be required in most instances to remove the risks they cause to maternity patients. I am of opinion that it will be necessary to exclude from many of these hospitals either the maternity cases or the surgical cases. Further, I consider that hospitals in which the maternity nurse also attends to surgical out-patients, should not be allowed to take maternity cases at all. In some instances this may produce an economic condition that will entail either closing the hospital or materially increasing the expenses of keeping it open if it is to be used for both classes of patient. It will be necessary to consider each hospital separately and decide what should be done with it, always regarding as essential that, whatever action is taken, the special risks to maternity patients revealed by the above figures must be removed. While the interests of patients requiring surgical treatment and the interests of doctors and nurses who may be licensees of these hospitals will be considered, it cannot for a moment be conceded that these interests can be allowed to jeopardize the safety of maternity patients who may enter the hospital for attention. Their safety must be considered of paramount importance, and must be the determining factor in deciding the conditions under which these hospitals can be permitted to continue. Investigation of the conditions present in certain mixed hospitals has shown that the danger to the maternity patient is very real, and suitable curtailment of their surgical activities has already been effected.

MATERNAL MORTALITY IN MATERNITY HOSPITALS BY GROUPS FOR 1929.



ANTE-NATAL CLINICS.

The returns of 1929 show that two public clinics have been opened during the year, making a total of twenty-four altogether established in New Zealand. The appended table shows the number of cases receiving attention in these clinics during the past year, and also shows the gradual increase in the work since 1925, which is satisfactory, and indicates that these clinics are providing a service that was previously wanting and is now appreciated by the expectant mother.

It is gratifying to note the increase in the number of sterilized labour outfits since this method of promoting asepsis in maternity work in non-hospital cases was instituted in connection with these clinics in 1925. It shows an increasing appreciation, on the part of doctors, nurses, and patients, of the value of this safeguard against the introduction of sepsis.

The average attendance of each patient at the clinics varies considerably, but on the whole is fairly satisfactory. It will, I hope, increase, though the introduction of clinics in some of the more isolated country districts will always tend to lower the general average, owing to the difficulty of frequent attendance due to the distances of many patients from the centres.

Ante-natal Clinics.

Year.	New Cases.	Total Attendances.	Outfits sterilized.
1929	5,177	17,555	924
1928	5,050	20,740	728
1927	3,919	15,406	515
1926	3,238	12,554	401
1925	2,289	7,816	..

Puerperal Sepsis.

Following up an inquiry into the causal conditions and consequences of 174 cases of puerperal sepsis which was made in 1928, a similar inquiry was instituted into 143 cases reported to the Medical Officers of Health during 1929. Of these, forty-three occurred in private houses, ninety-nine in hospitals, and one undetermined. The total number of days illness caused up to twenty-eight days was 2,609. The final results returned were 109 cases recovered and twenty died, while the results of fourteen cases remained undetermined at the expiration of the twenty-eight days over which the inquiry into these cases extended. This by no means represents the full economic loss, as in many cases the illness extended to more than twenty-eight days to which it was found necessary to limit the investigation.

The investigation into the contributing causes shows that pregnancy was normal in ninety-three, abnormal in thirty-five, and unclassed in fifteen, while labour was normal in eighty-three, abnormal in fifty-six, and unclassed in four. In fifty-one out of 143 cases the delivery of the infant or the placenta or both was artificial, and consequently more than one-third of the cases were subject to internal manipulation during labour. It is possible that the internal manipulations that took place in these fifty-one cases were unavoidable. If, however, they are taken in conjunction with the returns of forceps cases in hospitals, in some of which the percentage was as high as 30 per cent., 32 per cent., and 47 per cent., there is certainly a suggested conclusion that in a certain number of these fifty-one cases internal manipulations might have been avoided. With these figures before them, I feel confident that all practising obstetricians, midwives, and maternity nurses will recognize the necessity for still further inculcating the practice of extreme patience on themselves, as well as on patients and their relatives; by so doing it is possible to avoid the unnecessary risks attributable to avoidable interference.

The results also show that further provision must be made for practising asepsis both in and out of hospitals, and that the risk of infection from environment, due to including septic surgical and maternity cases in the same hospital, must be eliminated as has been indicated elsewhere in my report.

In conclusion, I find, while New Zealand can on the whole congratulate itself upon the condition and conduct of the majority of its maternity hospitals as indicated by the results, that the mixed hospitals under present conditions must be regarded as introducing an avoidable danger to maternity cases. This matter as I have said before requires very great consideration, and, if necessary, drastic action. Unfortunately, I cannot find in other countries any returns for a similar number of small country maternity hospitals such as I am able to include in this report. My figures, however, compare more than favourably with some recent returns that have appeared in medical publications for certain other hospitals.

It is only recently that a medical practitioner wrote stating that he was sure that our hospital returns were as bad as those recently published for some Aberdeen maternity hospitals which gave the maternal-mortality rate of 14·9 per 1,000, and "that he was sure of his facts and willing to wager a considerable sum to back his opinion." The tables published here will, I hope, satisfy him, and others who may hold a similar view, that such an opinion is not justified by facts.

I wish to extend my thanks to many medical confreres, to the licensees and nursing staff of many hospitals, and to my fellow officers who have most courteously co-operated with me in my efforts to improve hospital conditions in New Zealand particularly with regard to maternity hospitals.

I trust that the publication of the facts in this report may prove a useful and reliable guide to the direction in which the greatest and most immediate improvement in the condition of these hospitals may be accomplished. I again anticipate with confidence the co-operation of all the members of the medical and nursing professions able to hasten that accomplishment.

Table I.—Summary of Maternity Cases in all Hospitals, 1929.

—	Number of Hospitals.	Patients admitted.	Confined at Full Term.	Number of Patients confined between Seventh Month and Full Term.	Number of Confinements	Number of Miscarriages.	Number of Operations.							Hæmorrhages.			Eclampsia.	Number of Deaths of Mothers in Hospital.	Number of Deaths of Infants who were born alive.	Number of Infants born dead.		Patients transferred before Delivery.	Patients transferred after Delivery.	Deaths of Transferred Patients.	Number of Maternal Deaths.
							Instrumental Delivery.	Version.		Dilatation of Cervix.	Manual Removal of Placenta.	Cæsarean Section.	Craniotomy, &c.	Accidental Hæmorrhage.	Unavoidable Hæmorrhage (Placenta prævia).	Post-partum Hæmorrhage.				Probably before Labour.	Probably during Labour.				
								External.	Internal.																
(*a*) Maternity hospitals—*i.e.*, admitting maternity and urgent miscarriage cases only—																									
Group I: 1–100 cases per annum—																									
Totals	149	7,081	6,510	359	6,869	93	698	14	35	31	69	8	5	31	25	105	29	12	108	143	68	21	82	11	23
Percentages to total confinements	..	..	..	..	..	..	10·16	0·20	0·51	0·45	1·00	0·12	0·07	0·51	0·36	1·53	0·42	0·175	1·57	2·08	0·99	0·31	1·19	0·160	0·335
Group II: 101 and over cases per annum—																									
Totals	42	6,476	5,940	323	6,263	47	600	25	24	63	68	14	2	29	30	84	21	13	118	112	73	18	83	6	19
Percentages to total confinements	..	..	..	..	..	..	9·58	0·40	0·38	0·37	1·09	0·22	0·03	0·46	0·48	1·34	0·34	0·208	1·88	1·79	1·17	0·29	1·33	0·096	0·303
St. Helens Hospitals—																									
Totals	7	2,568	2,333	70	2,403	10	102	9	10	9	27	5	1	11	15	39	5	..	31	39	21	9	15	5	5
Percentages to total confinements	..	..	..	..	..	..	4·24	0·37	0·42	0·37	1·12	0·21	0·04	0·46	0·62	1·62	0·21	..	1·29	1·62	0·87	0·37	0·62	0·208	0·208
Groups I, II, and St. Helens Hospitals—																									
Totals	198	16,125	14,783	742	15,525	150	1,400	48	69	63	164	27	8	71	70	228	55	25	257	294	162	48	180	22	47
Percentages to total confinements	..	..	..	..	..	..	9·02	0·31	0·44	0·41	1·06	0·17	0·05	0·46	0·45	1·47	0·35	0·161	1·66	1·89	1·04	0·31	1·16	0·142	0·303
(*b*) Mixed hospitals—*i.e.*, admitting maternity and medical and surgical cases—																									
Totals all mixed hospitals	71	2,424	2,199	111	2,310	63	258	9	11	11	33	8	..	6	11	35	18	15	42	53	26	5	16	4	19
Percentages to total confinements	..	..	..	..	..	..	11·17	0·39	0·48	0·48	1·43	0·35	..	0·26	0·48	1·52	0·78	0·649	1·82	2·29	1·13	0·22	0·69	0·173	0·823
(*c*) All hospitals—																									
Totals	269	18,549	16,982	853	17,845	213	1,658	51	80	74	197	35	8	77	81	263	73	40	299	347	188	53	196	26	66
Percentages to total confinements	..	..	..	..	..	..	9·29	0·29	0·45	0·41	1·10	0·20	0·04	0·43	0·45	1·47	0·41	0·224	1·68	1·95	1·05	0·30	1·10	0·146	0·370
(*d*) Cases confined other than in hospitals—																									
Totals	..	..	..	..	9,496	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	37
Percentages to total confinements	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0·390

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

SECTION I.—CENTRAL AUCKLAND HEALTH DISTRICT.

Dr. HUGHES, Medical Officer of Health.

INFECTIOUS DISEASES.

The most outstanding feature was the occurrence of a sharp epidemic of bacillary dysentery of a virulent nature, the cases being of both the Shiga and Flexner types, the former predominating. The first cases were detected in the Auckland Hospital early in January, occurring in Maoris from the Orakei Settlement; but owing to the roaming nature of the Maoris and their habit of concealing cases it was not possible to confine it to this locality, and it shortly spread to the city and suburbs and southward to the Waikato. Fortunately the incidence in the metropolitan area was not unduly high. The greater number—approximately 75 per cent.—of the cases occurred amongst the Maori population. Special nursing assistance was obtained, and cases found were moved to hospital or placed under isolation and treatment, and the epidemic subsided early in May almost as quickly as it arose. Information in regard to the diagnosis and treatment of dysentery was disseminated during the epidemic, and arrangements made with Dr. Gilmour, Director of the Pathological Department, Auckland Hospital, to deliver a lecture on this subject to a meeting of the British Medical Association (Auckland Branch). The Medical Officer of Health also addressed this gathering.

Of the other diseases, scarlet fever and diphtheria ran a fairly high incidence—higher than for some years past, in fact—but the cases were mostly of a mild type, some of the patients suffering little inconvenience; and probably this accounted for the large number of cases, as the diseases were promulgated by carriers and undetected mild cases. Outbreaks of diphtheria occurred at Papatoetoe and Manurewa during the year, but the cases were controlled by the precautionary measures adopted.

There was little pneumonic influenza reported, although the organization for dealing with a possible epidemic was reviewed and kept in order.

Enteric-fever notifications were very low, as also were those of infantile paralysis and cerebro-spinal fever, the district being practically free of these dangerous diseases.

A fair number of cases of puerperal fever occurred, some in public and private maternity hospitals. A careful investigation of every case was made, and strict precautionary measures to prevent the possible spread of infection were insisted upon in all cases.

GENERAL ADMINISTRATION.

Much improvement has been made in such matters as general sanitation, sewerage, and drainage, refuse and nightsoil disposal, as well as in the many other branches of departmental activity.

Drainage.—During the year the Engineer to the Auckland Drainage Board left for a world tour with a view of obtaining information concerning the methods of drainage purification and sewage disposal in various countries, and with the view of improving the system at present in Auckland, and also with a view of drawing up a comprehensive scheme for the whole metropolitan area.

Complaints have on various occasions been received concerning nuisances from disposal of sewage of various local-body districts into the harbour, and especially at Orakei. Improvements were made during the year at Orakei by the provision of extra-fine screens for further screening sewage before its discharge. Nuisance from discharging storm-water overflows has occurred on several occasions, chiefly due to blockage of sewers. There is no doubt that the creeks which receive storm-water overflows in the city are too many, and require to be piped or concreted in the future, and it is hoped that the Auckland Drainage Board will deal with these at the earliest opportunity. A special report was made by the Medical Officer of Health to the Auckland Drainage Board concerning the drainage problems in the city and the metropolitan area.

Throughout the city and suburbs drainage reticulations have been extended. Great progress has been made in Mount Eden and Mount Albert districts, and polls were successfully taken in Onehunga, Mount Roskill, and Ellerslie for extension of sewage reticulation. Difficulty still faces the Ellerslie Town Board, which still awaits the drawing-out of a comprehensive scheme by the Engineer to the Auckland Drainage Board.

Swimming-baths.—Considerable improvements have been carried out by the City Council in the care and construction of various city baths during the year. Numbers of samples of water from the baths were taken for bacteriological examination. Nevertheless, constant care is required in the filling operations of those baths using sea-water, owing to the amount of suspended matter in the harbour water at certain states of wind and tide. The inlet for the tepid baths has not been extended, as recommended last year, and the results given by the filtration plant are not such as one would expect to be obtained from an up-to-date recirculation plant.

Occupational Diseases.—The question of danger from dust given off from the granite-surfacing machines used in the construction of the new Auckland Railway-station was dealt with, and respirators and fans for extracting the dust were provided by the contractors.

Inspections of all factories using duco and lacquer paints were made during the year, and booths and exhaust fans of satisfactory size were installed. Similarly the use of lacquers for hats was dealt with.

Ventilation of Theatres.—Attention was paid to the ventilation of theatres in the city, more especially picture-theatres. In two cases up-to-date plants were installed for cleaning, heating, and cooling the air before it passed into the ducts leading to the inlets throughout the theatre. Other theatres requiring improvements are receiving attention.

Smoke Nuisance.—Improvements have been made in respect of smoke nuisances in the city and suburbs during the year. In three instances "Iron Fireman" furnaces have been installed, with very satisfactory results.

Refuse-disposal.—All tips in the district have been carefully supervised by the Department during the year. The improvements carried out in the city and suburbs in connection with refuse-disposal are very satisfactory. The capacity of the city destructor has been increased to such an extent that all refuse in the City Council's area can be burnt, and steps were taken for the two tips formerly used by the city to be closed.

The use by the Onehunga Borough Council of a destructor has been a great advance on their old method of disposal.

During the year Mount Eden, Mount Roskill, and Mount Albert have maintained their tips in an excellent condition, and the two former stand out as examples of what can be accomplished with proper care and attention to details in running a refuse-tip.

Mosquito-control.—Through the Mosquito-control Committee, investigations were continued and carried out throughout the health district, and typing of the mosquitos completed. Special investigations were made in connection with ships arriving from overseas, especially from the East and Australia. The various creeks running throughout the city continue to be the breeding-ground of millions of larvæ, especially during dry, hot spells in the summer. It is hoped that the Auckland Drainage Board will be enabled to undertake the responsibility of dealing with all such streams running throughout the metropolitan area, and in the meantime local bodies will accept their responsibilities in dealing with the mosquito nuisance.

All ships have been specially inspected for mosquitoes or larvæ by the Department's Shipping Inspector, and special provisions for the prevention of the importation of mosquitoes from overseas have been enforced by him.

Disposal of Factory Wastes.—The disposal of milk wastes from butter-factories, &c., still continues to give rise to difficulty by causing nuisance. Companies have gone to large expense in endeavouring to deal with this matter, and it appears that best results are obtained by discharging the factory effluent, whilst fresh, into streams. The passage of the milk-factory effluent, without the septic-tank treatment, over deep percolating filters with a good supply of air from the bottom of the filter appears to be finding favour in America.

Maori-Asiatic Inquiry.—Some weeks were spent by the Medical Officer of Health acting as Chairman of the Commission of Inquiry into the living-conditions of Maoris and Asiatics. There is no doubt that the standard allowed by local bodies in regard to Chinese dwellings requires raising, and steps have been taken for the improvement of the conditions existing, also for improvement in the condition of temporary accommodation for Maoris working during the season in Chinese gardens.

Water-supplies.

Consistent effort has been given to the supervision of public water-supplies, and in consequence the condition of most of the supplies has shown improvement during the year. The watersheds and catchment areas have been safeguarded from pollution as far as possible, and advice in regard to methods of purification and the establishing of new supplies given from time to time. A great number of samples have been obtained for chemical and bacteriological examination, and the results, with observations thereon, communicated to the responsible local authorities. Incidents of note have been the bursting of the Auckland City reservoir on Mount Eden subsequent to alterations, and the establishing of new supplies at Howick and Papatoetoe.

Food and Drugs.

Much consideration and effort has been given to improving the conditions under which foodstuffs and drugs are sold, and to the maintenance of a high standard in their quality. In collaboration with the Customs Department, the labelling of incoming goods has received much attention, as well as the handling and unloading of same on the wharves, as it has been found, for instance, that dates have been contaminated by basic-slag dust. Constant inspection of markets and food-sellers' premises, tea-rooms, &c., has been made, with good results as to their general condition and cleanliness.

Many samples of foods, principally those of the staple diet, have been obtained for analysis, and in quite a number of instances it was found necessary to institute legal proceedings for breaches of the Acts and regulations. Substantial fines have been imposed in many instances, prominent among which were fines and costs totalling over £100 against an hotel-proprietor for the sale of samples of gin and whisky which were not true to their labelled description. A case was also taken against a wholesale chemist for supplying a drug wrongly labelled, and fines and costs were imposed totalling £21 11s.

The Dangerous Drugs Act and Regulations have been brought into force during the year, and any illicit use of these drugs is now rendered very difficult. Extra work and supervision in conjunction with the Customs and Police Departments have been necessitated in this matter. Legal proceedings were instituted by the Department against the owner of a chemist's shop for supplying Indian hemp to a person not licensed to receive same, and fines and costs imposed totalled £8 8s.

Milk-supply.—During the year a large number of samples of milk have been obtained for chemical and bacteriological examination. Samples for bacteriological examination were obtained at the farms shortly after milking or on arrival in the city and after pasteurization. The provision of refrigerators in certain farms for the cooling of the milk is a step in the right direction, and is to be greatly encouraged. The sale of milk in bottles has certainly increased, and premises carrying on such work have been the subject of special inspections; also one prosecution took place for filling bottles on the milk-float in the street. The exposure of milk-cans awaiting transit to the city on roadsides still continues to a certain extent. Licensing of milk-shops has been extended in the suburbs by local bodies, and a general improvement in the standard has resulted.

Special inspections of bakers' and butchers' shops, fish-shops, restaurants, and marble-bars were made by the Medical Officer of Health during the year, and the satisfactory conditions found reflect much credit on the shopkeepers and City Council Inspectors.

Shipping and Anti-rat Work.

All vessels entering the port, averaging some twenty-eight per month, have been subjected to careful medical examination by the Port Health Officer, and all prohibited or restricted immigrants detected have been reported to the Customs Department. There have, fortunately, been no serious outbreaks of disease aboard, and in only one instance was it necessary to order a vessel into quarantine, this being the R.M.S. "Aorangi," on which vessel a case of mild smallpox was detected on arrival here. The contacts were released under medical surveillance after vaccination and a period of isolation.

Quarantine Station.—During the year a portion of Motuihi was handed over to the City Council as a park. The island was visited by thousands of the public during the summer, and, as only temporary sanitary provision was made by the City Council, conditions were, and are still, far from satisfactory, and require attention at the earliest opportunity.

Supervision has been exercised by the Shipping Inspector over the sanitation of all vessels in the port, and all fumigations with cyanide-gas or sulphur have been carried out under his superintendence.

In connection with the anti-rat measures taken here, the City Council and Harbour Board have each a special officer assigned to this work, and good catches of rodents by trapping have been reported. Poisoned baits are also laid by those officers, and the City Council distributes free baits to householders on application and reports a steady demand for these throughout the year.

SECTION 2.—AUCKLAND AND THAMES-TAURANGA HEALTH DISTRICTS.

Dr. Chesson, Medical Officer of Health.

Infectious Diseases.

The districts have been free from epidemics of infectious disease, although minor outbreaks have occurred, of scarlet fever and diphtheria at Hikurangi, in the North Auckland district, and of scarlet fever at Thames. The cases were mostly of a mild type.

The two districts were practically free from the epidemic of dysentery which affected the Central and South Auckland areas, although a few sporadic cases were notified, and in one instance a family of five were affected at the Bay of Islands, the infection being traced to contact with a patient from South Auckland. Any cases which appeared were immediately placed under isolation and treatment, and any general outbreak was thereby avoided.

But few cases of puerperal fever were reported, and careful investigation and precautionary measures against the possible spread of infection were adopted in all cases.

Both the districts were practically free of the dangerous epidemic diseases, such as pneumonic influenza, infantile paralysis, and cerebro-spinal meningitis; and enteric-fever notifications have also been very low.

Generally it may be stated that the routine precautionary measures of isolation of cases and school contacts, and disinfection, together with such other special measures as swabbing of diphtheria contacts, inoculation of enteric-fever contacts, &c., have proved efficient in keeping the infectious diseases under control.

General Administration.

Supervision has been exercised over all sanitation and drainage matters, and much improvement has been made, especially in connection with household drainage. The districts being largely rural, many of the houses have private drainage, but most of the towns and boroughs have their own sewerage systems, which have been extended and improved during the year. The following are some of the sewerage improvements effected:—

Whangarei: A new sewerage outfall installed, and an extension of the reticulation system was made.

New Lynn: New septic tank and outfall completed on the Manukau foreshore, and general extensions made to the system. The whole of the borough is now sewered.

Takapuna: Good general progress made with the extension of the recently instituted sewerage system.

Thames: But few extra house connections have been made during the year, and this is not very satisfactory. A measure of pollution of the foreshore by sewage also occurred.

Te Aroha: Further house connections have been made, and consideration given to proposals for the extension of the present system. Complaints regarding pollution of the Waihou River by sewage occurred during the year, and a report on the matter was submitted to the Board of Health.

Tauranga: A new drainage scheme is under way, and a report was made thereon during the year in connection with loan proposals.

The applying of the departmental Drainage and Plumbing Regulations to most of the local authorities' areas has undoubtedly contributed to the marked improvement noted in general sanitation and drainage.

Improvement is also noted in the collection and disposal of household garbage and nightsoil, all the dumps being subjected to regular inspection by the departmental Inspectors, and the sites for new dumps approved before use. The investigation of nuisances of various kinds and remedial action have also been attended to.

With the increased popularity of the islands in the Gulf—Waiheke, Kawau, &c.—as holiday resorts, a greater measure of sanitary surveillance has been required and exercised, with good results.

By-laws.—Efforts have been made to get the various County Councils in this area to adopt a set of comprehensive by-laws. The matter has been brought under the notice of the County Councils' Association, which has circularized the various Councils regarding the matter.

Division of Nursing.—The inspection and licensing of public and private hospitals and the supervision and registration of maternity and general nurses have been given much attention. As occasion arose I have myself made inspection of some of the hospitals, which have for the most part been very well conducted.

Water-supplies.

A good deal of work has been done in the supervision of the various public water-supplies. Inspection of the various catchment areas to ensure the protection of the supplies from possible human or animal contamination, and endeavour to place these areas under the efficient control of the local authority served thereby, was made. Special action in this respect was taken in regard to the Dargaville, Whangarei, Takapuna, Thames, and Tauranga catchment areas.

Such bacteriological and chemical examinations of supplies as were required were made, and the results communicated to the local authorities concerned, with any necessary recommendations in regard to chlorination or improvement of the supply.

A new water-supply was instituted by the Thames County Council during the year from the Omahu Stream, and was reticulated throughout the Puriri, Omahu, Wharepoa, and Hikutaia districts.

Assistance and advice have been given in regard to the establishment of various small private supplies, as for dairy factories, &c.

Food and Drugs.

Regular inspection of food-sellers' premises has been made throughout the year, and the necessary action taken to remedy any defects found. Supervision has also been given to the establishment and conduct of restaurants and eating-houses. Many samples of foodstuffs, principally the staple foods as milk, butter, &c., have been analysed, and warnings issued or prosecutions instituted against the vendors of non-complying samples. Adequate fines have been imposed by the Court when convictions were recorded, and ample reports of cases have appeared in the press, which may have proved a deterrent to prospective wrongdoers. Generally however, vendors have honestly tried to comply with the standard set, and have co-operated to produce a good article under hygenic conditions.

Consideration has been given to the labelling of foodstuffs, and corrective action taken and advice given on this matter.

During the year Inspector Bamberry, Sanitary Inspector to the Tauranga Borough Council, was appointed an officer under the Sale of Food and Drugs Act, to enable him to procure food-samples for analysis under direction from this office.

Native Health.

Attention has been paid to the educational side of this work, and lectures have been given by Mr. Leaf, Maori Health Inspector, and by the district nurses, on simple lines, on hygienic living and cleanliness, and the care of infants, &c. Departmental publications printed in Maori have also been distributed. There is a fairly large Maori population in the two districts, and especially in the North Auckland area, where living-conditions have been improved by the consolidation of lands and the allotting of individual farms, with Government assistance in stocking and farming the land. Many of the Maoris have made good, and their living-conditions are markedly superior to those where this scheme is not in operation.

The general health for the past year has been fairly good, as little dysentery and enteric fever have occurred, although some influenzal colds and the usual run of skin-complaints have been noted. The Native-school teachers, who are supplied with free remedies by the Department, have been of great assistance in treating minor ailments.

SECTION 3.—SOUTH AUCKLAND HEALTH DISTRICT.

Dr. Boyd, Medical Officer of Health.

Infectious Diseases.

The incidence of infectious diseases has been fairly high, and was especially remarkable for a sharp epidemic of bacillary dysentery which affected the district, principally during the months of March, April, and May. The infection, which was of a severe character, originated amongst the Maori population in the Central Auckland District, but, owing chiefly to the itinerant nature of the Maoris, the disease spread to the Southern District. Every effort was made to combat the epidemic, which ran a short and sharp course. The majority of the cases, some 80 per cent., occurred amongst the Maori population, probably due to lack of care in regard to nursing, and to unrecognized and concealed cases. Children were largely affected, approximately 50 per cent. of the cases being ten years of age or under, and the fatality-rate among the Maoris was about 25 per cent. Extra nurses and Inspectors were drafted to the affected area, which was thoroughly combed for unreported cases, many being thereby discovered and placed under isolation and treatment.

Enteric-fever notifications were also fairly high, especially amongst the Maori population in the Rotorua district, where twenty-six cases occurred in February, ten in June, and fifteen in July. Cases were removed to hospital wherever possible and inoculation of contacts carried out by the district nurse to Natives. Sanitation measures were also adopted.

Of the other diseases, scarlet fever and diphtheria have been the most prominent, the notification-rate of both being higher than the average. An outbreak of scarlet fever occurred in the Piopio district during August, some twenty cases occurring, affecting several households. Examination of school-children resulted in the detection of two suspicious cases, which might have spread the infection.

Notifications of puerperal fever were few, although all were carefully investigated and the necessary precautionary measures adopted. There is little that calls for comment in regard to the other diseases, except that the number of tuberculosis cases dropped by over 50 per cent. from that of the previous year.

General Sanitation.

There has been considerable improvement affected in regard to general sanitation during the year. Drainage and sewerage installations, both public and private, have shown good progress, and the supervision given to the collection and disposal of refuse and nightsoil in the various boroughs and town districts, together with the inspection of dumps, has materially contributed to the general improvement noted. Complaints and nuisances have been fully investigated, and the necessary action taken to rectify any unhealthy conditions found. Some of the sanitation improvements are noted hereunder:—

Ngaruawahia: Special water-flushed closets for both sexes were erected at the regatta-ground and careful supervision given to scrupulous cleanliness during regatta week, when some five thousand Maoris congregated. Despite the prevalence of dysentery at the time, no cases were notified from the camp. Consideration was also given to a proposed drainage scheme.

Hamilton: A compulsory refuse-removal system was inaugurated and has been very efficiently controlled.

Cambridge: The Council decided to extend the sewerage scheme to include practically the whole area of the borough. A report was submitted for the information of the loans Board, and sites for septic tanks approved.

Matamata: Drainage reticulation is now almost complete. A thorough cleansing of the septic tank recently produced satisfactory results, and endeavour has been made to prevent river-pollution by ploughing material dislodged from the tanks into adjacent land.

Putaruru: A new nightsoil-dump was approved and operated during the year.

Rotorua: A favourable report on the proposed sewerage scheme was submitted to the Loans Board, and a start with the work will be made almost immediately.

Several conferences have been held with the Council regarding improvement at Whakarewarewa. Difficulties regarding responsibilities as amongst the Council, Native Department, and the Maoris have cropped up, but it is hoped that the matters will soon be satisfactorily settled and improvements put under way.

The improvement noted in sanitary plumbing and drainage is largely attributed to the application of the departmental regulations regarding this work to the majority of the area.

Other matters receiving attention have been the inspection of buildings and the issuing of condemnation or repair notices as required, and the supervision of offensive trades and of cemeteries. An annual inspection of hotels was also completed, and notification sent to the owners regarding necessary renovations and repairs, copies of which were also sent to the Licensing Committee concerned for its information when considering the issuing of licenses. The matter of the adoption of a suitable uniform set of by-laws by the County Councils has also received attention.

Water-supplies.

The public water-supplies have been duly supervised by the Medical Officer of Health and Inspectors, and much advice has been given regarding the care of catchment areas and methods of purification and chlorination. Samples of water for bacteriological and chemical examination have been obtained as required.

Food and Drugs.

In connection with the supervision of food and drugs, many inspections of food-sellers' premises have been made and samples of foodstuffs and drugs obtained for analysis during the year. Advice has been given regarding the regulations as to the establishment of new businesses, and the licensing and conduct of restaurants, eating-houses, &c., under local-authority by-laws. When legal action has been necessary concerning flagrant breaches of the Food and Drugs Act, such as the addition of water to milk, cases have been satisfactorily determined and publicity given to the results through the press. A good deal of work was also done in consideration of the labelling of foodstuffs in accordance with the regulations.

Native Health.

There are very considerable numbers of Maoris resident throughout the district, and, apart from the epidemic of dysentery and cases of enteric fever and tuberculosis, there has not been a great deal of sickness in the area. A general clean-up campaign was instituted of settlements and kaingas throughout the dysentery-infected areas, and, through the Native Department, water-supplies and tanks and satisfactory privies were provided in many cases, with great resultant improvement in general living-conditions, which should bear fruit in better general health in the future. Tuberculosis is fairly prevalent, many cases being concealed owing to the strong objection which the Maoris have against hospital and institutional treatment. Much good work is done by the Maori Inspector and the various district nurses by lecturing on necessary subjects and the distribution of Maori pamphlets, &c. The Native-school teachers are also of great assistance in reporting sickness and treating minor ailments with medicines supplied by this Department.

Ratanaism and tohungaism is practically non-existent now. Medical assistance has been provided by the Department through subsidized medical officers to Maoris, and in indigent cases special visits are authorized at departmental expense. In some cases preventive action regarding enteric fever was seriously hampered by the Maoris concealing cases and hurriedly removing them to the bush owing to their objection to hospital treatment. It is to be hoped that this obstructive policy will give way to educational endeavour.

SECTION 4.—CENTRAL WELLINGTON HEALTH DISTRICT.

Dr. Findlay, Medical Officer of Health.

Birth-rate.—18·68 per 1,000 mean population of urban area.

Death-rate.—9·21 per 1,000 mean population of urban area.

Scarlet Fever.—Number of cases, 339. Rate per 10,000 of population, 22·92. Four deaths.

The increased incidence apparent in 1926–28 now shows a definite decline. In 1930 we should expect a further substantial decrease in the number of cases.

Control: A nurse has not been employed full time on infectious-disease work. A card index showing the incidence in schools has been kept, and wherever there appeared indication of possible spread of infection in a school a visit was paid by a member of the school medical staff, and the children in the class or classes examined. Occasionally one finds that School Committees or parents become apprehensive on the occurrence of cases in the school, and suggest school-closure and disinfection of school. Our experience shows that only in very extreme instances are such radical methods necessary. In special instances the overhaul of the children in the class has proved quite sufficient.

Home nursing as against hospital: Seventy per cent. of the cases were sent to hospital, as against 68 per cent. in 1928. Where conditions were suitable, home nursing was quite satisfactory. The departmental pamphlet on "Home Nursing and Infectious Disease" is left with the householder in all such cases. Satisfactory home treatment must reduce hospital cost and requirements to some extent.

Length of stay in hospital: This has not been reduced in this district.

Diphtheria.—Number of cases, 395. Rate per 10,000, 26·70. Twenty deaths.

The importance of early medical attention and the administration of antitoxin, where necessary, in all possible cases of diphtheria is again apparent. Parents and guardians should also recognize that great care is necessary in convalescence after diphtheria in the matter of restricting the movements of the patients.

Immunization with antitoxin: Arrangements have been made to recommence immunization with toxin-antitoxin at an institution in the district. At another institution, where all the children were inoculated some two and a half years ago, there have been no cases of diphtheria since. Previously diphtheria was recurrent in the institution.

Pulmonary Tuberculosis.—Number of cases, 150. Rate per 10,000, 10·14. Sixty-four deaths. Death-rate for urban area, 4·80.

The last two years the rate per 10,000 of notified cases has increased. This is probably due to some extent to the greater attention paid to chest conditions through the T.B. clinic at the Wellington Public Hospital, and the consequent earlier recognition of cases.

Occupations: Clerks and domestics show a high figure, comparatively.

Control: The register is checked twice a year, and contact is kept with all notifiable cases. The question of sanatorium treatment is placed before every medical practitioner who notifies a case of pulmonary tuberculosis.

Cases sent to sanatoria: Number of patients admitted to Pukeora, 59; number of patients admitted to Otaki, 38.

Child Contacts: All child contacts are followed up by the School Medical Officer. As the years go by, the number of child contacts under observation is increasing considerably, and this work is now quite a definite part of the duties of the school medical staff. Our thanks are due to the Medical Officer in charge of the Wellington Hospital T.B. clinic for his kindly co-operation wherever desirable.

Tuberculosis: Other Forms.—In cases of possible bovine tuberculosis we are indebted to officers of the Agriculture Department for their co-operation in investigating herds.

Enteric Fever.—There were seventeen definite cases, with two deaths.

This is the highest number of cases recorded in the Wellington Central District for some years. The case, which occurred in a farm-house in the Hutt County, was instrumental in causing four direct-contact cases and at least one secondary-contact case. Another two cases of this disease occurred in a small cottage in an isolated seaside area. In this particular locality the local authority was requested to provide a nightsoil service and an improved water-supply. Two other patients received their infection as contacts of other isolated cases of enteric, one of which received infection in the country districts. Except in the instance of the contact patients, we were not able definitely to clench the source of infection, although all were investigated exhaustively. A study of the cases, however, directs attention to the following points:—

(1) Confirmatory bacteriological findings may be considerably delayed. In such undetermined cases of febrile nature the presence of leukopenia should warrant further investigation *re* enteric.
(2) The need for care in the disposal of nightsoil or sewage material on the sea-coast.
(3) Precautions *re* spread of infection in the nursing of enteric patients.
(4) Co-operation between Inspectors of the Agriculture and Health Departments and local-authority Inspectors in the prevention of the pollution of watercourses which flow through dairy-farm lands.

Cerebro-spinal Meningitis.—Number of cases, 5. No deaths.

As usual, the instances of this disease were isolated cases. Under ordinary living-conditions the infectivity of this disease always appears to be low.

Poliomyelitis.—Number of cases, 7. No deaths.

No apparent connection between the cases. The disease has exhibited its usual manifestations in non-epidemic periods—that is, occasional sporadic cases.

Influenza (Pneumonic, Septicæmic, and Fulminant).—Number of cases, 16. One death.

Pneumonia.—159 cases notified. Rate per 10,000, 17·51. Twenty-three deaths.

There was an increased rate in notification. This apparent increase can be explained to a great extent as due to improved notification from the Public Hospital.

Puerperal Fever.—Full-time cases: Twenty-four cases notified. Five deaths.

Of the twenty-four full-time cases notified, sixteen occurred in maternity hospitals, and eight in their own homes. Of the total births in the Wellington metropolitan area (2,491 for 1929), 1,915 took place in maternity hospitals, 589 of which were in St. Helens Hospital.

Eclampsia.—Number of cases, 12. No deaths.

Tetanus.—Number of cases, 1. No deaths.

The desirability of obtaining a prophylactic dose of anti-tetanic serum after cuts, no matter how small, as the result of street accidents should be stressed. Where there is the slightest possibility that the wound has been fouled by street-dust the advice of a medical man *re* the administration of serum should be taken.

Hydatids.—Number of cases, 2. No deaths.

Chronic Lead Poisoning.—Number of cases, 5. No deaths.

These cases of lead poisoning occurred in an industry new to this country. In conjunction with the Labour Department, very considerable improvements have been made to the premises concerned. The company employs its own medical man, who examines the employees monthly for commencing signs of lead poisoning. We are in hopes that there will be little further trouble with regard to the development of lead intoxication.

Lethargic Encephalitis.—Number of cases, 4. No deaths.

Measles and German Measles: Chicken-pox.—Although there was some incidence in these diseases, there was no widespread general prevalence.

Infantile Mortality.—40·90 per 1,000 births.

The Death Register has been perused *re* all deaths under five years of age. The findings do not indicate any particular infantile mortality in any one section of the city or suburbs.

Puerperal State.—Fourteen deaths. Causes: Accidents of pregnancy, 2; puerperal septicæmia, 7; puerperal phlegmasia alba dolens, embolus, and thrombosis, 2; puerperal albuminuria and convulsions, 3.

Wellington City.—Population, 104,400.

City Council Organization.—Both infectious-disease work and general sanitary work are regularly attended to in an efficient manner by the officers of the Wellington City Council. I am pleased to say that close co-operation exists between the City Council and this Department. The advice and assistance of the Medical Officer of Health and our staff is frequently sought on various matters pertaining to the health and sanitation of the city. The usual number of complaints from diverse sources in regard to matters in the city were received and dealt with in co-operation with officers of the City Council.

Garbage: The City Council continues to provide as satisfactory a service as possible. On windy days the disadvantages of the common present-day type of cart are, of course, very apparent, as they are in many other cities. With the gradual advancement which is being made in the construction of garbage-carts and the means of locomotion in other parts of the world it is possible that before long the City Council may be justified and feel secure in gradually introducing a definitely approved and suitable type of closed vehicle.

Disposal of garbage: Although the City Council has a destructor and a rubbish-masticator at Rongotai, it is again faced with the question of finding a suitable site for the disposal of dried trade wastes generally and other material which will not burn. With the many small gullies and hills in Wellington much valuable land could be made available for recreation-grounds, parks, &c., for the benefit of the young people, and a considerable improvement would be made to the surrounding locality. The material disposed is not of a nature likely to attract rats. If constantly supervised, there seems no reason why Wellington should not follow the example of Bradford, in England, in regard to the disposal of rubbish by properly controlled modern tipping methods, which are free from nuisance.

Stables and fly nuisance: With the continued increase of motor traffic the number of stables in the city continues to decrease. In 1923 there were 209 stables; there are now only forty-nine. Further attention was devoted to the application of sodium arsenite to manure, &c., as a means against flies. Needless to say, it has been found that unless sodium arsenite is applied regularly and in the thorough manner recommended it is not successful. It is found that constant supervision is required.

Water-supplies: These continue to be supervised by inspection and chemical and bacteriological tests. A Paterson chloronome has been installed at Karori for use in emergency. The heavy rain which fell in January helped, I understand, to maintain the supplies by having kept up the ground-water. The Wellington Water Board has continued its investigation with regard to the streams in the upper portion of the Hutt Valley. Lower Hutt and Petone Borough Councils have, for the present, withdrawn from the schemes put forward *re* water from the Hutt River or its tributaries. These boroughs feel that expense on their part is at present unwarranted, and that they have ample supplies of artesian water. The Wellington City Council, however, remains alive to the fact that it must proceed with the question of increased supplies. During the year additional water-supply was provided in the suburbs in the following areas: Brooklyn Heights, Highbury, Northland, Vogeltown, Breaker Bay, Moa Point Road, and other parts. Much of this work was carried out under a loan raised as a result of a requisition from the Board of Health.

Drainage: The work authorized at Miramar by a requisition from the Board of Health *re* storm-water drainage is under construction. The total amount granted for this work was £148,000. New sewerage work has been constructed at Island Bay, Highland Park, Highbury, Miramar and Seatoun Heights, Onslow, Karori, and other parts of the city. Much of this work is also the result of a requisition from the Board of Health.

Various complaints have been received with regard to the discharge from the septic tank at the Karori Stream. Before construction, the site of this tank was, at our request, shifted some considerable distance farther down the stream and nearer the sea than was at first meditated. With the very great growth at Karori within the last two years, it has now become apparent, however, that something further is necessary by way of providing a better discharge for the drainage of this area. The matter has been represented to the Council.

With regard to drainage generally I would again venture to remark that Wellington is better provided for than any other city in the Dominion.

City milk-supply: The municipal milk-depot has had another very satisfactory year. Some months ago a commencement was made with the new milk-station. During the year bacteriological and chemical checks of the milk from various portions of the sterilizing and bottling plant were carried out. These were satisfactory. It is pleasing to observe that the officers of the Milk Department appreciate the necessity for the production of a clean milk on the farm, and that pasteurization should not be considered as a method merely for rendering low-standard milk more fit for use. The Milk Committee must continue its good work in the direction of keeping up the standard of the initial farm supply.

Housing: During the year ending 31st March, 997 new dwellings were erected as against 863 in 1928. As far as the number of houses is concerned, there is now really no excuse for overcrowding. The number of houses which received structural alterations by notice under the Health Act was fifty-one, and the number of dwellinghouses demolished was fifty. The gradual development of the Te Aro Flat locality into an industrial and warehouse area is causing the disappearance of many of the poorer type of house in the city.

By-laws: The consolidated or remodelled by-laws which have been under consideration by the City Council have not yet been finalized. I am in close touch with the Council regarding this matter, with the object of ensuring that all matters pertaining to the maintenance of the public health are fully considered and provided for. Changing conditions from time to time bring into view the desirability of providing against such in the new by-laws.

Public baths: There are proposals to establish new baths at Ngaio and Karori. In the construction of new baths we are alive to the fact that modern sanitary constructions should be embodied.

Recreation-grounds and play areas: Most parts of the city, where possible, now have public parks, recreation-grounds, or play areas not far distant. No new play areas or recreation-grounds were established during last year.

Dust nuisance: With the increased area of sealed roads, there has been a further diminution in the nuisance from dust. With the large area of paved roads and streets, it is probable that citizens suffer less from dust than the other large towns in New Zealand where paving is not so extensive.

Rat nuisance: During the year twenty-six rats were caught on ships and 377 in Harbour Board sheds; also 1,377 by the Wellington City Council. The Wellington City Council employs a special rat-catcher. With the improved regulations in various parts of the world regarding ship-fumigation at regular intervals, there appears to be less rats on overseas vessels than formerly. Thanks are again due to the Harbour Board for their co-operation in the matter of rat-catching on wharves and ships. 335 rats were examined by the Bacteriologist.

Free ambulance (Wellington City): This continues to do good work. At our suggestion, an arrangement was made with the Wellington Hospital whereby equipment is sterilized by steam at the hospital before return to the ambulance. I am satisfied that the method of dealing with infectious cases generally by the ambulance is very satisfactory.

Theatres: Occasional visits were paid to theatres with regard to ventilation. As you are aware, there are yet very few local authorities, so far as can be gathered, in Great Britain or America, which have adopted standards which may be said to embody the experimental work *re* comfort which has developed in the last ten years. This being the case, we are somewhat handicapped for want of a standard. The new regulations regarding places of public entertainment adopted by the London County Council last year are now available, and the adoption of similar standards with regard to new buildings erected is being urged upon the Wellington City Council. With the adoption of up-to-date by-laws, it is hoped that theatre-proprietors will be encouraged to maintain as efficient ventilation as is possible. It is recognized that in existing structures the difficulties are very great indeed, as the science of ventilation from the practical aspect is not always easy. The advisability of by-laws with regard to increased sanitary accommodation at places of amusement is also being brought to the notice of local authorities.

Food premises (city): There can be no doubt that the regulations under the Health Act administered by the local authorities are resulting in a gradual improvement of food premises. One of the great difficulties in food premises of all descriptions is the personal one as regards the worker. Improved buildings and conditions do not abolish the necessity for still further insistence of high standards of cleanliness in the actual work. Officers of the Labour Department and of this Department realize that constant attention must be devoted to this aspect.

Plumbers Registration Act: This Act is being more strictly enforced.

New buildings: In the last few years many office and warehouse buildings have been erected in the city. The advent of these modern buildings has brought to a realization the desirability of constructing such, as far as possible, in a manner that will allow the various rooms to receive the maximum amount of sunlight and ventilation. Provision of special light areas, where possible, is certainly most desirable. In past years office buildings have been erected in this city in which certain of the office rooms are extremely badly lit and ill-ventilated.

Lower Hutt.—The standard of sanitation continues to improve in all directions in this borough. In a rapidly growing district the demands upon the Borough Council staff have been very great, but every effort has been made to keep pace with the many requirements. The flat situation of the borough has added very much to the difficulties, especially with regard to storm-water. Complaints have been received from time to time with regard to flooding in the Moera new settlement area. All concerned realize the difficulties, but, nevertheless, conditions are gradually improving.

Garbage: At present this is disposed of by tipping methods in the neighbourhood of land which is being reclaimed for a future industrial area.

Water-supply: Some 427 new connections have been made throughout the year. As stated previously, this borough and Petone have decided to rely upon artesian water as a source of supply in the near future. Tests show that this water is satisfactory.

Drainage: The Board of Health granted an application for a loan for drainage-work in the Waiwetu-Gracefield area.

Town-planning: The town-planning scheme is slowly evolving, and the industrial area is beginning to take shape. This borough attains to a high standard in all matters relative to town-planning, and an endeavour has always been made to support the Council, where possible, in the maintenance of this high standard.

Petone.—Sanitary conditions good. Number of new houses erected during the year ended 31st March, 1930, 87; number repaired under the Health Act, 9; number demolished, nil.

Petone Beach: The conditions, as far as health is concerned, are reasonably satisfactory. The companies concerned are fully alive to the necessity of constant care with regard to non-pollution of the beach.

Water-supply: During the year the ratepayers approved of a proposed loan of £60,000 for the construction of larger mains and additional artesian bores. The laying of the mains is now under way, and four new artesian bores have been sunk. These new wells have each a flow of 600 gallons per minute, and produce a daily supply of 3,456,000 gallons. In addition, the Council has seven other artesian wells and also the upland surface supply from Korokoro. Tests of the water proved satisfactory. Seventy-six new water connections were made during the year.

Eastbourne.—Water and drainage: A commencement has not yet been made with a water-supply and drainage as required by the Board of Health in its requisition in 1929. Meanwhile the position continues as unsatisfactory as before. The present uncertainty with regard to supplies from the Wellington Water Board is, of course, the reason for the delay at present.

Garbage: Methods of disposal of refuse and nightsoil continue to be unsatisfactory; in fact, they cannot be otherwise as long as the present site is used. An endeavour is made to keep conditions as sanitary as possible. The Borough Council is considering the question of making arrangements for rubbish-disposal elsewhere.

During the year approximately £1,000 were spent on special storm-water-drainage works.

Upper Hutt.—Water-supply: A contract has recently been let for the erection of water head-works and dam, and it is proposed to carry out a further water reticulation in the course of the next few months. These works will provide sufficient water for all purposes, including drainage, in the future.

Drainage: With the continual increase in the number of houses, the possibility of a drainage scheme comes nearer realization. The longer the scheme is delayed, the greater will be some of the difficulties with regard to the position of certain of the works.

General conditions: Under the Council's new by-laws general sanitary conditions in the borough are gradually being improved as far as possible in a non-sewered town.

Johnsonville.—This town district has both water and drainage services, and the general health conditions are satisfactory.

Makara County.—General conditions in this county are satisfactory. Careful supervision is necessary with regard to the Titahi Bay seaside resort at Tawa Flat; also, there is need for care from the point of view of town-planning.

Hutt County.—As mentioned in previous reports, this county has many problems which are created by the various seaside and holiday resorts which have arisen within its boundary.

With regard to the requisition by the Board of Health *re* water and drainage at Day's Bay, the County Council has lodged an appeal before a Magistrate. Conditions at Day's Bay cannot be considered as satisfactory. In fine weather hundreds of young people from Wellington and surrounding districts visit the bay and receive drinking-water from the neighbourhood of the pavilion. Although they are all advised to boil this water, it is certain that this advice is not heeded by at least a certain proportion of the children, and even the adults. Also, with regard to the bathing-area, there should not be the slightest suspicion as to possible dangerous pollution.

That there are occasional active typhoid-carriers in our midst is proved by the fact that, as previously mentioned in the report, we had various sporadic cases of this disease during the year. A proper appreciation of town-planning, regulation of subdivisions, &c., should do much in this county to maintain satisfactory standards of sanitation, and also tend to economy in public services.

Private Hospitals.

There are now ten private maternity hospitals in the district, and nine medical and surgical hospitals, in addition to the Alexandra Home and St. Helens Hospital. During the year the new Lewisham Hospital was opened. The private hospitals in the Wellington central district are generally satisfactory.

Sale of Food and Drugs Act.

During the year a great deal of routine work has been carried out in and around Wellington with reference to the general condition of foodstuffs. At present the question of lead in soda-fountains is being investigated.

Ice-cream Manufacture.—Conditions *re* this manufacture are very much improved compared with a few years ago.

Port Health Inspection.

One hundred and forty-seven vessels were inspected by the Port Health Officer, and twenty-three infirm and prohibited persons were dealt with under the Immigration Restriction Act.

SECTION 5.—HOROWHENUA-WANGANUI HEALTH DISTRICT.

Dr. Ritchie, Medical Officer of Health.

Infectious Diseases.

Scarlet Fever.—During the year 1928 scarlet fever of a mild type was prevalent throughout New Zealand, but in this district the incidence was mainly in the larger centres of population, many of the country areas being effected very slightly or not at all. During the past year the epidemic continued, and the whole area, with the exception of the most northerly portion, was affected. The number of cases reported was 581, with four deaths, as compared with 536 cases, with three deaths in the previous year.

As in the previous year, owing to the accommodation at some of the isolation hospitals being taxed to the utmost, the discharge of selected cases somewhat earlier than the usual six-weeks period was permitted, provided the parents were agreeable and the Inspector of Health was satisfied that adequate precautions would be taken in the home for the remainder of the period of isolation.

Diphtheria.—The number of cases reported was one more than in 1928—ninety-seven, with two deaths, as compared with ninety-six, with five deaths.

Enteric Fever.—Five cases, one death. The majority of cases of this disease occur amongst Maoris. With a view to eliminating the condition as far as possible, preventive inoculation is being given to all those who are willing to submit themselves.

Leprosy.—One case of leprosy was discovered. This was a Maori who had been under treatment and discharged from the Leper Station on parole. Before steps could be taken for his return to the Leper Station he contracted pneumonia, which terminated fatally. Constant supervision of all patients discharged from the Leper Station, with periodic examination, enables the small percentage who suffer from a recrudence of the disease to be quickly placed again under control.

Sanitary Works.

Senior Inspector Gardiner reports as follows on sanitation, water-supplies, &c. :—

Rubbish and Refuse Collection, Removal, and Disposal.—Collection : Ten boroughs and two town districts have systems of refuse-collection. In six this collection is done periodically, usually weekly ; in the remainder collection is undertaken at the request of the householder. In two boroughs and one town district, although a tip is provided, the householder has to make his own arrangements for disposal. Two town districts provide no facilities at all.

Disposal : With the exception of Palmerston North, where refuse is disposed of by destructor, all local authorities dispose of it by dumping at tips. Wanganui has a destructor, but has reverted to tipping. English practice, notably at Bradford, has demonstrated that controlled tipping can be made a perfectly sanitary method of rubbish-disposal, and that the refuse can be economically used in reclaiming certain lands for recreational purposes. Controlled tipping means supervision, and such supervision over both collection and this method of disposal could well be part of the duty of the Sanitary Inspector.

Nightsoil Collection and Disposal.—Although the boroughs of Palmerston North, Patea, Marton, and Foxton have sewerage systems, there are localities not served by such systems, which are dependent on nightsoil-disposal in some form or other. Palmerston North and Marton provide a service. In Patea and Foxton householders not served by the sewerage system are compelled to carry out disposal on their own sections. Shannon and Levin (sealed-pan system), Rongotea and Ohakune (nightsoil-cart), have contract systems for collection and disposal. Waverley compels its householders to provide septic tanks or dispose of nightsoil on their own sections.

Sewerage Systems.—The boroughs of Patea, Wanganui, Feilding, Marton, Foxton, Palmerston North, Taihape, and Raetihi all have sewerage systems. With one exception, Wanganui, which discharges its crude sewage into the Wanganui River, the method of disposal is by treatment in septic tanks, with final disposal of the effluent into a near-by stream.

Levin should have a sewerage system for the central portion of the town. There are, however, difficulties in the way of providing a system of disposal which will not be too costly to kill any such scheme. In the meantime the procedure of allowing every one who wishes to do so to install a septic tank in lieu of making use of the provided nightsoil-collection system is likely to furnish a number of opponents to any loan for the provision of a sewerage system. Most of the installed systems have been inspected from time to time during the year, and have been found to be functioning satisfactorily.

Water-supplies.

With the exception of Rangataua, a small town district on the Main Trunk line, and Bulls, all the boroughs and town districts are furnished with water-supplies.

Wanganui.—The work of stopping a leak in the abutment to the dam on the Okehu supply is proceeding and will be apparently successful. This summer there has been no necessity to make use of the Virginia Lake supply to maintain the supply to the city. Whilst this supply has been in use monthly samples have been taken to ensure that a reasonable standard of purity has been maintained. 600 ft. of sub-mains have been put in during the year. The daily consumption of water in this city has averaged over 1,000,000 gallons per day.

Palmerston North.—Following on the carrying of a poll in October, 1929, a contract was let for the sinking of a 6 in. artesian bore, and to date the bore is down 447 ft. The water has been tested and has been found to be of good quality. The installation of this bore is for the purpose of augmenting the town supply, and it is hoped that it will deliver 30,000 gallons per hour into a storage reservoir, from which the water will be pumped under pressure into a series of feeder mains. Contracts have been let for the supply of 33 chains of 18 in. diameter and 86 chains of 12 in. diameter steel mains, and 73 chains of 9 in. diameter cast-iron mains, together with all necessary valves and fittings, to improve the town reticulation. A contract has also been let for the supply of eight additional filters of the Bells type of mechanical wash filters, which it is hoped to have in operation before the winter.

Exhibits at Winter Shows.

The Department, through our District Office, put on exhibits at the Palmerston North and Wanganui shows. The preparation of these exhibits entails some extra work, but this has been fully recompensed by the interest which has been taken in these exhibits by the public attending these shows, and the fact that the various show committees now look upon them as quite attractive features of their shows.

Food and Drugs Work.

This work has been maintained at a fair average during the year. If the respective Borough Councils can be brought to agreement, there seems no reason why the borough Sanitary Inspectors in Palmerston North, Feilding, and Levin should not be appointed officers under the Sale of Food and Drugs Act for the purpose of taking milk-samples and to permit them seizing and condemning unsound foodstuffs.

Factory Hygiene Sanitation.

The Sanitary Inspector has many responsibilities in this respect, which are defined in section 26 (*g*) and section 37 of the Health Act, 1920. Any matters which fall within the scope of these sections must, in the first place, be remedied by requisition by the local authority. In both our Health Act and Factories Act, the principle that the local authority is concerned with the health of the workers in industrial plants is confirmed. There is room for more work being done by the Sanitary Inspector in co-operation with the Factory Inspectors in securing hygienic working-conditions in factories, workshops, shops, and offices.

Sanitation Generally.

Although there has been nothing of importance to report in the working of the district during the year, this may reasonably be taken as an indication that the organization in sanitary matters is on a good footing, and that Sanitary Inspectors are by their usual routine work maintaining their districts in a good sanitary condition.

The relations between the District Office and both borough Sanitary Inspectors and our Inspectors of Health, acting as Sanitary Inspectors for various local authorities, have been pleasant, and the former officers have come to realize that they can depend on our Department for help and advice in the carrying-out of their duties and that their activities are linked with those of our Department.

SECTION 6.—WAIRARAPA-NELSON-MARLBOROUGH HEALTH DISTRICT.

Dr. Mercer, Medical Officer of Health.

There have been no administrative changes in these health districts, the health work of which is carried out by three departmental Inspectors in the Wairarapa-East Cape Health District and two in the Nelson-Marlborough Health District. In addition to the five departmental Inspectors, there are eight local-body Sanitary Inspectors. The population of the two health districts is, roughly, about 150,000. To our own and the local-authority Inspectors, I am much indebted for the excellent manner in which they have carried out their various duties, and for their constant assistance and loyalty to the Medical Officer of Health.

The general health of these two districts has been satisfactory, and the year 1929 has been uneventful so far as the control of infectious diseases is concerned. There has, however, been one outstanding event:

On the 17th June a severe earthquake occurred in the north-west part of the South Island, and its most serious effects were felt in certain areas of the Nelson-Marlborough Health District, notably the Nelson and Murchison districts. Much damage was done to public and private property, and a dozen lives were lost. In the Murchison district the big shake, which was followed by continuous but less severe shakes for several weeks, caused so much damage to private property and to the communications, and, further, caused such severe mental shock, that nearly all the inhabitants evacuated the district and became refugees, mostly in Nelson City. For some days there were not less than seven hundred of these unfortunate people billeted in various houses in Nelson. This disaster did not, fortunately, bring about any serious sickness which called for special attention by the Health Department, but Inspector Coltman's services were much in evidence, and he made a number of trips to Murchison under trying conditions. It is fortunate that no epidemic sickness followed the earthquake, as often does occur in such disasters. This is probably due to the fact that public water-supplies and drainage were not seriously damaged in any of the towns. The majority of refugees returned to their homes in about a month. Three months afterwards, beyond the general effects on the country-side, the big landslides, &c., there was not much evidence that such a terrifying disaster had happened. The damages to structural buildings, large and small, presented various interesting features. Brick buildings suffered, on the whole, much more serious damage than wood and concrete buildings; the amount of strain and stress a particular structure would stand varied very considerably.

Infectious Diseases.

The actual number of notifications in the two health districts shows a very decided decrease in the Wairarapa-Hawke's Bay Health District, but an increase in the Nelson-Marlborough Health District. This is mainly due to the decrease of scarlet-fever notifications in the former health district and to an increase in the latter health district. Two diseases, diphtheria and pneumonia (including pneumonic influenza), show an increase over the previous year.

Scarlet Fever.—This disease, which had been epidemic in a mild form all through the previous year (1928) and the early months of this year, began to wane in the late autumn. For the latter half of the year the graph shows about the same as the pre-epidemic incidence. The period of isolation, which, owing to the rush on the accommodation in the public hospitals, had been reduced to twenty-eight days for "clean" cases, has not been extended again to the regulation six-weeks period. The Medical Superintendents of most of the hospitals in the two health districts are satisfied that "clean" cases are quite free from infection, even if desquamation has not quite finished. This shortening of the period of detention in hospital is a decided economic benefit. Although, however, scarlet fever has declined rapidly in the Wairarapa-Hawke's Bay Health District, it shows now signs of becoming epidemic in the Nelson-Marlborough Health District, more especially in and around Nelson. The graph shows a decided rise since the middle of the year. The type of the disease has not changed; it is still extremely mild, and there is no doubt quite a number of cases are not reported. Some are discovered when inquiries are made by the Inspectors on a notified case.

Diphtheria.—There has been an increase of diphtheria notifications in both the health districts, but the cases have been scattered and not localized. The practice, which is being more generally adopted, of examining, wherever possible, the classmates of all notified cases who are contacts at school, is, I am satisfied, a very useful preventive method.

Typhoid Fever.—Twenty-four cases were notified in the Wairarapa-Hawke's Bay District, and six in the Nelson-Marlborough District. For the first time in my experience the number of pakeha exceeds the Maori cases. In the spring we had a series of cases in the Napier Hospital which were decidedly puzzling as regards origin of infection. Not one case, except familial cases, had, so far as could be ascertained, any history of contact with another case. The cases occurred in and around the towns of Napier and Hastings. The majority of the cases were whites. Careful inquiry was made about the eating of oysters and shell-fish, which did not give us any clue that this line of infection was implicated. Fortunately, the mild epidemic, if such it could be styled, ended as abruptly as it seemed to begin.

Dysentery.—The outbreak of this disease in the autumn in the South Auckland Health District fortunately did not spread to the Hawke's Bay District, although there were many Hawke's Bay Maoris at the big gathering at Ngaruawahia. There have been ten cases notified, but in the absence of any bacteriological confirmation of the diagnosis there is considerable doubt as to whether all the notified cases were true cases of bacillary dysentery. I am informed that the Flexner bacillus is not uncommonly found in routine fæces examinations—*e.g.*, clearance for typhoid fever, &c. Presumably it is when this particular causal organism becomes increasingly pathogenic that infection may be spread by "carriers."

Pneumonia (including Pneumonic Influenza).—There were 183 notifications in the Wairarapa-Hawke's Bay Health District, as against 131 in the year 1928, which also showed a decided increase on the previous year (1927). There were sixteen cases in the Nelson-Marlborough Health District. The mortality-rate on the 199 cases in the two health districts was 14·5 per cent. The distressing feature of these deaths is that nearly one-fourth of them (eight) were women in the last weeks of pregnancy. The woman advanced in pregnancy who contracts influenzal pneumonia has apparently little or no chance of recovery. In some of these cases death occurred within three days of onset of first symptoms. These unfortunate deaths come under the category of maternal mortalities, and, naturally, help to swell the maternal mortality-rate. It is, therefore, very important that the pregnant woman should receive ante-natal advice to the effect that if she should be unfortunate enough to contract influenza, or even a severe cold in her last months of pregnancy, she should take every care to avoid a complication like pneumonia. Apart from these unfortunate maternal mortalities, the mortality rate (11 per cent.) was not high.

Pulmonary Tuberculosis.—Pulmonary tuberculosis shows a decided decline in the number of notified cases—73 as against 102 in the previous year—for the Wairarapa-Hawke's Bay Health District; but there has been a considerable increase in notified cases in the Nelson-Marlborough Health District. The deaths number forty-nine and seven respectively.

Puerperal Fever.—There has unfortunately been an increase of notified cases, and also of deaths. In the two health districts there were nineteen notified cases and five deaths.

Maternal Mortality.—The same applies to the maternal figures, which number twenty—ten more than last year. But eight of the twenty-one deaths were due, as already reported, to pneumonia in the last months of pregnancy.

General Sanitation.

No sanitary works on a large scale have been entered upon. After many years of negotiation the Hastings Borough has at last been prevailed upon to install some form of treatment for its sewage, which at present is being discharged in a crude state into the Ngararuro River and is causing serious pollution. Plans have been prepared by the Borough Engineer and approved by the Board of Health. It is hoped this work will be completed during the course of this year.

Another town, Blenheim, with a population of five thousand is still without a sewerage system. This matter has been outstanding for some years. The Borough Council has constantly pleaded lack of funds as an excuse for not carrying out this very necessary sanitary work. It was hoped that this year might have seen an improvement in the finances of the borough, but a hydro-electric installation has, unfortunately, drained the resources of the ratepayers, and set the clock back so far as a sewerage scheme is concerned.

Water-supplies.

Samples of water from various public supplies are examined chemically and bacteriologically from time to time. The presence of the colon bacillus in upland waters in quantities in excess of what some Medical Officers of Health might regard as a safe standard is an interesting factor. Such waters are chemically excellent for all domestic purposes. A few recent examples of these waters, which have been in use for many years as domestic supplies, where chemically there is no suspicion of contamination, but bacteriologically there is evidence of *Bacillus coli* in 5 c.c. or even only 1 c.c., have made us anxious to investigate carefully for any obvious sources of pollution. These investigations are, for the most part, negative in their findings.

In some instances we have found that since the first installation of the water-supply a considerable amount of bush has been cleared above the intake, and some rough cultivation of the land carried out. Yet there is no evidence of permanent pollution from drainage from habitations, although there may be some pollution by cattle, sheep, and, in some instances, wild pigs and deer.

I am of opinion that these water-supplies do not require artificial means of purification, provided reasonable precautions to prevent pollution at the intake are carried out, and periodic inspections of the pipe-line for leakages are made.

Milk-supplies.

I am endeavouring to get the larger boroughs to carry out the entire control of the milk-supply, including a periodic taking of samples. This is a much more desirable method than the limited control that our own Inspectors can have. A few early-morning visits to take samples for possible adulteration is not, in my opinion, a proper control and supervision of the milk supply of a town of five thousand population and upwards.

Private Hospitals.

In my report for 1928, I remarked that "the efficiency of these institutions is steadily improving." The same remark applies this year. No new private hospitals have been opened; one or two have been closed. The new Memorial Hospital at Hastings is proving to be a very popular institution, and is doing very useful maternity work.

Nurse Inspectors.

The inspection work carried out by the two Health Department's Nurse Inspectors is excellent, and I have learnt from various outside sources is much appreciated by all nurses engaged in hospital and private work.

District Nurses.

The work carried out by Mrs. Oliphant in Hawke's Bay is very good, and is much appreciated by the Maoris.

SECTION 7.—TARANAKI HEALTH DISTRICT.

Dr. Mecredy, Medical Officer of Health.

Infectious Diseases.

The epidemic of scarlet fever which commenced early in 1928 continued with decreasing intensity into 1929, in which year 277 cases were notified. The notifications of diphtheria almost doubled as compared with 1928, while very slight increases were recorded for pneumonic influenza and pneumonia. A considerable decrease in incidence was experienced in the case of puerperal fever, eclampsia, erysipelas, and enteric fever. The incidence of pulmonary tuberculosis remained unchanged. The total number of verified notifications dropped from 940 in 1928 to 658 in the year under review.

Diphtheria, after a number of lean years, showed a distinct tendency to become more prevalent, but the number of notifications was still below the average for the preceding seven years. As in the previous years, July proved the month of maximum incidence. A very persistent epidemic of the disease was experienced at Rawhitiroa. In spite of the regular swabbing and the elimination of cases and carriers, fresh outbreaks occurred on each occasion on which the school was opened. (School-closure was resorted to at the request of the School Committee.) By the conclusion of the epidemic, the majority of the children attending the school had either contracted the disease or been carriers. The results of systematic swabbing in the case of this school proved disappointing, and were apparently of no value in limiting the spread of the disease. Nothing in the nature of an epidemic was experienced elsewhere in the district. The general type of the disease remained mild, but five deaths occurred. Only six of the 113 cases were treated at home.

Scarlet fever evidenced a steady downward trend from April, and showed no tendency to recrudescence in the winter months. No deaths from this disease were notified. The low virulence of the organism concerned is emphasized by the fact that, in a series of 860 cases notified, only two deaths were recorded. The sending of patients to hospital was again avoided where this procedure could be justified. The average duration of the stay in hospital of those 190 cases who were admitted was four weeks and two days from the date of admission. Eighty-seven cases were treated at home. In a series of eighty-five cases treated in one hospital, sixteen developed one or more complications. Amongst these were three cases of otitis media, five of nephritis, and four with an arthritis. No definite heart-lesions were noted, though tachycardia occurred in one case.

Pulmonary tuberculosis was responsible for thirty-six notifications and thirteen deaths. The majority of these cases are now notified in the early stages, and a fair proportion are recorded as non-infectious. Some overlapping in the supervision of certain cases has been found to be unavoidable, as the school nurses have been following up all children who are contacts of cases of the disease. At the end of the year, eighty-seven children, in forty-three families, came under this heading. At the same time there were fifty-six active cases recorded as in need of supervision by the Inspectors. The number of Maori cases notified during the year was nine, of whom four received hospital treatment, and two of the four treatment at a sanatorium in addition.

Enteric fever was again conspicuous by its absence from the district, as only three isolated cases with one death were reported.

Puerperal Fever.—A very satisfactory year was experienced as regards this condition, as only seven cases were reported, as against seventeen in the previous year. In addition, some of those reported suffered from only slight illnesses. No deaths were recorded. Six of the cases occurred in private hospitals, and one—a Maori—contracted the infection in her home.

Septicæmia following abortion was reported in one case, which was also fatal.

Eclampsia was reported in three cases, as against six in the previous year. Ante-natal care is probably partly responsible for this gratifying decrease.

Influenza.—In spite of a fairly widespread epidemic of influenza from May to September—as reported by the primary schools—only thirty-two cases of pneumonic influenza were notified, of whom seven died.

Pneumonia was responsible for 173 notifications, as against 163 in 1928. The deaths numbered twenty-six. This disease is not yet being notified in every case, but the figures probably form a good index to its relative frequency in the district.

Erysipelas showed a drop in notifications from eighteen to six.

Infectious diseases of the central nervous system were fortunately responsible for only a few isolated cases.

Smallpox.—In June three remote contacts of a case off the R.M.S. "Aorangi" were kept under supervision until the period of quarantine had expired. This proved a simple matter, and it seems that the procedure followed in this case would prove quite as satisfactory as that of keeping all contacts in one of the special quarantine stations.

Terminal fumigation is infrequently demanded now, and was only carried out twenty times in 390 cases of diphtheria and scarlet fever. In twenty-five additional cases the householders themselves had either used sulphur or formalin to fumigate the patient's room prior to the Inspector's visit. There is no doubt that the public are becoming more accustomed to the discontinuance of this procedure.

Water-supplies.

Throughout the year all the urban water-supplies were subjected to at least one chemical analysis in addition to an estimation of the *Bacillus coli* content. In addition, a number of local supplies or suggested supplies for motor camps, &c., were examined and reported upon.

The chemical analysis of the urban water-supplies gave uniformly satisfactory results. The results of the bacteriological examinations were of a more dubious nature. In this respect the Waitara supply showed some improvement over the previous two years. Other supplies showed little change. Kaponga and Hawera gave the best bacteriological findings.

Various tests made at Opunake indicated that the Waiaua River would furnish a good potable supply if the Town Board decided to put forward to their ratepayers this very necessary improvement. Several tests of well and spring waters in Opunake indicated almost invariably waters of a low standard of purity. The drawing of water from certain wells in this area had to be curtailed, while the use of that from some other sources was only permitted under certain safeguarding conditions.

A considerable amount of work has been done in New Plymouth on the improved reticulation of the water-supply agreed to in 1928. In addition, work on the Mangamahoe dam is being rapidly carried forward and all fear of a water-shortage in the town will soon be a thing of the past.

Sanitation.

During the year work on the new drainage scheme in New Plymouth was commenced in earnest. This very comprehensive scheme should meet the needs of the expanding town for many years to come. At the same time, any lessor project would have been liable to frequent expensive additions. The present state of sanitation in the borough is such as to completely justify the extension of the sewerage system to all the suburbs. In addition, all streams passing through the borough will no longer be subjected to the considerable pollution which exists at the present time. The Henui bathing-pool, now in a very insanitary state, will not be the least to benefit by this scheme.

Discussions as to the extension of the present sewerage systems have taken place in Stratford and Inglewood.

It is to be regretted that Waitara Borough has not yet seen fit to undertake the installation of a modern sewerage service. This borough is in a most unsatisfactory position, with several buildings in the congested area without a satisfactory sanitary system; others are on a drain which leads direct to the river.

An estimate has been submitted for a sewerage service in conjunction with a water-supply for Opunake. This town and Waitara remain the only towns in Taranaki without a water-borne sewerage system.

Private Hospitals.

During the year reviewed every private hospital in Taranaki was inspected by the Nurse Inspector at least twice, in addition to special visits in relation to cases of morbidity, &c. Ten private hospitals were visited on one or more occasions during the year by the Medical Officer of Health.

The Opunake Cottage Hospital was visited on several occasions in connection with a faulty drainage service and a contaminated well. The former trouble was rectified, but it was found impossible to protect the well, so suggestions were made that, pending a new source of supply, all well-water was to be boiled.

Several cases of puerperal sepsis and morbidity were followed up personally and the doctor concerned interviewed in regard to the etiology of the trouble.

Supervision by the Nurse Inspector has lead to very marked improvement in the aseptic conduct of the private hospitals in this district. The great majority of the recommendations as to alterations in technique, &c., made by the Inspector of Private Hospitals have been carried out.

Midwives and Maternity Nurses.

Practically all nurses coming under the above heading have been interviewed and their equipment and technique overhauled twice yearly by the Nurse Inspector. The majority have attended a special course of lectures designed to modernize their methods, and held, with the co-operation of the Plunket nurses, in the Plunket Rooms. A great many nurses have attended at the District Health Office for personal instruction by the Nurse Inspector on the technique of sterilization and on the modern aseptic outlook. Considerable progress should result in the equipment, and perhaps, to a lesser extent, in the methods of the nurses concerned.

Provision was made for the sterilization of maternity outfits for these nurses at the New Plymouth Hospital, and at Nurse Rae's hospital in Hawera.

The co-operation of the various district nurses resident in or bordering upon this health district was enlisted by the Nurse Inspector in regard to ante-natal propaganda, tuberculosis in school-children, and general education of the public in hygiene.

Massage Establishments and Beauty-parlours, etc.

Practically all massage-rooms, beauty-parlours, female hairdressers' rooms, &c., were inspected twice during the year. Regular reports submitted on these various establishments indicated that the majority were properly conducted and that due attention was paid to the dictates of hygiene.

Port Health Inspection.

Thirteen vessels from overseas were inspected by the Port Health Officer and granted pratique. No prohibited or restricted immigrants were reported.

Food and Drugs Act.

One hundred and thirty-one samples of milk, eight of butter, twelve of wholemeal bread, six of wholemeal flour, and two of whisky were taken during the year. Convictions were recorded against two milk-vendors for selling milk to which water had been added. Fines amounted to £12 and costs to £2 1s.

A large quantity of food was seized and destroyed during the year. Practically all of it was in the auction marts in New Plymouth. In this category were included 60 cases of tomatoes, 219 sacks of potatoes, 206 cases of apricots, 36 cases of oranges, 20 cases of red currants, 41 cases of plums, 80 cases of pears, 12 packages of loganberries, and 14 cases of miscellaneous fruits and vegetables, 400 mutton-birds, 70 flounders, and 54 dozen eggs had also to be destroyed. It was found possible to recondition 16 cases of plums and 6 of apricots. The majority of the auctioneers extend a considerable measure of co-operation to our Inspectors in carrying out these duties.

Dangerous Drugs Act.

The publication of this Act and the regulations thereunder caused a considerable degree of alarm at first amongst the chemists. For a time numerous inquiries were made as to the requirements of the Department in respect to prescriptions containing these drugs. In a few instances orders were requested from the Medical Officer of Health to meet the needs of special cases.

Inquiries which were made showed that there was practically no wholesale importation or distribution of drugs by any firm in Taranaki. The majority of dispensing chemists appear to be taking the necessary steps to comply with the requirements of the Act.

Inspection of Food Premises, etc.

A number of butchers', fishmongers', and fruiterers', shops, bakehouses, eating-houses, &c., were inspected personally by the Medical Officer of Health throughout the year. Various alterations and improvements were suggested to the owners as the result of these visits.

In addition, various premises were inspected in which boiling-down and other offensive trades were being conducted. In the case of a large boiling-down works in New Plymouth complete reconstruction, together with the installation of modern plant, was recommended.

The co-operation of local authorities and their officers has been extended to a considerable degree to the departmental officers. The Medical Officer of Health was frequently consulted on the action to be taken in regard to needed repairs in food premises, &c., and also on the subject of the departmental requirements in new buildings.

It was not found necessary to take action against any tradesmen during the year for contravention of the Act or regulations which deal with the proper handling of foodstuffs and their protection from contamination.

General Inspections, etc., under the Health Act, 1920.

Action was taken by the Taranaki County Council, on the recommendation of the Medical Officer of Health, against a builder for erecting a house with defective timber which had been derived from a condemned house in the Borough of New Plymouth. Considerable public interest was taken in this case, as being the first in which a demolition order was demanded, and, fortunately, granted, in this district.

Complaints as to nuisances due to the effluent from dairy factories were fewer in number during last year, probably owing to a more satisfactory rainfall keeping the creeks and rivers well flushed out.

Camp-sites and Seaside Resorts.

Practically all these were visited personally during the year. A general improvement in the sanitary accommodation was noted. A number of the motor camps have now either w.c.s on the respective town sewers or are connected with septic tanks. In the remainder the pan privy is chiefly used. Satisfactory water-supplies have been provided at Urenui and Tongaporutu camps.

Improvements were made to the sanitary fittings at the Opunake Beach, enabling them to cope better with the holiday throngs; but a sewage system is the only way to deal with this problem. The New Plymouth beach and camp conveniences are still relatively primitive, but with the completion of the new sewage scheme it should be possible to transform the privies, &c., to the water-carriage system. Stratford has opened one of the best-equipped motor camping-sites in Taranaki during the year, while Urenui and Tongaporutu—of country sites—showed the greatest relative development.

The volume of motor campers making use of these recognized sites tends to steadily grow from year to year, and the camping season has also extended until Easter sees quite a fair number still taking their holidays under canvas. Hot and cold baths, in addition to properly fitted up kitchens and complete water-carried-sewage systems, will soon be the rule at all such camps. They are already, as I have pointed out, being provided in certain instances.

Licensing of Hotels.

A detailed overhaul of all licensed premises by the Inspectors led to a large number of requisitions being issued on the licensees, which were in most cases complied with at once. So completely was this work done last year that in the current year it has only been necessary to recommend minor alterations and improvements to the hotels.

Plumbers Registration Act.

There is considerable improvement in the conduct of the plumbing trade in this district. The majority of unregistered plumbers appear to be making definite attempts to obtain their ticket, while the volume of work undertaken by the unqualified has certainly diminished.

Lectures.

During the year lectures on various phases of hygiene and public health were delivered to different organizations. At the Sanitary Inspectors' refresher course an address was given on "Dietetics." A similar talk was delivered to the Trained Nurses' Association in New Plymouth. The Victoria League was lectured on "The Attainment of Health," while a discourse to the Rotary Club was entitled "The Evolution of Preventive Medicine."

At Opunake a public meeting was addressed in support of water and sewage schemes as outlined by Mr. Worley, of Auckland. As already noted, Miss Wise undertook the organization of a course of lectures for midwives and maternity nurses. Inspector Swindells, by permission of the Department, takes the plumbing class at night in the Technical School.

STAFF.

The very considerable volume of work carried out through the year in the Taranaki Health District was only made possible through the loyal and energetic support accorded by the Health Inspectors and my office staff.

I have also alluded, in the course of this report, to the increasing degree of co-operation which I have received on the part of the Inspectors of the local authorities.

GENERAL.

During the year a conference between delegates from the St. Johns Ambulance Association and the Red Cross Society was attended, and the need for the prevention of overlapping of their spheres of activity was elaborated. As the result of this conference the fields of work in New Plymouth for the respective organizations were clearly defined. At the same time it was agreed to share the necessary offices and lecture-rooms. In view of the working agreement between the Red Cross Society and the Department, this further understanding was most valuable.

SECTION 8.—EAST CAPE HEALTH DISTRICT.

Dr. TURBOTT, Medical Officer of Health.

INFECTIOUS DISEASES.

Scarlet Fever.—Number of cases, 343. Rate per 10,000 of population in district, 64·71. Number of deaths, 2. Case mortality, 0·56 per cent.

During the autumn and winter scarlet fever was epidemic in the district. A small increase in notifications during February, a further rise in March, was followed by epidemic prevalence during April, May, and June. By September normal incidence again prevailed. Gisborne Borough was first affected, but by May country districts were involved. The school holidays during this month were responsible for a sharp rise in notifications; and it was at this time that rural spread appeared, vacation visits probably being responsible. Gisborne cases were now lessening, with a greater proportion of adults being affected. The epidemic was mainly rural from now on till subsidence in early spring. The two deaths occurred, one at the beginning and one at the end of the epidemic.

All cases were mild in type; the disease merited respect, nevertheless, for some of the mildest cases were followed by nephritis or other complication. More females were attacked, the figures for the three epidemic months being—females, 130; males, 60. Maoris are apparently immune, no case occurring in that race during the epidemic.

Where the facilities were adequate, home isolation was allowed, and the call on hospital accommodation thereby relieved. The isolation period was reduced to four weeks throughout the epidemic, unless complications prevented a clearance at that time. This procedure had no adverse effect on the spread of the disease, judged by the return cases rate of 1·12 per cent. In addition to the methods laid down by regulations, an attempt to curb the spread of infection was made by obtaining daily lists of absentees from town schools. By following up to their homes these absentees it was hoped to discover the "missed case." Of these absentees, 8 per cent. were suffering from true scarlet fever. These had no intention of calling in medical aid, would otherwise have been missed, returned to school after a few days, and been a potent factor in the spread of infection.

Diphtheria.—Number of cases, 96. Rate per 10,000 of population, 18·11. Number of deaths, 1. Case mortality, 1·04 per cent.

A marked reduction in incidence is noticeable, last year's rate being 31·20. No epidemic occurred, the distribution being scattered. Increased autumnal incidence was evident, more than half of the yearly cases occurring at this period. The one fatality occurred in a man aged fifty-one years. No preventive immunisation has been undertaken.

Typhoid Fever.—Number of cases, 34. Rate per 10,000 of population, 6·41. Number of deaths, 3. Case mortaility, 8·82 per cent.

In sixteen cases the source of infection was traced, careless contact being responsible for seven cases, a polluted water for five cases, and carrier infection in a maize-picking gang for four cases.

Twenty of these cases occurred in Maoris, seven of whom were children. Of these seven children, four had escaped preventive inoculation, one developed the disease the day after his first injection, while two, who had been inoculated in December, 1928, contracted the disease in August, 1929. Mass inoculation of Maori school-children was effected in 1928, and falls due again in 1930. The 1928 rate of 8·18 has fallen in 1929 to a rate of 6·41.

Tuberculosis (Pulmonary).—Number of new cases, 45. Rate per 10,000 of population, 8·49. Number of deaths (old and new cases), 17.

Acute Poliomyelitis.—Number of cases, 10. Rate per 10,000 of population, 1·88. Deaths, nil. Sporadic typical cases occurred.

Four cases occurred in Maori children at Nuhaka and within a radius of twelve miles, but there had been contact between the affected families. This Nuhaka area escaped visitation by the disease during the last New Zealand epidemic.

Pneumonia.—Number of cases, 76. Rate per 10,000 of population, 14·33. Number of deaths, 5. Case mortality, 6·57 per cent.

There was increased incidence as compared with the 1928 rate of 9·32.

Dysentery (Shiga type).—Number of cases, 8. Rate per 10,000 of population, 1·50. Number of deaths, 2. Case mortality, 25 per cent.

Infection was brought into this district from Ngaruawahia, where the disease was epidemic, but was confined to one family and contacts thereof.

Tetanus.—Number of cases, 2. Deaths, 2. Case mortality, 100 per cent.

One fatal case occurred in the Public Hospital, following an abdominal operation. A bacteriological examination of the imported ready-sterilized catgut used revealed the presence of *B. tetani*. The other case followed infection of a motor-accident wound, antitetanic serum not having been used prophylactically.

Trachoma.—Only two cases were notified by medical practitioners, but throughout the whole of East Cape District trachoma is present among Maoris, usually in mild form, but in rare cases becoming severe. Then the clinical appearance is that of true trachoma, with follicle-formation and hypertrophy, and congestion of the palpebral conjunctiva. Some showed pannus-formation, while a few had gone on to ulceration of the cornea. Sixteen further cases, adults and children, were found personally, giving a total of eighteen cases, or a rate per 10,000 of 3·39. It is very difficult to obtain special treatment for these people where the condition is advanced; where mild only, the exhibition of argyrol 10 per cent. has a curative action. The disease in its present form is mildly yet certainly communicable, there being usually a family history of previous infection.

Erysipelas.—Number of cases, 26. Rate per 10,000 of population, 4·90. Deaths, nil.

Other communicable diseases had a low incidence.

General Sanitation.

In general, satisfactory conditions prevail. A personal visit of inspection was made to each settlement and town in the whole area, local authorities being made conversant with findings, satisfactory or otherwise.

Gisborne.—About two-thirds of the town has sewerage and water-supply provided. A scheme to reticulate the rest of the borough was propounded and approved by the Loans Board, but, unfortunately, rejected at a poll of ratepayers. The soil in most of the unsewered area is unsuitable for septic-tank systems; consequently small drainage nuisances continually occur, absorbing an appreciable amount of the Inspector's time.

The Health Committee of the Borough Council were closely co-operated with the sanitary services and offensive trades being operated, business and private premises being maintained in cleanly condition.

At Wainui Beach, a summer resort four miles away, the proper collection and disposal of nightsoil has been advocated for institution next summer.

The Public Works camp at Kopua, housing about six hundred people has been closely supervised. Health and sanitation remain satisfactory. A drainage system and a refuse and nightsoil service operate well.

Wairoa, Whakatane, Opotiki, East Coast.—Improvements have been effected at rubbish and nightsoil depots. Whakatane built an up-to-date public lavatory, and tar-sealed its main road, to the elimination of dust. Wairoa is in the process of converting an open-pan into a sealed-pan nightsoil-collection system, the scattered nature of the borough, together with financial stringency, rendering sewerage impossible at present. Ruatoria and Tokomaru, after representation, have opened rubbish-tips and banned indiscriminate dumping.

Water-supplies.

Water-supplies have remained satisfactory throughout the year. None of the supplies are treated before delivery to the consumer. A monthly bacteriological check is kept, and twice a year chemical tests are also made to confirm bacteriological results. Public swimming-bath waters have also been closely checked for pollution.

Milk-supplies.

Milk-supplies are in general satisfactory, all supplies being regularly tested for gross dirt, also bacteriologically for satisfactory standard. The minority of suppliers who compare unfavourably are being visited and educated to produce a clean milk, the results so far being quite encouraging.

Ice-cream.

Ice-cream is carefully checked for purity. In one case with poor-quality ice-cream the factory was visited. Attention to cleanliness of pipes and use of correct temperature in pasteurizing restored the product to satisfactory condition.

Food and Drugs Act.

Regular sampling of various foodstuffs and beverages continued. Prosecutions for failure to comply with regulations were successfully instituted in four cases.

Port Health Inspection.

Two vessels arrived from overseas. A clean bill of health was given.

Maori Hygiene.

The old Maori custom of living in pas is rapidly disappearing. Each year the Natives are building better dwellings on their own ground. The old buildings in the pas are used by the poorer and indigent class, who have lost or sold their hereditary rights to plots of land. Some of these people live consequently in unsatisfactory dwellings, and hence their bad housing, with concomitant tuberculosis, scabies, and septic conditions, continues, and the indigent Maori remains a worrying problem. Progressive work has been carried out; meetings with Maoris of main pas have resulted in improved sanitation. Health talks are persisted in, although practical results are often discouraging. With the assistance of the Native Land Board new dwellings have been erected and old ones renovated. Several Maori working committees have been organized and so far are doing good work in effecting improved hygiene in homes and pas, and in disinfecting and cleaning meeting-houses before and after meetings.

Administration.

This combined unit, health and school district, has proved workable. District nurses have settled down to their wider task of school, Native, and health duties. Some of these nurses, where the Plunket Society has no representative, also include baby welfare in their duties. Inspectors are called on for more co-operation without any impairment of efficiency.

SECTION 9.—CANTERBURY-WESTLAND HEALTH DISTRICT.

Dr. Telford, Medical Officer of Health.

Infectious Diseases.

Scarlet Fever.—This disease, though still epidemic in prevalence, showed a marked falling-off in the number of cases compared with the year immediately preceding. It would appear that most of the susceptibles have had the disease, and that as a result the notifications under this heading should soon reach their normal mean. The incidence works out at 4·63 per 1,000 population. There were four deaths.

Diphtheria.—The number of cases of this disease was nearly equal in the two health districts, Canterbury having 159 notifications and Westland 151. Fifteen deaths.

Various factors contributed to an increase under this heading. First an outbreak occurred at Karamea whilst the regular communication was interrupted following on the earthquake of 17th June. Dr. Barrowclough, who happened to be stationed at Karamea at this time, managed as best he could until arrangements could be made to transfer the patients to the Buller Hospital. The s.s. "Nile" was used for taking out supplies, and bringing back the patients, as stated. Dr. Barrowclough, running short of diphtheria antitoxin, the Hon. Mr. Wilford, Minister of Defence, gave his permission for Flight Lieutenant H. B. Burrell, of the New Zealand Permanent Air Force, to take out a supply of antitoxin to Karamea. In this way Dr. Barrowclough obtained his medical requisites, and the confidence of the local residents was restored, as they were able to obtain outside news.

On the 4th July the dam which had been formed by the blocking of the Mokihinui River by a slip during the earthquake broke away suddenly, flooding the Township of Seddonville, but fortunately no human lives were lost. As a consequence the houses, following on the flood's subsidence, were in a deplorable state, due to the saturation and accumulation of silt in their interiors. It was decided to evacuate the township, the refugees coming to Christchurch. The transfer of this community to Christchurch increased the number of diphtheria infections here, and on their return a few cases of scarlet fever resulted from their stay in Christchurch, but in each movement the number of infections resulting were soon controlled.

Another outbreak occurred at Harihari. In this place it was ascertained that the school motor-bus, used for collecting and taking the children to school, proved a ready means of spreading the infection.

The incidence of diphtheria for the combined health districts worked out at 1·18 per 1,000 population.

Enteric Fever.—There were twenty-seven cases under this heading, being five fewer than in 1928. The bulk of these cases occurred in two separate outbreaks—one at Timaru, which is being reported upon by Colonel Dawson, and the other developed suddenly in the Christchurch metropolitan area, and an associated case at Temuka, during the last week of September and the month of October. Each case in this group had partaken of common food substance, which came under suspicion as being the conveyor of the infection. I regret to state that of this group of ten cases four deaths resulted.

Pulmonary Tuberculosis.—281 cases occurred, as against 414 in the previous year; this despite the fact that all returned soldiers suffering from this disease in the South Island are treated in the Canterbury Health District, and that civilian cases, in addition, are treated from the Nelson and Marlborough Districts. The incidence proved 1·07 per 1,000 population.

Puerperal Fever.—Notifications under this heading showed an increase, which, I think, is in part due to better notification and a willingness on the part of the general practitioner to work in with the Department in its measures for the control of this disease. Incidence proved 0·19 per 1,000 population.

The other notifiable diseases do not call for any special comment.

Earthquake of 17th June.

On the above date the West Coast was visited by a severe earthquake, the chief centres of marked severity being at Murchison, Karamea, and Westport. Water-supply mains were broken at Westport, Greymouth, and Hokitika. The repairs to the mains at Hokitika and Greymouth were soon effected, but it took over a week before an 8 in. supply was available at Westport. A limited supply was made available for the business section of the town by shutting off the valves at the margin of the four central blocks and pumping a supply by means of a steam-engine from the railway well into the mains. The local authorities and certain private persons engaged motor-lorries, on which they placed iron and galvanized-iron water-tanks, into which water was pumped from approved sources for delivery to the residents. In addition, eight local wells were approved for the purpose of residents taking their supplies therefrom by bucket.

The sewerage system was inspected by means of lamping, and this, on the whole, was found to be intact. It was decided, therefore, that the householders could use their w.c.s. provided they flushed them daily by means of a bucket of water. In the case of hotels and boardinghouses the Borough Council improvised a pan service, which was removed daily from these places to an approved burial-ground.

The electric-light supply was interrupted for a very short period, the breakdown being repaired promptly, and so the light was restored.

A considerable number of breakages occurred in the gas-supply mains. Two serious breaks occurred in the water-supply mains—one in the 14 in. main, and the other in the 8 in. main previously referred to. In addition to these, the household connections were in many instances broken at the junctions with the mains.

It was found at the time and subsequently that the greatest damage to the sewers, gas mains and pipes, and water-retriculation was in the western area of the borough, overlying the marine gravels.

It is fortunate that at the time of the earthquake the weather happened to be fine, and the householders were able to effect repairs to the roofs, caused by the falling-in of chimneys, and thereby making reasonably watertight until the permanent repairs were completed.

I need not dilate further on this subject, as you have already been advised in regard to this matter in my special reports. I am pleased to state that, as a result of the action taken, there was no outbreak of the intestinal group of diseases.

Drainage.

The Christchurch Drainage Board is still extending the sewerage scheme in the Christchurch metropolitan area, and householders' connections are being made as soon as possible after the laying of the mains.

Water-supplies.

These have proved to be satisfactory throughout the district whenever sampled.

Offensive Trades.

These have been, on the whole, very well conducted, the only exception being a gelatine-factory, where verbal instructions were given for immediate improvements. These the management undertook to comply with immediately.

Food and Drugs.

This work has been carried our regularly in the district, together with a systematic inspection of food premises. I am glad to state that fewer prosecutions were taken against milk-vendors than for some time, this being due to the general improvement maintained by the individual vendors as a whole.

Industrial Hygiene.

Duco-spraying plants, bitumen-mixing plants, and stone-crushing plants have been kept under particular observation within an area of ten miles from the centre of Christchurch. Improvements are being regularly effected in these plants as opportunity affords.

Fines collected for Year.

Fines amounting to £165 19s. 10d. were collected under the various Acts and regulations for breaches thereof.

In conclusion, it is my pleasure to again record my thanks to my staff, one and all, for the valuable assistance afforded me during the year, and for their loyalty and willingness. Particularly would I instance my Health Inspectors, whose duties are so varied.

SECTION 10.—NORTH CANTERBURY AND SOUTH CANTERBURY SUB-DISTRICTS.

Lieut.-Colonel F. W. W. Dawson, Medical Officer of Health.

Scarlet Fever.

The decrease in the incidence of this disease has continued. In the City of Christchurch the maximum incidence was reached in July, 1928; by December the incidence was 0·15 per 1,000. In the Canterbury rural districts the maximum incidence was in May, 1929, with a steady fall to 1·49 per 1,000 in December. In 1927 and 1928 there was a definite spring rise, usually attributed to the Carnival Week. In 1929 this rise did not occur.

Enteric Fever.

A small outbreak of enteric fever occurred during the first half of 1929 at Timaru. All the cases came from a small area adjoining the hospital, and close to the seashore. Four cases were contacts with other cases. Two sources of infection were possible. A tradesman was suspected as a carrier. Exhaustive tests failed to incriminate him. The outfall drain taking the sewage from the hospital and discharging into the sea had become broken by heavy seas. The adjoining foreshore was heavily polluted with excreta. The majority of those attacked had been on the beach, and the remainder lived near enough to be infected by dust or flies. In consultation with the Medical Superintendent a modification was made in the method of disinfection of the excreta of enteric patients. Since this was done no further cases have occurred. The Timaru Borough Council has arranged for a loan to repair the outfall drain.

Water-supply.

Temuka is now conected with the high-pressure water-supply, from the Orari spring.

Waimate: The Borough Council are making arrangements for obtaining water from Kelcey's Bush, above the present catchment area. This will leave ample and satisfactory space for recreation purposes.

Drainage.

The arrangements for the sewering of Rangiora are complete, and the work will commence early in 1930. Disposal works, consisting of a septic tank and filter, have been approved. The sewers, where possible, will run between the sections. The placing of sewers beneath the roadways is being avoided wherever possible.

Suburban Settlements.

The sanitary improvements in the Willoch Street settlement, adjoining the Borough of Kaiapoi, are being made by the Eyre County Council. These close settlements in county areas on the border of boroughs are a grave administrative difficulty.

Camping-grounds.

Considerable improvement has been made in camping-areas. Domain Boards are becoming alive to the danger of overcrowding, and to the necessity of careful planning of camp-sites both for tents and for huts.

Camps have been established along the Kaikoura Road, north and south of the town. A caretaker has been appointed, and a café erected. All the necessary amenities have been provided. The arrangements at Leithfield have now been completed. Waikuku maintains its excellent reputation. Kairaki, which has suffered severely from the inroads of the Waimakariri, is being reorganized. The Selwyn huts are connected with their water-carriage system. Improvements are being made in the South Canterbury camping-areas.

I wish to express my thanks to the Inspectors and other members of the staff for their loyal devotion to their duties, and to the members and staff of the local authorities for the helpful and considerate manner they have considered any recommendations I may have put before them.

SECTION 11.—OTAGO AND SOUTHLAND HEALTH DISTRICT.

Dr. Crawshaw, Medical Officer of Health; Dr. Maclean, Medical Officer of Health.

Notifiable Diseases.

The total notifications for the calendar year 1929 show a slight reduction on those of the previous year, numbering 1,123, as compared with 1,161. This is chiefly accounted for by fewer cases of scarlet fever and tuberculosis. The only disease showing a definite increase is pneumonia with 111 notifications, as against 90. This is almost certainly due to an increase of notifications rather than increased incidence of the disease.

Scarlet Fever.—This disease again accounts for more than half of the total notifications received. There is a total of 601 cases, as compared with 630 for 1928. Although the figures are so nearly similar, there is little doubt that the epidemic is near its termination. The figures for March, 1929, and March, 1930, are 59 and 29 respectively. The cases continue to be of a very mild nature, with a death-rate of 0·33 per cent. of notified cases for 1929.

Diphtheria.—The incidence of this disease shows a slight increase over the previous year, there being a total of 49 cases, compared with 18. The majority of these occurred in Southland, and included an outbreak of 12 cases during October and November in Gore and the surrounding district, followed by 18 cases in November and December, centred chiefly in Invercargill. Fortunately these small outbreaks did not develop into an epidemic. It is some years now since a diphtheria epidemic disturbed the district, and there must be a high proportion of susceptible persons. It may well be that these small outbreaks are forerunners of a general epidemic when weather conditions become more favourable to the spread of infection. It will be necessary to maintain a close watch in this connection during the coming winter.

Tuberculosis.—Owing to the failure of some general practitioners to notify this disease before the patient is dead or about to die, the notifications give only a very approximate statement of its extent. The total of deaths gives a more certain indication, and it is noteworthy that these show an appreciable drop, numbering only 75, as compared with 107 and 102 for 1928 and 1927 respectively. This is satisfactory so far as it goes, and may possibly be to some extent the effect of the increased sanatorium accommodation which has existed for the past five years. It remains to be seen whether this low figure is maintained during the next few years.

In addition to the routine visits by Inspectors, Nurse Jeffery has done valuable work among tuberculosis patients over as large a district as she has been able to cover.

Influenza.—The incidence of this disease has been low and it has not presented any administrative problems.

Enteric Fever.—Southland has been entirely free during the year from this disease. In Otago four cases were notified, one of which was not proved bacteriologically. The remaining three occurred in widely separated localities at about the same time. One case was presumably caused by drinking polluted river-water. No source of infection for the remaining two could be discovered.

Puerperal Sepsis.—Fifteen cases were notified, with three deaths. The cases all arose in different hospitals and no spread of infection occurred.

Food and Drugs.

The following samples of foodstuffs were taken during the year and submitted for analysis: Milk, 768; butter, 107; cream, 23; ice-cream, 27; whisky, 39; soda-water, 149; water, 61.

The following prosecutions were instituted in connection with samples not complying with the legal standard: Milk, 12; cream, 6; whisky, 3.

Water-supplies.

Dunedin.—The necessity for a more ample supply has long been felt, and the City Council has in view a project for obtaining an additional new supply from Deep Stream, a tributary of the Taieri River. The catchment area is particularly suitable, being entirely free from the likelihood of any pollution from human sources. This new supply will be doubly welcome if it enables the Council to dispense entirely with the water from Ross Creek, which, from a sanitary point of view, is a most undesirable source of supply. It is to be hoped also that the new supply will assist in the solution of the Kaikorai Valley drainage problem. With an ample supply of water at a sufficiently cheap rate it should be possible to carry out a sewerage scheme for the valley and allow the stream to flow on its way unpolluted.

Invercargill.—The present policy of the City Council is to develop the existing well supply to the utmost rather than undertake a new gravitation supply. The wells, for the most part, deliver water of great purity, judged by bacteriological standards. The exceptions are due to the faulty methods employed in the past for raising the water to ground-level, and conditions will shortly be much improved by the installation of a better pumping system. The chief problem in connection with this supply is the presence in the water of considerable quantities of iron. This not only causes discoloration of the water and of clothes washed in it, but leads to the rapid deposit of iron and organic matter in the mains and the service-pipes of houses. Unless the latter are of copper they require replacement every few years. The problem will have to be met sooner or later by the provision of the plant necessary to remove the iron. This seems to be a common feature in most of the wells in Southland and South Otago.

Gore.—The supply being from shallow wells in the centre of the town, it has been found necessary to chlorinate the water. The necessary plant is on order and should be in operation at an early date.

Queenstown.—This supply has recently been increased by drawing from Brewery Creek, a mountain-stream close to the borough. In addition, an appreciable amount of extra reticulation has been carried out and an increased number of houses supplied with water.

Balclutha.—This supply, from a deep well, is also badly affected with iron. The Borough Council is investigating the possibilities of treating the present supply, or of drawing water from the river and giving it adequate treatment by filtration and chlorination.

Drainage and Nightsoil-disposal.

Invercargill.—The sewers have been laid in the recently amalgamated area of South Invercargill, and a number of houses are already connected up. The Council is about to improve conditions at the main-sewer outfall by the provision of a new iron pipe to convey the sewage from the septic tanks out to the deep channel of the estuary. The city has outgrown the septic tanks, which have now become simply holding-tanks, in which a certain amount of liquefaction takes place. The new outfall will permit of the periodic flushing-out of the tanks, which will discharge only on the falling tide.

Balclutha.—Owing to the low-lying site of the town, drainage presents a considerable problem, which is intensified by the fact that any comprehensive sewerage scheme would of necessity include pumping-stations, and therefore be expensive. The position has to some extent been met by the recent provision of several miles of carefully graded concrete street-channelling. As far as possible, these channels are kept flushed out by running water from the town supply.

The drainage systems of Winton and Nightcaps have been extended, and in these districts practically every street now has a sewer.

The need for some scheme of drainage is apparent in Ohai and The Rocks. The latter is becoming a popular seaside resort, and conditions in respect of sanitation are yearly becoming worse. An improvement is being attempted in the direction or persuading the ratepayers to form a special-rating area under the Counties Act for drainage purposes. With this end in view, the County Engineer is at present preparing an estimate of the cost.

Port Chalmers Borough Council is negotiating with the Otago Harbour Board for the reclamation of Mussel Bay. This particular inlet is at present offensive by reason of the numerous sewer outfalls which discharge on to its foreshore. Under the proposed scheme these will be connected by an intercepting sewer, which will be carried out to comparatively deep water at the reclamation wall. As regards the hygienic condition of the locality, this will effect a vast improvement.

Riverton is very backward in matters of public conveniences and drainage generally.

Refuse-disposal.

The universal method is by tipping, which is almost universally badly done. It is difficult to persuade local authorities to give sufficient supervision and to insist on correct methods being adopted. The chief faults are failure to flatten empty tins, failure to work to a restricted face and to cover daily, and the failure to control unauthorized tipping. An experiment may shortly be tried in the centre of Dunedin in the controlled tipping of refuse in an area of low-lying ground in Caversham. If the work is carried out efficiently it should create no nuisance, and may serve as a useful object-lesson for other local authorities.

Insanitary Dwellings.

Following the Dunedin flood in March, 1929, a number of dwellings were rendered so insanitary that their demolition was rendered necessary. In this connection demolition certificates were issued in respect of some thirty or forty houses.

Private Hospitals.

Regular inspections have been carried out during the year, and, with one or two minor exceptions, the hospitals have all been conducted in an efficient manner. In one hospital three cases of puerperal fever arose, the second and third being due probably to failure in securing effective isolation.

General.

By-laws.—Stewart Island County has during the year adopted a comprehensive set of by-laws, which are at present in the printer's hands. They are on the lines of those adopted recently by the combined counties of Otago, and should meet their needs for many years to come.

Southland and Wallace Counties, after long preparation, have completed their joint by-laws, and these will shortly be adopted.

Bluff Borough Council is engaged in preparing new by-laws. It is hoped that these will serve as combined by-laws for a number of boroughs in the district, some ten or twelve having agreed to be associated for that purpose.

Soda-fountain.—Considerable attention has been paid during the year to the possibility of lead contamination in soda-water. Well over one hundred samples have been tested for lead, which in a high proportion has been found to be present in amounts varying from 1 to 20 parts per million. Some carbonators still continue to show lead contamination after repeated alterations.

In this connection it is interesting to refer to an article in the *Medical Journal of Australia* of the 3rd August, 1929. The writer, Dr. L. J. J. Nye, draws attention to the large number of young persons in Queensland who have died from chronic nephritis. He attributes this to the chronic lead poisoning of children by white-lead paint from house-walls and verandas which has become dry and powdery and contaminated their hands. He points out that the daily poisonous dose for a child may well be under $\frac{1}{100}$ grain. One wonders whether a similar process may not be at work in this country by the absorption of lead from soda-water out of defective carbonators. Investigations in this district show that 1 part per million of lead in soda-water is quite common, and much larger amounts are fairly frequent. One part per million represents very nearly $\frac{1}{100}$ grain per pint, and this amount might easily be consumed daily during the summer months. It has been shown, moreover, that lead may be stored up in the bones out of harm's way, but that under certain conditions of diet or shock this lead may be released and cause severe intoxication. These facts show it to be a most insidious poison, capable of inducing disease of such a nature and at such a time that the true cause may remain unrevealed. Because a child imbibing lead-contaminated soda-water does not exhibit wrist-drop or a blue-line, there is no certainty that he is not receiving poison which may cause serious illness at a later date. The danger appears to be a real one, and not sufficiently recognized by the importers and users of carbonators.

Construction Camps.—A close watch is being kept on all construction camps in the district, with special reference to their general hygiene. The largest camp in Otago, and probably in New Zealand, is that at Kurow in connection with the Public Works Department's hydro-electric development of

the Waitaki River. The population of the camp is now over 1,250 men, women, and children, all of whom are housed in well-built huts. There is an ample water-supply from the Waitaki River, and a drainage system terminating in a grease-trap and soak-pit. There is an organized weekly nightsoil service and refuse-collection service, and a whole-time sanitary staff to attend to them. Special care is taken to prevent pollution of the Waitaki River, on account of the fact that the Oamaru water-supply is drawn therefrom. The camp authorities have given every assistance to the Department in carrying out the sanitary improvements asked for.

Bluff Oyster Industry.—During the year considerable attention was directed to this industry and its possible connection with cases of typhoid fever occurring in other parts of the country. A full investigation was made into all the circumstances surrounding the industry, but no evidence was forthcoming upon which the oysters could be held to be the vehicle of infection. The chief fact exonerating them was that no case of typhoid fever occurred throughout Otago and Southland during the first ten months of 1929, although many thousands of oysters were consumed in the district during the same period.

The raising of the question, however, served a useful purpose in that it led to this investigation, and a review of the possibilities of placing the industry in as satisfactory and hygienic a condition as possible. In this connection various steps have been taken to limit the amount of pollution entering Bluff Harbour, particularly in the neighbourhood of the Oyster Wharf. The following facts also should serve to allay public anxiety:—

(1) Southland, of all the districts in New Zealand, has the lowest incidence of typhoid fever. No case of typhoid fever has been notified for two years, and only eight cases have occurred during the past five years. No more suitable locality could be found, therefore, throughout New Zealand for preserving such an industry from the risks of infection.
(2) The oyster-beds are in the open sea, several miles from land, and there is not the remotest possibility of their becoming polluted.
(3) When necessity arises the oysters are stored for a period of one to four days at a specially selected site in Bluff Harbour well removed from the main shipping wharves. The oysters are in deep water some distance from shore, and there is no likelihood of pollution entering the harbour in the immediate vicinity.
(4) To prevent the possibility of a typhoid-carrier handling the oysters, the firms concerned have agreed to require a medical certificate from all men entering their employment.
(5) Regular bacteriological examinations are being made of the oysters. So far the standard reached is a very high one. Any deterioration would be immediately noted and the reasons sought for.
(6) Only clean, unused sacks are used for the transport of oysters.

There must, however, always remain a small irreducible measure of risk in cases where the fish are consumed in a raw state.

In conclusion, I would mention especially the continued good work that is done by the country Inspectors. These men, who are often faced with difficult problems which have sometimes to be solved unaided, can always be relied on to carry out their work in a thorough and conscientious manner.

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

SECTION I.—QUEEN MARY HOSPITAL, HANMER.

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

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

General.—The work of the institution has proceeded along the usual lines during the year. The number of patients under treatment has been approximately the same as in the past few years. The new Nurses' Home was completed, and the building has proved very satisfactory. It is quite adequate to deal with the numbers of the nursing staff, and will undoubtedly prove of very great benefit to the institution.

The old bathhouse has been demolished, and a new bathhouse and massage block is in course of erection. I am confident that on the completion of the building it will prove extremely advantageous to the work of the institution.

Male Hospital.—The daily average number of patients under treatment in the male hospital has been very consistent during the year. There still remain a fair number of "Service" patients in hospital. The patients have been well cared for, and I have had no complaints in regard to their treatment or care.

Women's Hospital.—This building has not had an unoccupied bed during the year, and there has been a waiting-list of patients throughout the whole period. The conditions in this block are very satisfactory, and the building has been kept in a good state of repair. This section continues to be under the direct supervision of Sister Trott, the Sub-Matron, and to her energy, interest, and skill the continued successful administration of this section is due.

Both hospitals have served a further purpose in dealing with the sick of the village and district, and a fair amount of out-patient service has been rendered by the medical officers.

Medical Staff.—During the year I was absent, on the grounds of ill health, for a period of five months, and during that time Dr. Lumsden acted as Medical Superintendent, and the assistance of Dr. Tovey was obtained as *locum tenens.*

Nursing Staff.—There have been few changes in the nursing staff. I am of the opinion that the improved living-conditions in the Nurses' Home are going to assist us in retaining a more stable staff than we have done in the past.

Male Staff.—There have been but few changes in the male staff, and we seem at the present moment to have a satisfactory and settled staff. Every endeavour has been made to keep the number of men employed at an absolute minimum. The fact that we have to maintain external services for the benefit of the public, such as water-service and electric-light, rather tends to increase the number of men employed. The hospital is being particularly well served by its clerical and office staff.

Farm.—The conduct of the farm has been satisfactory during the year. The supply of milk has been quite adequate, and every endeavour has been made to increase the milk-production. A very close record is now kept of the production from each cow. The new land which was bought some years ago continues to be brought under cultivation. The cattle, the land, the farm buildings, and the fences are in good condition.

Tea-kiosk.—The tea-kiosk continues to be satisfactorily conducted, and there is a very definite improvement in the receipts. This section is now entirely self-supporting. During the year it was decided to open the tea-kiosk, tennis-courts, and swimming-pools on Sunday afternoons. This has proved to be an immensely popular innovation with the public.

Physiotherapy.—Work in this department has been sadly handicapped during the year. Owing to the demolition of the old bathhouse and massage block, temporary arrangements had to be made in order to deal with the work. Unfortunately, the period has been more lengthy than was anticipated. The massage staff, under the control of Miss Wilson, has worked well under the greatest inconvenience.

Bathhouses.—The bathhouses and swimming-pools are popular with the public. The new bathhouse will be of great value to us when completed, as the old building was in a deplorable state of dilapidation. I consider that possibly the women's swimming-pool will in the near future require renovation and an overhaul.

Electric-light Supply.—As was expected, there continues to be grave difficulty with the shortage of the electrical power. Unfortunately, the arrangements made for increasing the amount of power available have been delayed. It was hoped that this might have been completed before the winter, and before the demand for power was so great as it is now. I can only foresee further difficulties during the winter, as I forecast in my last annual report. When further power is available a considerable amount will be sold to the public. At present we are not in a position to supply any further power.

Water-service.—This, as usual, is a source of everlasting anxiety. The river from which the water is obtained has a frequently-moving bed and an enormous amount of shingle, and we have continuous trouble at the head of the reservoir when the river is in flood.

Grounds.—The public grounds and hospital gardens have been carefully looked after, and are in a fairly satisfactory state. They certainly repay us for the amount of labour which is spent on them.

General Maintenance.—The general maintenance of the institution has been carried out fairly well, and the buildings are in a good state of repair. With the general growth of the institution the maintenance staff is very busy, and to some extent find it difficult to overtake the work.

New Kitchen Block.—The new kitchen block in the main hospital has not been started. The plans have been completed, and, I understand, the matter is under consideration. This is a very necessary improvement to the hospital. The present kitchen block and equipment is hopelessly inadequate. This has steadily been recommended to be rebuilt for the past seven years, and I am glad that the matter is now settled.

Red Cross.—The Red Cross have maintained the recreation-rooms, as in the past, and it gives me great pleasure to express my very great appreciation of their work, especially the work of the Red Cross officer, Mr. R. Hughes, who has so ably conducted the Red Cross rooms for the past ten years.

Stores and Equipment.—Stores and equipment have been well kept and cared for. The House Manager, as usual, has been most assiduous in the oversight and care of his particular section. I would wish to express my very keen appreciation of the help I have received from Mr. Chappell in respect to the general administration of the institution.

I wish to take this opportunity of expressing to you my appreciation of the work of the staff of the hospital, and to acknowledge my indebtedness for their help.

I beg to convey to you my thanks for the ever-sympathetic support, help, and advice which we have received from you during the year.

SECTION 2.—KING GEORGE V HOSPITAL, ROTORUA.

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

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

Of the 996 patients under treatment during the year, 755 were admitted suffering from general diseases as distinct from orthopædic conditions. Of the ninety-six orthopædic cases admitted during the year, thirty were suffering from the after-effects of infantile paralysis. Fifteen of these patients were the victims of the 1925 epidemic; the remainder were sporadic cases which had arisen more recently. Other conditions dealt with in the orthopædic department are, as previously, birth-palsies, congenital deformities, malunited fractures, deformities following septic and tubercular bone and joint disease.

Infectious Diseases.—Eighty-six patients were accommodated in this department during the year, and the accommodation was at no time taxed, as on previous occasions during recent years.

Theatre.—Three hundred and sixty-seven operations were performed during the year, classified as follows:—Major orthopædic operations, 33; minor orthopædic operations, 52; major ordinary operations, 95; minor ordinary operations, 143; local anæsthetics given in theatre, 31; local anæsthetics given in plaster operations, 13.

Maternity Annexe.—Eighteen accouchements were attended in this department during the year.

Nursing.—Two nurses passed the necessary examination for registration, one with honours, during the year.

Acknowledgments are made of the services of the Sunshine League, Red Cross, Women's Club, Rotorua Bowling Club, and the employees of the Perpetual Forestry Co. in providing recreation and comforts for the patients.

SECTION 3.—OTAKI SANATORIUM.

Dr. E. Irwin, Medical Superintendent; Miss Pownall, Matron.

During the year 114 patients were admitted; of these 7 had been away for short periods, necessitating readmission. Of the 107 patients, 2 were under twelve years of age, 21 were under twenty years of age, 70 between twenty and thirty-five years of age, 12 between thirty-five and fifty years of age, and 2 over fifty years of age: 38 were married, 2 being widows.

Country of birth: England, 15; Ireland, 2; Scotland, 2; Russia, 1; and New Zealand, 87. Of the 87 New-Zealanders, 8 had Native blood.

Occupation previously engaged in: Domestic duties, 58; dressmakers, 3; upholsterer, 1; clerks and typists, 13; teachers, 7; nurses, 9; telegraph operator, 1; factory hand, 1; shop-assistants, 4; and schoolgirls, 10. In the case of 9 nurses, 2 showed a family history of tuberculosis.

Patients discharged, 115, 6 having been temporarily discharged for hospital treatment or home reasons. One child was admitted who proved not to be tubercular, and another patient admitted at the end of the preceding year was discharged, the diagnosis being hydatid of the lung. Those improved, 35; unimproved, 11; disease arrested, 69.

Complications of the disease have been—Hyperthroidism, 1; nephritis, 3; pelvic trouble, 2; hæmorrhoids, 3; middle-ear trouble, 3; antrum trouble, 2; septic tonsils, 5; naso-pharyngeal catarrh, which has tended to retard progress, 5; pregnancy, 1; neurasthenia, 5; tubercular glands, 3; defective eyesight, 3 (remedied by specialist); tubercular knee, 1; defective teeth, 5; appendicitis, 1.

After-history reports of the 109 patients leaving the institution: 22 still under treatment; 24, disease quiescent—carrying out light duties; 55 doing definite work; 2 dead; 1 extremely ill; 2 transferred to Hanmer; 3 no information.

This year, on the whole, the type of case referred for Sanatorium treatment has been more suitable as such: Early cases, 20, comparatively early, 22; moderate, 50; and advanced, 15.

Treatment has been carried out on much the same lines as in previous years. In this year's group of cases, where there was a history obtainable, about 50 per cent. had been fed naturally as infants. Influenza appears to have been fairly common causative factor in the breakdown of health; also, in the case of the adolescent, excessive sport and dancing after the day's work, mostly in those predisposed.

Nurses have received periodic instruction by the Matron in the work generally. The educative part of the work in regard to the patients, for the most part, has been restricted to their monthly examinations. Advice is given on departure, but there is urgent need for follow-up work, the subsequent condition of living in most instances predisposing to a setback.

The post-graduate nurses visited the institution during the year, and as much information as possible was given on the Sanatorium treatment.

Farm Report.—It is pleasing to note the satisfactory results obtained from the working of the farm, under the advice of the Agricultural Advisor, carried out by the Farm Manager. The dairy herd supplying milk to the institution has been handled so as to supply plenty of first-class-quality milk all the year round. At present the butterfat test is 5·05. This has been made possible by culling the dairy herd, so that only profitable young stock which are reared on the farm are kept. It is found that a smaller number of dairy stock than previously carried can maintain the necessary supply by systematic and proper feeding, with a balanced ration. All supplementary feed for them is

produced on the farm. A supply of mutton of excellent quality is arranged by buying store and fat sheep, which are mostly four-tooth wethers, thus enabling a supply of mutton to be had at a low price. The poultry section has also given good results, more than the required quantity of fresh eggs and table poultry being produced at a minimum of cost. From the kitchen garden an abundant supply of fresh vegetables and fruit is daily provided, surplus vegetables being sent to St. Helens Hospital and the Otaki Hospital. The work of keeping up the ornamental grounds has been thoroughly attended to, with the result that they are much admired both by the patients and the public. Plantations of young eucalyptus-trees on the swamp lands are making good growth, having the desired results of consolidating the land and smothering gorse and other noxious weeds. All work done on the farm and grounds has been done efficiently and with a view to economy, and the whole staff have worked together most cordially.

SECTION 4.—PUKEORA SANATORIUM, WAIPUKURAU.

Dr. G. Maclean, Medical Superintendent; Dr. H. D. Matheson, Assistant Medical Officer; Miss A. L. Lundon, Matron.

Statistics for the year ended 31st March, 1930, show that the work of this institution has steadily increased. The total number of patients treated is the highest on record, at 330, while the average period of hospital treatment per patient has remained almost exactly equal to last year's figure at 148 days.

The increased period of treatment given each patient during the last two years should mean greater security against subsequent relapse, and considering that this Sanatorium receives all types of cases of pulmonary tuberculosis, most of which are type III, the average individual days' stay of one hundred and ninety-two days is by no means lengthy, and, indeed, is still much shorter than that obtaining where selection of cases by sanatorium medical officers excludes from treatment cases which at this Sanatorium constitute at least 70 per cent. of the total treated.

Readmissions following relapse have this year considerably decreased in number, the total for the year being twenty-two, fifteen of which were ex-Service patients and seven civilians. Of the fifteen ex-Service patients so readmitted, twelve were treated here more than two years ago, while six of them last received treatment more than five years ago.

Among the seven civilian patients readmitted, two only were patients here less than two years ago, and none of these were treated more than five years ago. In the total of twenty-two readmissions for relapse, thirteen were definitely due to following unsuitable occupations, so that this is the main factor in relapse. In another five of the cases relapse has been proved to be consequent to surgical treatment necessitating administration of a general anæsthetic. Of the remaining four cases, one (a Maori) made no attempt to change his mode of living, one was readmitted from a southern Sanatorium because of disciplinary difficulties with him, and with one other patient relapse was due to unemployment and consequent inability to look after himself properly, particularly in regard to adequate good food. The only remaining case yet to be considered was not one of relapse, and he was discharged to undergo operation for removal of septic tonsils, as advised on leaving Sanatorium previously.

This interesting review summarizes briefly the usual post-sanatorium difficulties of patients, and reveals the necessity for follow-up supervision of cases. Most of these relapses, as in the case of initial breakdown, are preventable.

One hundred and fifty-six civilian men patients were admitted during the year, thirty-six ex-Service patients, and fifteen female patients, making a total of 207. The number of ex-Service patients is steadily decreasing, as may be expected at this late date.

The amount of sepsis related to nose and throat and teeth is not so noticeable among entrants to the Sanatorium this year, though several patients have been returned to hospital centres for removal of tonsils, and in these cases this type of sepsis was the principal cause of ill-health. No surgical emergencies requiring urgent operative treatment in the local hospital have occurred now since 1927, when an Auckland patient was so transferred, and only two occasions have arisen during the last five years when such urgent transfer to the Waipukurau Hospital has been necessary in cases belonging to other Hospital Boards, who have, of course, at once acquiesced in the arrangement and accepted entire responsibility in financial arrangements.

Buildings.—These are all in excellent state of repair, as vouched for by the various Hospital Board visiting delegates who made inspections prior to the Conference of Hospital Boards in December, 1929, at Palmerston North, when the question of combined Hospital Board control was suggested by the Boards. The most urgent requirement is reroofing of shacks with iron to replace the malthoid, which has given remarkable service for twelve years.

X-ray Department.—The apparatus has given continued excellent service. A Coolidge tube which had given three years' service was replaced. The number of films taken during the year was 320.

Farm and Vegetable Garden.—Except for failure of the cream-supply again in the middle of last winter, supplies from the farm have been kept up. To the Farm Manager's credit it should be said that the average butterfat test for the herd is steadily improving. The latest test, completed a month ago, showed the very satisfactory figure (checked by local dairy company) of 4·4 per cow. The vegetable-supply has been fair, and commensurate with local difficulty in wholesale vegetable-production.

Ornamental Grounds.—These have been kept in good order. A daily average of 12 patients have been employed assisting the gardening staff in constant attention to the grounds, bowling-green, paths, and patients' kitchen garden. From the latter the additional supply of 2,769 lb. of potatoes and 484 lb. of onions was provided.

Red Cross Society.—Red Cross workers have again contributed in large measure to the comfort of patients throughout the year by weekly visits of the various committees, bringing gifts in kind and various home-made delicacies. This practical interest amongst Red Cross workers is not confined to local committees only, but prevails throughout Hawke's Bay from Napier and Hastings to Dannevirke. The Red Cross Society has not only not forgotten the thirty odd ex-soldiers still being treated annually, but is also steadily maintaining its peace-time work on behalf of the stream of civilian patients who come from all parts of the North Island and even from the South.

Among the larger contributions made by the Red Cross Society to the welfare of patients must be mentioned the vocational-training classes in leather and raffia work under Miss Shaw, and in cabinetmaking under Mr. W. Condie. The society has also for years past contributed half the cost of moving-picture programmes given twice weekly. The society is deserving of every commendation for the valuable work it performs.

Canteen, &c.—The canteen continues to show an annual profit over the year's working, and the accrued profit now stands at £70. From this fund from time to time extra benefits for all patients are provided, such as library-upkeep, games, requisites, &c. This year an additional part of vocational training by way of a class in book-keeping for patients has been financed from the canteen fund. The canteen has been very ably conducted by the Storekeeper, Mr. Trollope.

I would like, in conclusion, to record full appreciation of loyal support given me by the staff as a whole in the work of this institution.

APPENDIX.

SPECIAL INVESTIGATIONS.

PART I.—RESEARCH INTO STILL-BIRTHS AND NEO-NATAL DEATHS.

By Dr. C. M. Hector, Medical Research Officer.

Work on this research has been continued on the same lines as in the preceding year with the addition of a more extensive statistical inquiry.

During the preceding year post-mortem examinations were carried out on the bodies of thirty-one infants received from various parts of New Zealand, and during the year just completed this number has been brought up to seventy-five. These bodies were submitted to a complete post-mortem examination, and parts of the principal organs were preserved for histological examination. In addition complete records were kept of the weights of the principal organs and the ratio of these to the body weight. It is hoped that these records may throw some light on the development and importance of the endocrine glands. Post-mortem examinations are undoubtedly of value, and should be carried out systematically wherever possible. They deal with material which in the past has been almost entirely neglected, and in fact there appears to be no standard work on the normal histology of the new-born infant.

Much of the material—*e.g.*, that from macerated bodies and from bodies sent from a distance—is not in the best condition for histological examination. This suggests the desirability of having, at each large maternity centre, facilities for making immediate post-mortem examinations and for preserving tissues for further examination. It may also be noted that, even in cases where the material is not suitable for histological examination, post-mortem examination may reveal gross lesions of great significance which, in the absence of such examination, might never have been suspected.

In August, 1929, it was decided to extend the statistical inquiry, as it was realized that the cases submitted to post-mortem examination represented but a small proportion of the total still-births and neo-natal deaths which occur in New Zealand every year. Accordingly, a questionnaire was drawn up to be sent to all maternity institutions which showed still-births or neo-natal deaths in their monthly maternity returns. Up to the present time 517 of these forms have been sent out. Replies have been received from 365 (*i.e.*, 71 per cent.), and further replies are still coming in. An analysis of the first three hundred of these replies is appended to this report. The response to this inquiry has been very gratifying, and the information given, though incomplete in some respects, is full of interest and value.

I have to express my thanks to the members of the Health Department, to the members of the profession, and to the Matrons of maternity institutions, who have all so willingly assisted me in this inquiry.

Analysis of Replies to Questionnaire on Infant Deaths.

General.—In formulating the questions asked, the fundamental idea was to elicit information which might throw light on the factors that had led to the death of the infant, and in this light must all the answers be regarded. The headings "Name of Mother," "Place of Birth," &c., are inserted solely for the purpose of checking off the returns. This is mentioned because it is noted that in certain quarters there is an apparent reluctance to give these particulars.

The following is a brief analysis of the replies received:—

Number of children: Primiparæ, 126—*i.e.*, 42 per cent.; multiparæ, 174, 58 per cent.

The multiparæ ranged from two-paræ to sixteen-paræ among 112 cases in which the figure was given. The series included six ten-paræ and five twelve-paræ. The ratio of primiparæ to multiparæ in the general population (as shown in New Zealand Year-book for 1929, p. 120) is Primiparæ 32 per cent., Multiparæ 68 per cent. My figures thus show a greater percentage of primiparæ than multiparæa among those having still-births or neo-natal deaths as contrasted with the general population. Further the percentage of still-births in primiparæ to those in multiparæ is as 42·5 per cent. to 57·5 per cent. Thus the ratio of primiparæ is the same when neo-natal deaths are included as when they are not. This supports the view of Malcolm Fraser that neo-natal deaths are, in large measure, due to the same factors as still-births.

Degree of ante-natal care received: Some care, 197 cases—*i.e.*, 65·6 per cent.; no care, 91, 30·3 per cent.; not stated, 12, 4 per cent.

The degree of ante-natal care given in these 197 cases may be further analysed as follows: Good care, 76 cases—*i.e.*, 38·6 per cent.; fair care, 80, 40·5 per cent.; poor care, 41, 20·4 per cent. These are only approximate estimations based on the replies given.

By "good care" is meant regular attendance at an ante-natal clinic or regular medical supervision; by "fair care" that several visits have been paid an ante-natal clinic or medical practitioner; and by "poor care" that there has been no attendance at a clinic, but one or two visits to a practitioner with or without urinalysis.

These answers, showing that 66 per cent. received some ante-natal care, may be regarded as fairly satisfactory, considering the recent introduction of ante-natal treatment, but the number of these that received "good" ante-natal care is only seventy-six out of 197, or 38·5 per cent.

Presence or absence of pre-existing disease: Some evidence, 66 patients—*i.e.*, 22·00 per cent.; no evidence, 211, 70·33 per cent.; not stated, 23, 7·66 per cent.

Among the pre-existing diseases were noted twenty-eight cases of renal disorder (chronic albuminuria, pyelitis, &c.); eighteen cases of other bacterial invasion—*e.g.*, tuberculosis, influenza, septic tonsils, &c.; eight cases of pelvic disorder, including such conditions as contracted pelvis, irregular uterine, hæmorrhage, &c.; and one case each of cerebral tumour, glycosuria, pernicious anæmia, excessive obesity, &c.

Nature of previous labours: Normal, 101 labours—*i.e.*, 57·8 per cent.; abnormal, 56, 32·2 per cent.; not stated, 17, 9·8 per cent. The abnormalities recorded were various.

History of recent pregnancy: Normal history, 135 patients—*i.e.*, 45 per cent.; abnormal history, 158, 52·6 per cent.; not stated, 7, 2·3 per cent. The abnormality in 109 out of 158 cases was "shortness of duration," while thirty-two cases (20 per cent.) had toxæmic sysmptoms. From the foregoing it would appear that pre-existing disease in the mother and abnormalities in previous pregnancies had not a preponderating influence in causing still-birth or neo-natal death. On the other hand, some abnormality during the recent pregnancy was noted in approximately 53 per cent. of the cases. The curtailment of the duration of pregnancy increases the number of prematurely born infants who are unable to make the transition from fœtal to child life. In considering how far these abnormalities of pregnancy are amenable to treatment, it is to be noted that "short duration" is associated with such conditions as hydramnios, toxæmia, placenta prævia, placental hæmorrhage, &c.

The duration of pregnancy: Prolonged, 15 cases—*i.e.*, 5 per cent.; normal, 129, 43 per cent.; premature and immature, 109, 36·3 per cent.; not stated, 47, 15·6 per cent.

Of the 253 cases in which the duration of pregnancy was stated, it is notable that no less than 129 (51 per cent.) were of normal duration. The premature and immature cases are distributed as follows: 8·5 months, 13 cases; 8 months, 22; 7·5 months, 16; 7 months, 36; 6·5 months, 14; 6 months, 8.

This shows the preponderance of seven-month cases, also the well-known tendency for pregnancy to terminate at the end of the month rather than at intermediate times.

Course of labour: Normal, 160 cases—*i.e.*, 53 per cent.; abnormal, 136, 45·3 per cent.; not stated, 4, 1·3 per cent. The abnormalities include twins, malpositions, eclampsia, placenta prævia, disproportion, ante-partum hæmorrhage, &c.

Operative interference, if any: Some interference, 78 cases—*i.e.*, 26 per cent.; no interference, 207, 69 per cent.; not stated, 15, 5 per cent.

The operative treatment mentioned includes—forceps, 45 cases; version, extraction, &c., 19 cases; induction of labour, 15 cases; craniotomy, episiotomy, Cæsarean section, &c.

Apparent cause of death: Assigned, 224 cases—*i.e.*, 74·6 per cent.; not assigned, 66, 22 per cent.; not stated, 10, 3·3 per cent.

Here it is to be noted that the "causes" are merely those assigned by those filling in the replies and in the absence of post-mortem examination. It is here that post-mortem examinations would be of value in revealing, in some cases, remediable or preventible conditions.

Among the principal assigned causes of death are: Prematurity, 46 cases; asphyxia by pressure, (on cord or &c.), 29; toxæmia, 26; hæmorrhagic conditions, 15; placental anomalies, 14; congenital malformations, &c., 10.

Stage at which death of infant occurred: Ante-partum, 111 cases—*i.e.*, 37 per cent.; intra-partum, 83, 27·6 per cent.; post-partum, 106, 35·3 per cent. It is to be noted that the deaths are fairly evenly distributed in the three groups.

Condition of fœtus: Fresh, 120 cases—*i.e.*, 62 per cent.; macerated, 67, 34·4 per cent.; not stated, 7, 3·6 per cent. The proportion of macerated bodies is fairly high (34·4 per cent.). Eardley Holland amongst 1,408 cases found 298 macerated (21 per cent.). Future advances in ante-natal treatment might eliminate some of these cases.

Effect of the course of labour on the fœtus: Injurious, 110 cases—*i.e.*, 36·6 per cent.; non-injurious, 146, 48·6 per cent.; not stated, 44, 14·6 per cent.

Among the principal causes of increased risk were: Prolonged labour, 23 cases; breech presentation, 15; instrumental labour, 12; disproportion, 8; version, placenta prævia, twins, &c., 7. In this group improved treatment may be expected to reduce the fatalities.

Condition of child at birth: Asphyxiated, 73 cases—*i.e.*, 24·3 per cent.; non-asphyxiated, 119, 39·6 per cent.; not stated, 108, 36 per cent. The seventy-three cases of asphyxia included fifteen cases of "asphyxia pallida" which is now recognized to be a condition of "shock."

Method of resuscitation adopted: This question was framed to elicit *any increased risk* to the child. The replies were few, and did not give the information sought.

Presence of congenital defects: Present in 37 cases—*i.e.*, 12·3 per cent.; absent in 246, 82 per cent.; not stated, 17, 5·6 per cent.

The principal defects noted were: Anencephaly, 7 cases; deformity of limbs, &c., 6; congenital deformity or disease of heart, spina bifida, hydrocephalus of each, 5; monstrosity (not further defined), 3.

The prevalence of anencephaly among the defects is notable—viz., seven cases out of thirty-seven, forming 18·9 per cent. of the defects and responsible for seven of 300 deaths—*i.e.*, 2·6 per cent. Eardley Holland noted thirty-nine cases of anencephaly in 1,673 deaths (or 2·34 per cent.) and thirty-nine cases of anencephaly in 138 cases of deformity (or 28·2 per cent.). Malcolm Fraser has shown that "early infancy" and "malformations" are the cause of 97 per cent. of the deaths occurring on the first day, of 92 per cent. of those occurring in the first week, and of 87 per cent. of those occurring in the first month. As deaths from other causes are eliminated, those due to malformations become of increasing importance and prominence. Among deaths due to malformations, anencephaly, as we see, holds a leading place. Can this mortality, which amounts to about 2½ per cent. of all cases of still-birth and neo-natal deaths be reduced? The origin of this condition is still obscure, but in many cases it has been noted that there is an absence of or great diminution in the size of the supra-renal glands. The following statement from Langdon Brown's "Endocrines in General Medicine" has an important bearing on this point: "The adrenals are of double origin, the cortex developing from the Wolffian body while the medulla arises from the sympathetic nervous system. Swale Vincent has shown that in fishes these two parts form separate structures, the cortex being respresented by a median inter-renal body, the medulla by the chromaffin bodies or paired supra-renals. Higher in the vertebrate scale these two come together, and, if this fails to occur, the central nervous system fails to develop beyond the fish stage *resulting in anencephaly*." This research of Swale Vincent's pushes the query a stage further back, but does not explain why the failure in fusion should occur.

Existence of placental or umbilical abnormalities: Present in 60 cases—*i.e.*, 20 per cent.; absent in 222, 74 per cent.; not stated, 18, 6 per cent. The abnormalities described were: In twelve cases, unhealthy; in ten cases, placenta prævia; and, in seven cases, infarcts, &c. Ten cases of abnormalities of the cord included four in which it was round the neck.

Existence of neo-natal disease which may have caused death: Present in 22 cases, absent in 84.

Among neo-natal conditions may be noted: Hæmorrhagic disease of the new-born, 6 cases; pyrexial conditions (influenza, &c.), 5; broncho-pneumonia, 2; inanition, hæmophilia, intestinal obstruction of each, 1.

Among these the first place is taken by hæmorrhagic disease of the new-born. It is interesting to note in this connection that Collip (quoted by Langdon Brown) isolated from the parathyroid an active hormone which, if given to excess, led to hæmatemesis and melæna.

PART II.—DYSENTERY IN AUCKLAND AND SOUTH AUCKLAND HEALTH DISTRICTS.

Towards the end of January, 1929, cases of dysentery began to be reported in the Auckland Central Health District. The first three cases were reported from Auckland City on the 23rd January, 1929. These three were Maori cases. A definite bacteriological diagnosis as to the "type" of infective organism was not arrived at for some time, as the early cases gave negative results. About the middle of February, however, it was definitely determined that the causative organism was the Shiga bacillus. For a time the outbreak remained localized to the city area of the Auckland Central Health District. By the 23rd February, however, cases began to be notified from the outer area of this health district. Almost exactly a month later (23rd March) the outbreak had spread farther south and invaded the northern part of the South Auckland Health District.

Appended is a table (Table I) showing the weekly number of cases notified or discovered. For the purposes of tabulation, &c., Auckland Central Health District is divided into a metropolitan area and an outer area. The Native and white cases are given in different columns. It will be noted that the epidemic ran a shorter and sharper course in the South Auckland area.

There is a marked difference in the proportion of Maori cases in the three areas. In the Auckland metropolitan area 33⅓ per cent. of the total were Natives, in the Auckland Central outer area 76 per cent. were Natives, and in the South Auckland District 80 per cent. were Natives. This difference may be more apparent than real. It is probable that a more correct total of the Maori cases was arrived at than of the European. The district nurses and Inspectors were devoting special attention to Maori settlements, because it was felt that owing to faulty sanitary conditions a greater danger existed there. In this way many unnotified Maori cases were discovered.

The white and Maori population of these districts is—Auckland Central Health District, 204,879 and 2,581 respectively; Auckland South Health District, 97,218 and 12,457. The attack-rate on the Native population, therefore, was 135 per 10,000. The attack-rate on the white population was 2·94 per 10,000.

Age Incidence.—The age incidence of all the cases is given in Table II. Here all the districts are combined, but white and Maori are again kept separate. It will be observed that in the case of Europeans 62 per cent. of total cases were under sixteen years of age, and in case of Natives 64 per cent. were under sixteen years of age.

Death-rate.—In the eighty-nine cases amongst European population there were fifteen deaths—a fatality-rate of 16·8 per cent. In the 203 Maori cases there were forty-eight deaths, equal to a fatality rate of 26·6 per cent. Here, again, the Maori death-rate is possibly somewhat more accurate, as the total of Maori cases is probably more nearly correct than the total of European cases.

In connection with the extension of the epidemic to the South Auckland District, it should be mentioned that a large regatta was held at Ngaruawahia on the 16th March. This was largely attended by Maoris, but every endeavour was used to prevent Natives from infected districts travelling to the regatta. The fact remains, however, that during the following week cases were reported from the Maori settlements around Ngaruawahia. The week following the regatta a large Maori *hui* was held at Ngaruawahia Pa. The sanitation of this pa was under close supervision, and no cases of dysentery occurred in the pa. The people attending the *hui* came from all parts of the North Island, but only in one instance was infection conveyed on their return home to other districts. In this one instance the infection was confined to one family, members of which had been in attendance at the *hui*. During the epidemic there was no conclusive evidence that foodstuffs or water-supplies were a means of spreading infection.

Table I.

Week ending	Central Auckland District.				South Auckland District.	
	Metropolitan Area.		Outer Area.		White.	Maori.
	White.	Maori.	White.	Maori.		
January 26	..	4	..	..	..	..
February 2	..	2	..	..	..	..
„ 9	..	..	..	..	..	..
„ 16	..	2	..	..	..	..
„ 23	..	3	..	3	..	..
March 2	8	3	5	2	..	..
„ 9	1	..	..	6	..	..
„ 16	1	1	2	11	..	..
„ 23	5	3	..	6	1	4
„ 30	4	..	1	..	1	4
April 6	..	..	2	6	3	3
„ 13	1	..	2	12	3	17
„ 20	1	1	1	6	15	50
„ 27	5	1	6	5	5	28
May 4	13	..	1	3	..	10
„ 11	1	..	..	4	1	3
Total ..	40	20	20	64	29	119

In addition to the above there have been five cases in the North Auckland area, four cases in the Thames-Tauranga area, and five cases in the East Cape area. Since the above table was compiled eight cases have occurred in the Auckland Central area, and one case has occurred in the South Auckland area.

Table II.—Age Incidence.

—	White.	Maori.	—	White.	Maori.
Under 1 year ..	5	6	13 years	2	1
1 year	5	9	14 ,, ...	..	4
2 years	12	15	15 ,, ...	1	5
3 ,, ...	8	10	16 ,, ...	1	3
4 ,, ...	7	15	17 ,, ...	..	..
5 ,, ...	1	17	18 ,, ...	1	6
6 ,, ...	3	14	19 ,, ...	1	2
7 ,, ...	5	13	20–29 years	14	11
8 ,, ...	1	7	30–39 ,, ...	8	15
9 ,, ...	..	4	40 years	7	38
10 ,, ...	1	2			
11 ,, ...	3	1		87	203
12 ,, ...	1	5			

Two not classified.

PART III.—MAORI AND PAKEHA: COMPARATIVE HEALTH OF SCHOOL-CHILDREN.

(Continued from 1928–29 Report.)

By Dr. TURBOTT, Medical Officer of Health, Gisborne.

During 1928 comparative groups, Maori and white, representing the whole health district of East Cape revealed hereditary stamina still evident in the Maori, and placing him in a favourable position compared with the pakeha. During 1929 similar groups of fresh children were studied, 1,324 Maori and 2,496 white, the results being given below as rate per 1,000 children seen, with 1928 figures in brackets alongside. The present year's work supports the conclusion reached in 1928: that the Maori parents need awakening to the prevalence and seriousness of conditions readily preventable.

Anæmia was again more common in white children. Maori, 0·75 (1·40); white, 10·01 (11·47).

Heart-conditions were less in evidence in both groups, there being a marked drop in white figures, putting same in favourable position. Maori—Organic disease, 5·28 (4·91); functional disease, 11·32 (9·14): total, 16·60 (14·05). White—Organic disease, 4·80 (6·37); functional disease, 7·61 (22·31): total, 12·41 (28·68).

Respiratory disease was again more prevalent in the Maori group, although the total found was less. Maori—Unhealthy chests, 21·90 (30·92); undoubtedly tuberculous, 3·02 (5·62). White—Unhealthy chests, 11·21 (12·74); undoubtedly tuberculous, 0·80 (0·00).

Physique remains much better in the Maori group.

(*a*) Nutrition: First class—Maori, 518·88 (469·43); white, 342·14 (379·85). Subnormal—Maori, 17·37 (15·46); white, 18·02 (25·49).

(*b*) Total deformities of trunk and chest: Maori, 54·37 (39·35); white, 108·17 (58·63).

(*c*) Poor posture: Maori, 16·62 (37·24); white, 47·27 (61·82).

Skin-conditions.—The Maori manner of life keeps the infectious skin-conditions always with them, easily realized when it is grasped that one Maori child in approximately every seven has scabies, and one in approximately fourteen has septic sores or impetigo. Much solid preventive efforts seem to have been without effect, for, far from there being a decrease in these conditions, a slight Maori rise is manifest. The white rate has fallen.

To the non-infectious skin troubles the Maori seems relatively immune.

(*a*) Scabies: Maori, 145·01 (129·30); white, 6·41 (18·48).

(*b*) Septic sores and impetigo: Maori, 69·48 (60·42); white, 20·43 (29·95).

(*c*) Other skin-troubles are more prevalent in the white group. Whites suffer twice as much acne, twenty-nine times more seborrhœa, eight times more ringworm, and nearly four times as much of the group urticaria, eczema, ichthyosis. The total figures for this collection of troubles show the Maori relatively free from affection. Maori, 7·53 (21·76); white, 54·46 (31·20). Averaging the two years gives the following rates: Maori, 14·64; white, 42·83.

Vaccination.—Maori 1·51 (0·70); white, 20·83 (24·85).

Dental Hygiene.—Undoubted superiority is still seen in the Maori teeth, especially marked in rural areas, where shops are not so readily accessible. Pyorrhœa, however, is almost twice as common in the Maori, and probably following the adoption of pakeha diet.

(*a*) Defects in jaw or palate: Maori, 3·77 (2·10); white, 4·80 (8·91).

(*b*) Perfect sets of teeth: Maori—Primary, 71·75 (73·78); secondary, 164·65 (172·87): total, 236·40 (246·65). White—Primary, 30·84 (31·23); secondary, 14·42 (19·75): total, 45·26 (50·98).

Enlarged Tonsils.—Maori group show healthier nose and throat conditions. Maori, 172·96 (275·45); white, 276·44 (364·55).

Enlarged cervical glands.—Maori, 115·55 (309·20); white, 230·36 (512·42).

Goitre.—Here a less rigid standard lowers the total figures, but leaves undisturbed the Maori comparatively low susceptibility. Maori—Incipient, 24·16 (73·78); small, 2·26 (4·21); medium, 0·00 (0·70); large, 0·00 (0·00): total, 26·42 (79·39). White—Incipient, 138·62 (314·85); small, 9·21 (30·59); medium, 2·80 (5·09); large, 0·00 (0·63): total, 150·63 (351·16).

Of the goitre found, Maori, 3 per cent., and white, 10 per cent., were already using iodized salt. After inspection and home visitation a further 14 per cent. Maori and 53 per cent. white began to use the preventive salt.

Special Senses.—Ears: The amount of deafness was again approximately the same in both groups. Discharging ears were five times more prevalent in the Maori group.

Eyes: (*a*) Conjunctivitis: Maori, 19·60 (18·97), mainly trachoma; white, 5·60 (3·82), no trachoma.

(*b*) Squints: Maori, 5·27 (2·81); white, 8·80 (4·46).

(*c*) Defective vision: Maori, 61·80 (74·22); white, 85·40 (90·94).

No corrective glasses are worn in the Maori group, and before inspection 4 per cent. only of the white group possessed the necessary glasses.

Hernia.—Maori—Inguinal, 1·50 (2·10); umbilical, 18·12 (16·16). White—Inguinal, 4·00 (1·27); umbilical, 4·00 (5·73).

Phimosis.—Maori, Nil (2·10); white, 8·80 (11·47).

Flat Foot.—All degrees were slightly more than twice as prevalent in the Maori group—practically the same finding as in 1928.

PART IV.—A SURVEY OF THE MENSTRUAL FUNCTION OF TRAINING-COLLEGE STUDENTS AND SENIOR HIGH-SCHOOL GIRLS.

By Dr. Grace Stevenson, School Medical Officer, Otago.

The normal girl commences menstruation between the ages of thirteen and fourteen years. Once established menstruation is normally a regular and painless function and continues to the years of forty-four or forty-five. The factors for the establishment of a normal menstrual function are generally assumed to be in order of importance—(1) The maintenance of good health in childhood and through puberty and adolescence; (2) care of the pre-menstrual stage; and (3) care of the actual menstrual phase. Ultimately the true test would be the child-bearing capacity.

The standards upon which the survey is based are (*a*) age of onset, the presence or absence of regular pain, the regularity of the period, the quantity and duration of the flow; (b) the general and specific hygienic measures operating.

A. The survey was first carried out by means of a questionnaire drawn up with questions relating to health habits and the menstrual function. This was submitted to the mothers in the case of the school girls, to the girls themselves in the case of the students.

The response to the questionnaire was quite good, though some were incomplete and some had to be discarded, making the survey of 103 senior high-school girls and 187 training-college students, in all 290, from a possible 300. The average age of the girls was eighteen, the youngest was fourteen, the eldest twenty-four. The training-college students are a picked body of girls.

The points investigated were as follows: (1) The age at which menstruation commenced; (2) regularity of the period; (3) the duration and quantity of the flow; (4) the frequency of dysmenorrhœa.

B. To consider the hygienic influences operating generally and specially—(1) Restriction of games, exercises, and bathing during the period; (2) general hygienic influences.

Summary of Findings.

(1) In greatest proportion (63 per cent.) menstruation commenced between the ages of 13–14, with a variation from 10–17 years.

(2) Regularity of the period occurred in 82 per cent. of the school girls and 91·4 per cent. of the students—older girls greatest regularity.

(3) Average duration of the flow was four days, and medium amount in 85 per cent.

(4) Occurrence of regular dysmenorrhœa in 8 per cent. of the school girls, and 13 per cent. of the students—greater percentage with the older girls.

(5) Menstruation is associated with no regular pain in 89·5 per cent. of the girls.

(6) Some restrictions with regard to exercise, games, and bathing practised during the period with the majority of girls—87 per cent. of school girls, and 76 per cent. of students.

(7) Home study: For the school girls 11 per cent. three hours or more; for the students, 23 per cent. four hours or more.

(For high-school girls the average amount of home study was two hours; the shortest none, the longest three to four hours. Two girls were found working for Matriculation examination averaging six hours' study daily for five months. Of the school girls generally 12 per cent. worked from three to four hours nightly. For the students the average study hours were 3·16, the shortest being half an hour, the longest seven hours: 65 per cent. worked on an average of three hours or more home study.)

(8) Sleep: The average hours of sleep for both school girl and student was eight hours.

(For the school girls the average amount of sleep was 8·6 hours, the shortest six hours, the longest eleven hours. For the students the average amount of sleep was 8·5 hours, the shortest five hours, the longest ten hours. It would appear that too much study and too little sleep are factors to be considered.)

(9) Constipation a factor to be considered.

(10) Nutrition: Normal in 70 per cent.; subnormal in 12 per cent.

Recommendations.

There is need for the care and supervision of the young girl through puberty, adolescence, to young womanhood. Overtaxing of the bodily strength with study, too great mental strain, too little sleep, lack of practice of the laws of general hygiene, may produce irreparable injury affecting both body and mind.

The recommendation is "supervision and an intermediate course for all work and play." With regard to the menstrual period itself there is still to be noted the greater percentage of regular dysmenorrhœa in the older girls, faulty hygienic habits being practised in that a great proportion are still being advised not to bathe and a smaller number not to indulge in activities at all during the period. With the education of the parent and girl that this is a normal physiological function, that as Dr. Sanderson Clow says she may bathe, exercise, play tennis, hockey, &c. (provided overstrain is avoided) from the beginning to the end of the period, the decrease in regular pain will occur. Mrs. Clow in thirteen years gives a reduction in those girls suffering from dysmenorrhœa from 46·7 to 10·8 per cent. She says "Given free scope we could, I believe, abolish all menstrual suffering in girls under eighteen years."

I would recommend the measures advocated by the Medical Women's Federation in their leaflet with regard to menstruation. There is no doubt that the problem of prevention of menstrual troubles lies in the hands of the parent, school mistress, and school doctor.

PART V.—OBSERVATIONS ON PHYSICAL CONDITION AND POSTURAL DEFORMITIES OF NEW ZEALAND SCHOOL-CHILDREN.

By Dr. Mary Champtaloup, School Medical Officer, Auckland.

Incidence of Postural Deformities.

The incidence of postural deformity was estimated by observation alone. The judgment even of the same observer tends to vary. To guard against this, wherever possible some arbitrary standard was fixed. Deviations from correct posture were classed as follows: Class 1, Slight deviation. Class 2, Definite deviation; insufficient to be classed as deformity. Class 3, Marked deviation, classed as deformity. Class 4, Very marked deviation.

The deformity of forward head: In Class 3 a perpendicular line from the chin passed through the lower end of the sternum. In Class 4 a perpendicular from the chin passed anterior to the whole chest.

Deformity of the flat chest: In Class 3, in profile, the tips of shoulders were in the same plane as the chest. In Class 4, in profile, the tips of the shoulders were anterior to the chest.

In flat foot: In Class 3 the inner border of the foot lay very close to the floor. In Class 4 the inner border of the foot lay flat on the floor and there was prominence of the scaphoid.

In other deformities it was not possible to fix such a definite standard, but Classes 3 and 4 were of a corresponding degree of severity.

In estimating the incidence of deformity Classes 1 and 2 have been considered merely as deviations about the normal. Only Classes 3 and 4, with marked postural deformity, have been included in the figures.

In order that these results may be comparable with other findings on the posture of New Zealand children, age-groups have been made as follows: 7–8, 9–10, 11–12, 13–15. The figures for these groups are given below for reference. It is to be noticed that these are given separately for boys and girls. All figures are expressed in percentages.

Deformity.	Girls.					Boys.				
	7–8.	9–10.	11–12.	13–15.	Total.	7–8.	9–10.	11–12.	13–15.	Total.
Lumbar ..	4·9	9·3	6·6	5·8	7·2	3·4	7·8	8·3	8·4	7·5
Dorsal ..	15·7	22·5	27·2	33·3	23·8	13·4	18·6	18·2	20·4	17·3
Head	33·3	38·4	41·2	29·4	37·4	29·2	23·2	20·8	18·07	22·5
Chest	17·6	29·6	38·2	47·05	31·8	28·02	23·2	26·2	28·9	25·9
Abdomen ..	27·4	26·4	33·3	13·7	27·6	22·05	19·3	13·3	6·0	15·7
Hallux valgus ..	0·98	1·1	..	3·9	1·0	..	..	..	..	..
Flat foot ..	16·6	13·7	24·2	27·4	19·2	8·5	13·6	6·7	20·4	11·4

A study of these figures reveals the fact that postural deformities of all kinds are more common in girls than in boys.

This is more particularly marked in the forward head and in flat foot.

Lordosis was not particularly common, approximately 7 per cent., and tended to a decrease in the older children.

Dorsal Deformity (spine curved in antero-posterior plane).—In girls this increased steadily, reaching 33·3 per cent. in the 13–15-year group. It is much less marked in boys, shows only a slight increase, and is 20·4 per cent. in the 13–15-year group.

Head forward.—Up to twelve years in girls this is the commonest deformity rising from 33 per cent. in 7–8 years to 41·2 per cent., and falling in the older groups to 29·4 per cent. Boys commence at 29·2 per cent. and steadily decrease to 20·4 per cent. in the oldest groups. None of the Classes 3 or 4 were found to be associated with defective eyesight.

Flat Chest.—This in girls seems to follow the same progression as forward head up to twelve years, where it is 41 per cent., but while the forward head decreases markedly in the older group, flat chest shows a marked increase up to 47 per cent. It is to be noted that flat chest and dorsal deformity run parallel, and increase steadily in girls up to the oldest group. In boys the level is more or less constant at all ages at about 28 per cent. These findings are dissimilar to those of Dr. Bakewell, in Wellington, where chest deformities appeared to decrease with age.

Prominent Abdomen.—In boys this is the highest in the 7–8 group, at 22 per cent., and falls steadily to 6 per cent. in the oldest group. Girls commence at 27 per cent., rise to 33 per cent. at twelve years, and fall sharply in the older group to 13·75 per cent. Very roughly, it may be said that deformities of the lumbar, abdomen, and head tend to decrease; those of back and chest to increase.

Flat Foot.—This deformity is very common in New Zealand children, more particularly amongst girls. Marked and severe cases (Classes 3 and 4) commence at 16·6 per cent. and rise to 27·4 in the oldest groups, and an average of 19·2 per cent. Boys show very much less of this deformity, commencing at 8·5 per cent. and rising to 20·4 per cent.; average, 11·4 per cent. The lesser degree of flat foot (Class 2) appear to have a lower incidence than indicated by any other figures available.

Dr. Champtaloup, Auckland (1,000 children), 30 per cent. all ages (Class 2); Dr. Champtaloup, Dunedin (1,100 children), 58 per cent. all ages (Class 2); Dr. Bakewell, Wellington (1,000 children), 70 per cent. (approximately) all ages.

It is possible that Dr. Bakewell's figures correspond to my Classes 2, 3, and 4. Even so, the percentage for my Classes 2, 3, and 4 at all ages is lower—46 per cent. This indicates the wisdom of advancing along these lines. The emphasis placed by physical instructors on correct use of the feet is a step in the right direction. The occurrence of symptoms was not at all common, but this fact remains—that here we have potential disability of some magnitude. Early training along these lines should do much to improve matters.

The higher incidence amongst girls is possibly influenced by the more free use of footwear and the fact that this footwear is not always of a suitable type. We are living in a sensible age in this respect, but one does see some evidence of unsuitably shod feet.

Hallux valgus was entirely absent in boys. In girls 13–15 it was present in 3·9 per cent.

Genu Valgum and Genu Varum.—(1) Genu varum: This is comparatively rare, occurring in 5 per cent. of girls and 9 per cent. of boys, or in 7 per cent. of the whole group.

(2) Genu valgum: As has been indicated by other workers, this is extremely common. The figures available indicate considerable variation in incidence. Dr. Bakewell's figures indicate a tendency to decreased incidence as the age advances. In the present investigation the incidence in girls decreases definitely, but the same order is not observed in boys. These findings are inconclusive, and one is unable to suggest any influencing factor.

The standard adopted in classing genu valgum was as follows: Slight: ½ in. distance between the internal malleoli when standing with knees touching. Definite: 1 in. or more distance between malleoli. (In cases under observation the range was from 1 in. to 4 in.)

The figures obtained in Auckland are considerably higher than in Wellington. Auckland (1 in. or more between malleoli), 21 per cent.; Wellington (Dr. Bakewell), 7·11 per cent. As with other deformities the incidence is higher among girls (see table below).

(3) Relation of genu valgum to flat foot: In view of the high incidence of both genu valgum and flat foot it seemed not unreasonable to suppose that there might be some relationship between the two. Genu valgum tends to throw the body weight more to the inner border of the foot. Continued weight bearing under these conditions might predispose to flat foot. The figures do not, however, give any particular support to this theory. Among boys there certainly is a ratio of flat foot to genu valgum increasing with age, but this is not confirmed by the figure for girls.

The following table indicates the incidence of genu valgum, genu varum, and the relationship of the flat foot to these. The first two age-groups are here combined in one of 7–10 years:—

Age.	Flat Foot alone, Class 3 and 4, Incidence.	Flat Foot and Genu Valgum Incidence.	Flat Foot and Genu Varum Incidence.	Genu Valgum Incidence.	Genu Varum Incidence.
			Girls.		
	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.
7–10	4·2	8·8	1·3	(½ in. between malleoli) 15·0 (½ in. and more) 30·0	5·2
11–12	9·2	14·0	1·0	(½ in. between malleoli) 11·5 (1 in. and more) 26·5	2·4
13–15	13·1	11·1	3·2	(½ in. between malleoli) 4·9 (1 in. and more) 16·6	9·8
Total ..	6·8	11·2	1·4	(½ in. between malleoli) 13·0 (1 in. and more) 27·6	5·0
			Boys.		
7–10	8·8	1·0	1·0	(½ in. between malleoli) 13.0 (1 in. and more) 14·0	5·3
11–12	5·0	1·0	0·7	(½ in. between malleoli) 10·0 (1 in. and more) 20·0	12·0
13–15	16·0	8·0	6·0	(½ in. between malleoli) 18·0 (1 in. and more) 9·17	1·2
Total ..	8·0	2·2	1·2	(½ in. between malleoli) 12·8 (1 in. and more) 15·2	9·0
Boys and Girls ..	..	..	..	(1 in. or more) 21·0	7·0

Summary.—Taking the whole group under observation, the number of children showing postural deformity were as follows: Marked defect (Class 3): one or more defect, 27·3 per cent.; very marked defect (Class 4): general faulty posture, 15·7 per cent.: total, 43 per cent.

This indicates that we have 43 per cent. of the children with some definite postural deformity. Calling for definite remedial work are 15·7 per cent.

Nutrition and Posture.

Of the total group 29·2 were found to have subnormal nutrition. These were judged by observation, and also by weighing, and were divided into two groups: (1) Slightly below normal, 11·7 per cent of total. (2) More markedly subnormal, 17·5 per cent. of total; these were 10 per cent. or more below normal weight.

The relationship of faulty posture to malnutrition was shown to be definite. In this estimate were included only marked cases of general faulty posture. 15·7 per cent. of the whole group showed such posture. These were divided into two approximately equal sections, 51 per cent. of them having subnormal and 49 per cent. having normal nutrition. Since 70·8 per cent. of the whole group were

unusual in nutrition, and only 29·2 per cent. subnormal, the proportion of bad postures in the subnormal group is relatively much higher. In the subnormal group roughly 30 per cent. had bad posture as against 12 per cent. in the normal group.

In 10 per cent. subnormal group 29 per cent. had bad posture; in 7·9 per cent. subnormal group, 31 per cent.; and in normal group, 12 per cent.

This confirms the natural supposition that poor nutrition produces flabby muscles, whose bone is insufficient to maintain good posture.

The relationship between malnutrition and poor posture emphasizes the fact that this is a problem of various aspects. Not by physical education alone can the ideal be attained for our New Zealand children. The question involves also a consideration of diet and general conditions of living.

Angle of Pelvic Inclination.

Since it has been suggested that the increased inclination of the pelvis is the primary defect leading to a series of maladjustments and producing bad posture, it is of interest to study this question. The "pelvic angle" is that angle subtended to the horizontal by a line drawn between the anterior and superior iliac spines. The readings varied between 3° and 31°. The average for the whole group is approximately an angle of 15°.

	7–8.	9–10.	11–12.	13–15.	Total.
Girls	15·0	16·0	15·4	14·2	15·4
Boys	14·4	15·3	15·8	14·5	15·3

In calculating deviations from the normal an angle of 20° was considered to indicate inclination of the pelvis excessive. This is in accord with the estimate of Dr. Bakewell, who found such an inclination of the pelvis to be always associated with lordosis. In the present survey, although there is a definite relationship between the two factors, this is not as well marked as one would have expected. Of the children showing 20° or more inclination of the pelvis there were 5 per cent. with perfectly normal lumbar region; 42 per cent. with slight lumbar curve; 35 per cent. with definite lordosis (Class 2); 18 per cent. with marked lordosis (Classes 3 and 4), so that only 53 per cent. could be said to have lordosis.

Of the cases of lordosis 59 per cent. were unaccompanied by any increase in the pelvic angle. In the cases where lordosis was accompanied by increased pelvic inclination, however, in 62 per cent. reduction of the angle was associated with an improvement in lordosis.

It appears that increased pelvic inclination and lordosis may be associated or may occur independently. That where they are associated remedial treatment directed towards corrections of the pelvis tends to improve in lordosis.

The association of pelvic inclination with general posture has been noted, and again this is less marked than might have been expected. It is considerably more definite with girls, who show a much higher percentage of associated postural deformity, or general faulty posture. The following figures indicate the proportion of those showing increased pelvic inclination who have also one or more postural deformities:—

	Boys. Per Cent.		Girls. Per Cent.	
Increased pelvic inclination only	52		30	
Associated with one deformity	29	48	31	70
Associated with more than one deformity	19		39	

Where only one deformity was associated this was much more frequently lordosis. Second in frequency came forward head in girls and flat chest in boys. The incidence of associated lax abdomen was relatively low.

It does not appear that the pelvis is altogether the foundation of posture, or that excessive inclination necessarily involves the whole body balance.

Respiratory Excursion.

The average respiratory excursion, or difference between positions of full inspiration and expiration, for the whole group was approximately 3 in. There was a remarkable uniformity in range. Children of seven years and those of fourteen presented only ½ in. difference. One would have expected the older child with larger chest to have a relatively considerably greater range.

	7–8. In.	9–10. In.	11–12. In.	13–15. In.	Total. In.
Girls	2·7	2·9	3·8	3·5	3·019
Boys	2·9	2·9	3·2	3·4	3·1

Chest measurements were taken in three positions: (1) Position of full expiration; (2) position of full inspiration; (3) resting position.

It was felt that an improvement in posture affecting the position of the chest should mean that the chest would habitually be held in a position nearer to that of full inspiration, than formerly. That this is so has been demonstrated by taking these measurements on the same child in both poor posture and after assuming correct posture.

It was hoped that some indication would be given of an increased chest capacity in the resting position, and full inspiration was expressed as a factor—thus:—

Difference between measure at full expiration and at rest: Difference between measure at full expiration and full inspiration = respiratory excursion. Thus a child with average respiratory excursion of 3 in. might assume a resting position at full expiration = 0, or 1 in., 2 in., or even $2\frac{1}{2}$ in. above this, so

$$\frac{1}{3} = 0{\cdot}33 \text{ or } \frac{1{\cdot}5}{3} = 0{\cdot}5.$$

In this way the ratio of every child was expressed for comparison at a later date. The average ratio for the whole group was 0·26—that is, with a respiratory excursion of 3 in. the chest is habitually held 0·8 in. (0·26 × 3 in.) above the position of full expiration, and is much nearer expiration than inspiration.

Approximate Cost of Paper.—Preparation, not given printing (1,325 copies, including graphs), £130.

By Authority: W. A. G. SKINNER, Government Printer, Wellington.—1930.

Price 1s. 9d.]