1927.

NEW ZEALAND.

DEPARTMENT OF HEALTH.

ANNUAL REPORT OF DIRECTOR-GENERAL OF HEALTH.

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

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

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 1926–27.

PART I.—GENERAL SURVEY.

SECTION 1.—GENERAL.

PUBLIC HEALTH.

The extent to which the Department has discharged its responsibilities conferred under various Acts is indicated in the attached divisional and special reports. The Dominion can congratulate itself on the fact that the death-rate and the infantile-mortality rate in New Zealand are the lowest in the world; that the incidence of enteric fever has been reduced to a phenomenal degree; that the death-rate from tuberculosis is second or third lowest in the world; and that the New Zealand infant at birth has an expectation of life greater than he would have in any other country. At the same time, we, as other countries, are ever confronted with formidable problems of preventive medicine. More knowledge of the laws of health and the nature of disease is required and such knowledge must be passed on to the public; and the Department is endeavouring to meet the situation by actively encouraging research and the education of the public in health matters. Personal disregard of the laws of health results in much invalidity and many premature deaths. Credit is due to voluntary organizations for splendid work in creating public interest in these matters.

The major portion of the Taranaki Provincial District has been constituted a separate health district. This is the first step in a movement by the Department to do away with overlapping of several branches of nursing service and to provide for closer medical supervision. The suggestion is in future to have one Medical Officer in the district who will act as both Medical Officer of Health and School Medical Officer. The change is on the lines of a system which obtains in another country. In no case does more than one nurse, one Inspector, and one Medical Officer cover the same ground. The main object of the scheme is to decentralize public-health administration and to bring the unit of control nearer the homes of the people. The advantages of the scheme are twofold, as it makes

for both economy and efficiency. The negotiations have already been entered into with the Red Cross Society and the Taranaki and Stratford Hospital Boards with a view to the nurses employed by these bodies co-operating with the Department and undertaking certain duties, such as the inspection of school-children and supervision of cases of infectious disease in specified areas. If the experiment is successful, it is hoped to extend this new system to other parts of New Zealand as opportunity offers. Dr. R. J. Mecredy has been appointed to the new district, with headquarters at New Plymouth.

Vital Statistics.—In certain directions our vital statistics for the past year may be considered satisfactory. The crude (actual) death-rate, 8·74 per 1,000 of mean population, is still comparatively low, though it shows a slight increase over the rate of 8·29 for the previous year. The increase was due principally to the epidemics of whooping-cough and influenza. However, this rate is in line with the remarkable succession of low rates established in recent years. The infantile-mortality rate was 39·76 per 1,000 live births, in comparison with 39·9 for 1925. As pointed out by Dr. McKibbin in his report, it is encouraging to note that the record low infantile-mortality figure of 1926 had been produced by a reduction in the deaths during the earlier age periods of life. It is hoped that this foreshadows a further reduction in this rate. Probably the intensive ante-natal work is beginning to make itself felt. The birth-rate of 21·05 per 1,000 of mean population is the lowest on record, and the rate of still-births, 31·1 per 1,000 live births, shows an increase. The falling birth-rate is a matter of considerable concern.

Of the notifiable diseases, scarlet fever, diphtheria, and pneumonic influenza showed an increased incidence, and particularly so pneumonic influenza, with a notification rate of 4·73 per 10,000 mean population, in comparison with 0·52 for 1925.

Tuberculosis.—Death-rate per 10,000 mean population was 5·37. As with South Africa and Australia, we have a very much lower death-rate than other countries. Although the death-rate does not show a definite tendency to increase, the fight against this scourge must be more vigorously continued. Consideration is being given to the treatment of tuberculosis by the Hospital Boards, and the report of their association on this disease is awaited with interest. The paper on "The Incidence of Tuberculosis among New Zealand School-children" read by Dr. Mary Champtaloup at the Australasian Medical Congress, and included in the report of the Director, Division of School Hygiene, outlines an important investigation aiming at the prevention of tuberculosis among our school-children.

Cancer.—The death-rate of 9·91 per 10,000 is the highest yet recorded, and is a matter of concern. Attention is directed to the comments embodied in the report of the Director of Public Hygiene on this disease.

Maternal Mortality.—The rate of 4·25 per 1,000 live births represents a steady decline in this rate. It is satisfactory to note that since 1922 the rate has fallen 0·89. The initiation of intensive activities on behalf of the expectant mothers, and subsequent establishment of ante-natal clinics and closer supervision of maternity hospitals, no doubt has been of value in this respect.

In this connection the following comments of Dr. Marshall Allen, Director of Obstetric Research, Victoria, who visited New Zealand during the Medical Congress, which appeared in a Press interview may be quoted: "The association of ante-natal clinics with the Plunket centres he considered most valuable. The work being done in this respect in New Zealand was, he said, far in advance of anything in Victoria. There is no doubt, he said, that the private maternity hospitals here are far more thoroughly inspected than those in Victoria. Dr. Allen spoke in terms of high approval of the system adopted in New Zealand of providing sterilized labour outfits for expectant mothers. This provision alone was a great advance in the campaign for maternal welfare. Another excellent feature was the endeavour of the Health Department to standardize the methods of technique."

The keen interest taken by the medical profession in this problem and the assistance it has rendered the Department has been most gratifying.

The accompanying reports of Dr. Jellett, Dr. Paget, and Dr. Gurr detail the progress made in their special spheres of maternity work.

Venereal Diseases.—The extent to which these diseases are rife is indicated to some extent in the accompanying table showing returns from the V.D. clinics in the chief centres. Increasing attention is being given to the question of venereal disease in relation to the care of pregnant women in the ante-natal clinics. The regulations in operation for better supervision and control of sufferers continue to work satisfactorily, and have been of undoubted benefit.

Propaganda and Publicity.—The Department has continued, through its officers, to distribute many thousands of pamphlets, all aimed at spreading the principles of health. During the past year arrangements were made for the publication of a weekly series of newspaper articles dealing with some important phase of public health. The newspapers are perhaps the best method of reaching the public, and they exercise a tremendous force in moulding and educating public opinion. I wish to take this opportunity of expressing my great appreciation of the service the newspapers of the Dominion have rendered the Department in this direction. Health Week campaigns and similar valuable movements throughout New Zealand have received every assistance from the officers of the Department.

International Pacific Health Conference, Melbourne.—Dr. Watt, Deputy Director-General of Health represented New Zealand at this important Conference for the discussion of medical and health problems connected with the island groups of the Pacific. The report of the Conference covers the problems dealt with, and will form a valuable basis for a future policy in regard to these matters. The presence of Sir George Buchanan, C.B., M.D., Senior Medical Officer, Ministry of Health, Great Britain, added much to the value and interest of the Conference. I only regret that this eminent officer could not be spared to visit New Zealand.

Conference of the Australasian Branch of the British Medical Association.—The officers of the Department delivered a number of addresses on various aspects of public-health administration at this Conference, held in Dunedin. The excellent paper read by Dr. Ada Paterson, and compiled in conjunction with Dr. Marsden, D.Sc., late Assistant Director of Education, on "Physical Growth and Mental Attainment of New Zealand School-children" has been included as an appendix to this report.

Medical Research.—During the year under review this important matter has not been neglected. The research which has been undertaken includes both laboratory investigations and field inquiries. The former investigations, which were carried out at the Otago University Medical School under the supervision of Professor Hercus, included research work into the nature and prevention of infantile paralysis, rheumatoid arthritis, and goitre.

Difficulties have been encountered in regard to the infantile-paralysis work, more particularly on account of the lack of fresh *materies morbi*. While considerable progress has been made in the technique surrounding the problem and in the care of the monkey, a laboratory animal with which, so far, we have not been familiar, no definite advance can be claimed in knowledge of the disease. Dr. Steenson has continued the laborious work of repeating complement fixation tests as elaborated by certain workers in America. His investigations did not sustain the claims of these workers in regard to the diagnosis and treatment of rheumatoid arthritis by serological methods, his findings again being more or less of a negative nature. The inquiry into goitre has been continued, and detailed chemical investigations have been made into the proportion of iodine found in the soil and vegetables from different parts of the Dominion.

The field investigations carried out during the year included an inquiry into the incidence of cancer in New Zealand by Dr. Fulton. Although Dr. Fulton has completed his investigations, his report is not yet available. A second inquiry, which was undertaken by the medical officers of the School Division of the Department, was a study of the incidence of tuberculosis in school-children. The results arrived at were embodied in a paper presented by Dr. Mary Champtaloup, at the recent Australasian Public Health Congress in Dunedin, which is published in another part of this report. A third laboratory investigation which was undertaken was one into the weights and heights of New Zealand children by Dr. Ada Paterson and Dr. Marsden.

Deaths under Anæsthetics.—Twenty deaths occurred, in comparison with twenty-four for the previous year. During the year the combined medical and dental professions of Taranaki considered information and suggestions submitted by the Department in reference to deaths taking place during anæsthesia in dental operations. As an outcome, two pamphlets were prepared by the Taranaki Division of the British Medical Association and the Taranaki Dental Association—one, for the dentists, giving general instructions as to preparation of patients, and the other containing advice to patients requiring general anæsthetic for dental operations. This co-operation of the two professions might well be followed in other centres.

SECTION 2.—HOSPITALS.

New Zealand Hospital Boards' Association Conference.—The annual Conference of the New Zealand Hospital Boards' Association was held in Christchurch, and there was an attendance of sixty-three delegates representing forty-four Boards, with the addition of some twenty-six Board Secretaries and Medical Superintendents. Many important matters affecting hospital-administration were discussed.

During the past year I have been urging on Hospital Boards the need for economy, especially in capital expenditure, and in one way or another I have been able to put off expenditure on new buildings to the extent of some £250,000. At first sight it was disappointing, therefore, to notice in our Hospital estimates that though there is a decrease in capital requirements, yet the total requirements of Hospital Boards show an increase and the resulting subsidy has increased by some £50,000; but reflection shows that that expenditure was for sums to which the Department had been committed for the last two or three years, which commitment was principally due to the capital expenditure in our four chief hospitals. Next year's estimates should show a marked reduction in capital expenditure. During the year plans were approved for the erection of addition or alteration to public hospital buildings estimated to cost £183,885, being a decrease of £341,356 on the previous year. A still further reduction in this direction is anticipated during the coming year as a great deal of work which was overdue has now been overtaken.

The past year has been a quiet but a very busy one. I have interviewed practically every Hospital Board in the Dominion during the past twelve months. I was very glad to note the great improvement in some of the hospitals of the West Coast, particularly Westport and Hokitika, which reflect great credit on the medical and nursing staffs.

Hospitals administered by Hospital Boards.—Full particulars in reference to these hospitals will be published as an appendix to this report as soon as the statistical data are available.

SECTION 3.—DIVISIONAL AND SECTIONAL REPORTS.

Public Hygiene.—The report of Dr. McKibbin embodies interesting comments and statistical data on the chief causes of mortality and infection. Attention is specially directed to his observations on cancer and maternal mortality.

The administration of the Cemeteries Act, a new function of the Department, is proceeding satisfactorily. The Director's report and the extracts from reports of Medical Officers of Health indicate the steady progress that is being maintained in public hygiene and sanitation throughout the Dominion by the local authorities. With the growth of population the work of Medical Officers of Health and their staff is becoming of increasing importance. The co-operation received from local governing bodies is very encouraging.

School Hygiene.—Dr. Ada Paterson's report is distinguished by the important field work of the officers under her direction. The increased attention paid to notifications sent to parents relating to defects requiring treatment is very satisfactory. The medical inspection of our school-children is proving a most valuable means for the early detection of disease and of physical and mental defects.

Maternal Welfare.—The work of the special officers concerned in maternal welfare has resulted in steady progress. Dr. Jellett's comments on technique, dangers from interference in midwifery practice, and the abuse of Cæsarean section command attention. The reports of Dr. Paget and Dr. Elaine Gurr indicate the beneficial results arising from ante-natal care and the closer supervision of maternity hospitals. The inauguration of an Obstetrical Society amongst the medical profession of New Zealand should result in much good work being achieved in this direction.

Nursing.—The Nurses and Midwives Registration Board has experienced a busy year carrying out the requirements of the 1925 Act dealing with important problems affecting the nursing services of this country. Thanks are due to the members of the Board for their aid in administering the Act. The high standard of our nursing services reflects credit on those responsible for their training.

Dental Hygiene.—The Director's concise report indicates the valuable service rendered by his Division. The satisfactory results of the primary and final examinations of the dental nurses speak well for the standard of training carried out by the supervising officers. The remarkable progress achieved in providing dental treatment for the children of the Dominion is indicated in the increase by 127,257 of the operations performed in comparison with the previous year.

Maori Hygiene.—It is with much regret the Department is losing the services of Dr. Rangi Hiroa. Attention is drawn to the growing co-operation of the leading Maoris in the work of the health-conservation of their race in comparison to the regrettable attitude adopted by the followers of Ratana.

SECTION 4.—MISCELLANEOUS.

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 the carrying-out of sanitary works. Some of these involved works of considerable magnitude. Other matters dealt with included the typhoid epidemic in Hawke's Bay, regulations for the control of hairdressing-saloons, medical research, loans for private-house drainage connections, goitre, &c. The thanks of the Government are due to the members of the Board for their co-operation.

Medical Practitioners Act, 1914.—Four meetings of the Medical Council were held during the year under review. The following table, covering the past five years, summarizes the Board's work so far as the granting of applications by medical men for registration, &c., are concerned:—

——	1922.	1923.	1924.	1925.	1926.
Number on register on 1st January	1,071	1,073	1,138	1,204	1,211
Number added during year	34*	77†	85‡	78§	94‖
Number removed during year	32	12	19	71	22
Number on register at end of year ..	1,073	1,138	1,204	1,211	1,283

* Includes 21 with New Zealand qualifications. † Includes 59 with New Zealand qualifications. ‡ Includes 67 with New Zealand qualifications. § Includes 59 with New Zealand qualifications. ‖ Includes 69 with New Zealand qualifications.

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

Masseurs Registration Act, 1920.—During the year the Masseurs Registration Board met quarterly. Besides dealing with ordinary routine matters, arrangements were made whereby students qualifying as masseuses at the Otago Massage School could undertake a post-graduate course at the larger hospitals. The syllabus of training for probationers intending to take the State Massage Examination was increased by the addition of training in the use of apparatus for ultra-violet treatment and diathermy treatment. Owing to representations made by the Board, the Chartered Society of Massage and Medical Gymnastics, England, has agreed to accept as members any applicant who holds the New Zealand State examination. The register of qualified masseurs contains 426 names.

Plumbers Registration Act, 1912.—Two meetings of the Plumbers Board constituted under this Act were held during the year. Examinations under the Act were held in June and November. At the June examination 194 candidates presented themselves for examination, the results being that sixty-two candidates passed in the theoretical and forty-four in the practical, whilst forty-eight qualified for registration and were placed on the register. At the November examination 190 candidates presented themselves for examination, the results being seventy-three candidates passed in the theoretical and thirty-nine in the practical; forty-four qualified for registration, and had their names duly recorded on the register. To date, the names of 1,797 plumbers have been entered in the register, and thirty-five removed through death. The *Gazette* notice for 1927 contains the names of 1,236 plumbers.

It is with great sorrow I have to record the death during the past year of one of our oldest and most valued medical officers, Dr. J. P. Frengley. He had been attached to the Department almost from its formation, in 1900, and he has left his mark in almost every department of our activities. In addition to his wide range of scientific knowledge he possessed that capacity for taking pains which is akin to genius. Those who have worked with him know his painstaking care over even the smallest details. He never spared himself in his efforts towards efficiency in administration, while his quiet sense of humour and his kindly nature won him the friendship of his colleagues. Largely to his efforts do we owe the efficiency of the drainage and plumbing laws, our food and drugs regulations, and the broad lines of our hospital-planning. To him more than any one does Wellington owe its municipal milk-supply, his original sketch of which has in course of time come to be almost completely adopted. With Dr. Frengley's death the State has lost a valuable servant, and his fellow-officers will miss him both as a friend and as a collaborator in the Health Service.

The death of Mrs. Grace Neill removed one of the outstanding personalities of the nursing profession in this country. For many years she was Assistant Inspector of Hospitals and Deputy Registrar of Nurses, and by able administration she was mainly responsible for laying the foundation of our excellent nursing services. I cannot do better than quote the following extract from an article by Dr. Agnes Bennett appearing in the *Journal of International Council of Nurses* on this noble pioneer of the nursing profession in New Zealand, whose name has been fittingly added to the Scroll of Honour of the British College of Nursing: "It was Mrs. Neill's influence that brought into being the Nurses Registration Act of 1901 and the Midwives Act of 1904. She drew up the regulations and syllabus of training, and instituted the first uniform State examination of nurses, thus setting the standard for New Zealand nurses, which has since been followed with natural progress. Those who study statistics will note that the gradual decline in infantile mortality began from those dates. Authorities abroad soon realized the soundness of policy embodied in the Acts. State registration of nurses is now a recognized Empire policy. That New Zealand was in the van of these reforms is due to Mrs. Neill's foresight and broadminded view of the rightful relation of State and nurse."

It is desired to express fullest appreciation for the assistance rendered the Department by the Government Statistician and his officers in the compilation of statistical data, and for expert advice on matters of statistical nature to individual officers of this Department. The special vital-statistic reports issued by the Census and Statistics Office are becoming of increasing value to this Department.

The staff of Medical Officers has been increased by the appointment of Dr. MacLean as assistant to Dr. Crawshaw at Dunedin, and Dr. Turbott, now stationed at Auckland.

I again wish to express my sincere appreciation for the loyal and efficient service rendered by all the officers of the Department.

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

PART II.—PUBLIC HYGIENE.

I have the honour to submit my annual report for the year ended 31st March, 1927.

SECTION 1.—VITAL STATISTICS.

POPULATION.

The mean population of the Dominion for 1926 (exclusive of Maoris) was estimated to be 1,352,927. This total represents an increase over the corresponding figure for the previous year of 23,171, or a percentage increase of population of 1·74.

BIRTHS.

The births of 28,473 living children were registered in the Dominion during 1926, as against 28,153 in 1925. The birth-rate for 1926 was thus 21·05 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, 1917–26.

Year.	Total Number of Births registered.	Birth-rate per 1,000 of Mean Population.
1917	28,239	25·69
1918	25,860	23·44
1919	24,483	21·42
1920	29,921	25·09
1921	28,567	23·34
1922	29,006	23·17
1923	27,967	21·94
1924	28,014	21·57
1925	28,153	21·17
1926	28,473	21·05

The birth-rate for 1926 is the lowest ever recorded in the Dominion.

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 1922–26.

Still-births (Number and Rate) in New Zealand, 1922–26.

Year.	Total Number of Still-births registered.	Rate of Still-births per 1,000 Live Births.
1922	842	22·1
1923	894	32·0
1924	855	30·5
1925	861	30·6
1926	886	31·1

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

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

DEATHS.

The total number of deaths (11,819) registered during the year 1926 was nearly 800 in excess of the total for the previous year (11,026), although this disparity is not reflected to the same extent in the death-rate, which still maintains its position on a reasonably low level. The death-rate (8·74 per 1,000 of mean population) was in fact an increase of only 5·43 per cent. over the record low rates for 1925 and 1924 (8·29 in each case). The increase was due principally to the epidemics of whooping-cough and influenza during 1926.

Crude Death-rates.

Year.	Crude Death-rate.	Year.	Crude Death-rate.
1901	9·81	1923	9·03
1911	9·39	1924	8·29
1921	8·73	1925	8·29
1922	8·77	1926	8·74

Infant Mortality.—The infant-mortality rate for 1926 was 39·76 per 1,000 births. The achievement of such a phenomenally low infant-death rate stands as a record for New Zealand and also for the world.

Infant Mortality in New Zealand, 1900–26 (per 1,000 Live Births).

Year.	Under One Month.	One Month and under Twelve Months.	Total under Twelve Months.	Year.	Under One Month.	One Month and under Twelve Months.	Total under Twelve Months.
1900	31·1	44·1	75·2	1914	28·9	28·5	51·4
1901	29·8	41·6	71·4	1915	29·2	20·8	50·0
1902	32·2	50·7	82·9	1916	27·0	23·7	50·7
1903	31·7	49·4	81·1	1917	27·9	20·3	48·2
1904	29·4	41·6	71·0	1918	26·7	21·7	48·4
1905	30·1	37·4	67·5	1919	28·4	16·9	45·3
1906	29·6	32·5	62·1	1920	30·8	19·7	50·5
1907	30·4	58·4	88·8	1921	30·7	17·1	47·8
1908	31·2	36·7	67·9	1922	27·2	14·7	41·9
1909	29·9	31·7	61·6	1923	29·1	14·7	43·8
1910	30·2	37·5	67·7	1924	24·0	16·3	40·3
1911	28·5	27·8	56·3	1925	26·4	13·5	39·9
1912	30·1	21·1	51·2	1926	25·46	14·3	39·76
1913	29·7	29·5	59·2				

It will be seen from the above table that hitherto the decline in the infant-death rate has been due almost entirley to a lower mortality in the later months of the first year of life. In recent years more attention is being given to arresting the pre-natal causes of infant deaths, and, although one year's figures can hardly be taken as a true indication of the future trend of the rate, it is nevertheless encouraging to note that the 1926 record low infant-mortality figure has been entirely produced by a reduction in the deaths during the first three months of life. The rate for the following nine months has, in fact, increased in the year under review.

Analysis of Deaths of Infants under One Month of Age, 1926.

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	2
Meningitis	..	..	..	..	..	..
Convulsions	1	15	2	..	..	18
Bronchitis	..	..	1	2	..	3
Broncho-pneumonia	..	3	4	4	3	14
Pneumonia	..	2	..	2	1	5
Diarrhœa and enteritis	..	..	3	1	2	6
Congenital malformations	21	42	7	5	7	82
Congenital debility, icterus, sclerema ..	25	41	11	7	5	89
Injury at birth	13	27	3	..	..	43
Premature birth	154	129	22	20	10	335
Other causes peculiar to early infancy ..	28	54	3	1	..	86
Accidental mechanical suffocation (overlain, &c.)	..	2	..	..	..	2
Other causes	2	23	4	5	5	39
Total, both sexes	244	339	60	47	35	725

Maternal Mortality.—The following table shows the number of deaths from puerperal causes, and the rate of such deaths per 1,000 births, for the five-yearly period 1922–26 :—

Table A.—Deaths from all Puerperal Causes, 1922–26.

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.
1922	52	97	149	1·79	3·35	5·14
1923	52	91	143	1·86	3·25	5·11
1924	52	88	140	1·86	3·14	5·00
1925	42	89	131	1·49	3·16	4·65
1926	39	81	120	1·37	2·88	4·25

There has been a gratifying reduction in this death-rate during 1926. It has dropped from 6·48 per 1,000 live births in 1920 to 4·25 last year. During the period 1880 to 1885 this death-rate rose from 3·93 to 7·31, and then dropped to 4·23 in 1889. In 1894 it was 5·29 ; in 1898, 3·84 ; in 1903, 5·86 ; in 1907, 3·88 ; in 1909, 5·09 ; in 1913, 3·58 ; in 1920, 6·48 ; in 1926, 4·25. Since 1916 there has been more careful inquiry and greater statistical accuracy in the New Zealand returns, and probably last year's rate of 4·25 corresponds with the lower rates of certain earlier years.

Distribution of Maternal Deaths.—It is now possible to obtain separate statistics for the fourteen principal urban areas of the Dominion, which include roughly half the total population, and for the rest of the Dominion. Correction has been made by the Census and Statistics Office for women from other parts of the Dominion who died in urban areas.

The following table (B) shows that, after making allowance for the fact that the birth-rate in the urban areas is slightly lower than in the rest of the Dominion, the maternal death-rate in the latter from the principal maternal causes is considerably greater than in the urban areas. This is noticeable particularly with puerperal albuminuria and convulsions, puerperal hæmorrhage, and other accidents of labour. It holds good even with puerperal septicæmia, but to lesser degree. It is not true of "accidents of pregnancy" ; but these include miscarriages and abortions, which are believed to be more frequent in the cities. It would seem, therefore, that in order to reduce maternal deaths most attention must be given to non urban areas.

Table B.—Deaths from Puerperal Causes, Urban Areas and Rest of Dominion, 1922–26.

Cause.	Urban Areas.						Rest of Dominion.					
	1922.	1923.	1924.	1925.	1926.	Total.	1922.	1923.	1924.	1925.	1926.	Total.
Puerperal septicæmia	26	25	13	18	17	99	26	27	39	24	22	138
Puerperal albuminuria and convulsions ..	18	9	12	13	7	59	17	25	24	19	24	109
Puerperal hæmorrhage	6	8	8	15	1	38	16	18	11	9	8	62
Accidents of pregnancy	9	8	9	1	11	38	4	9	6	9	9	37
Other accidents of labour	3	1	1	1	4	10	10	3	5	6	5	29
Puerperal white-leg, embolus, sudden death	2	4	5	1	4	16	10	4	6	13	7	40
Following childbirth, not otherwise defined	..	..	1	2	1	4	2	2	..	..	..	4
Total deaths	64	55	49	51	45	264	85	88	91	80	75	419

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

Since, as seen from table (B), these deaths in New Zealand occur less frequently with urban dwellers than with those residing in the country districts and the smaller towns, it is possible that in all these countries the higher rate is due not to lack of skill, but to scattered distribution of population rendering ante-natal care and the procurement of skilled midwifery service more difficult of attainment. That is to say, we in New Zealand can considerably reduce our puerperal death-rate, but the distribution of our population makes that task more difficult.

Table C.—Deaths from Puerperal Causes in various Countries.

Country.	Period.	Death-rate per 1,000 Births from		
		Puerperal Septicæmia.	Other Puerperal Causes.	All Puerperal Causes.
Denmark	1920–24	1·10	1·16	2·26
Netherlands	1921–25	0·72	1·72	2·44
Sweden	1918–22	1·21	1·40	2·68
Italy	1920–24	1·08	1·73	2·81
Uruguay	1919–23	1·75	1·13	2·88
Japan	1920–24	1·28	2·11	3·39
Hungary	1918–22	1·52	1·90	3·42
England and Wales	1921–25	1·40	2·50	3·90
Northern Ireland	1921–25	1·55	3·21	4·76
Spain	1920–24	2·99	1·80	4·79
New Zealand	1922–26	1·67	3·16	4·83
Irish Free State	1921–25	2·10	2·88	4·98
Germany	1920–24	2·77	2·27	5·04
Jamaica	1921–25	1·09	4·10	5·19
Australia	1922–26	1·70	3·51	5·21
Switzerland	1918–22	2·82	2·60	5·42
Canada*	1921–25	1·46	4·09	5·55
Belgium	1920–24	2·65	3·11	5·76
Scotland	1921–25	1·86	4·41	6·27
United States†	1920–24	2·54	4·36	6·90
Chile	1919–23	2·24	6·00	8·24
Trinidad	1923–25	3·58	5·68	9·26
British Guiana	1922–25	2·68	11·55	14·23
Ceylon	1921–25	8·15	11·94	20·09

* Exclusive of Quebec. † Registration area.

SECTION 2.—NOTIFIABLE DISEASES.

Scarlet Fever.

The course of scarlet fever in New Zealand during the last five years is briefly shown in the tables below. The notifications for 1926 reveal a considerable increase as compared with the previous four years, though the death-rate remains low.

Scarlet Fever in New Zealand, 1922–26.

Year.	Notifications.		Deaths.	
	Number.	Rate per 10,000 of Mean Population.	Number.	Rate per 10,000 of Mean Population.
1922	1,449	11·58	10	0·08
1923	1,201	9·42	13	0·10
1924	1,176	9·05	13	0·10
1925	1,025	7·71	7	0·05
1926	1,583	11·70	8	0·06

Diphtheria.

Diphtheria in New Zealand, 1922–26.

Year.	Notifications.		Deaths.*	
	Number.	Rate per 10,000 of Mean Population.	Number.	Rate per 10,000 of Mean Population.
1922	1,989	15·89	78	0·62
1923	1,951	15·31	68	0·53
1924	2,717	20·84	82	0·63
1925	1,518	11·42	52	0·40
1926	1,975	14·59	66	0·49

* Figures include deaths from croup.

The death-rate, though remarkably low, shows an increasing tendency. Although little preventive inoculation of children has been carried out in New Zealand in comparison with what has been done in certain American States, the death-rate from this disease has greatly reduced in the last few years. Preventive inoculation is now carried out in districts which show an increased incidence of this disease.

Enteric Fever.

The position as regards this disease for the period 1922–26 is shown in the table below :—

Enteric Fever in New Zealand, 1922–26.

Year.	Notifications.		Deaths.	
	Number.	Rate per 10,000 of Mean Population.	Number.	Rate per 10,000 of Mean Population.
1922	539	4·31	67	0·54
1923	276	2·17	23	0·18
1924	354	2·73	19	0·15
1925	278	2·09	16	0·12
1926	302	2·23	19	0·14

Tuberculosis.

Tuberculosis (All Forms) in New Zealand, 1917–26.

Year.	Number of Deaths from Tuberculosis.	Death-rate from Tuberculosis per 10,000 of Mean Population.	Percentage of Total Deaths from all Causes.
1917	755	6·87	7·17
1918	832	7·54	5·08
1919	762	6·71	7·05
1920	851	7·21	7·03
1921	793	6·48	7·42
1922	821	6·56	7·48
1923	792	6·21	6·88
1924	736	5·67	6·84
1925	684	5·14	6·20
1926	727	5·37	6·15

Of the total of 727 deaths in 1926, 592 were assigned to pulmonary tuberculosis and the remaining 135 to other forms of this disease. South Africa, Australia, and New Zealand have a very much lower death-rate from this disease than most other countries.

Pulmonary Tuberculosis.—Pulmonary tuberculosis is the only variety of the disease which is compulsorily notifiable, and, although the death-rate is reducing, notifications have increased for several years past, due, it is believed, not to an actual increase in incidence but to freer notification by medical practitioners. This is a satisfactory feature, since it leads to control of cases and the prevention of the spread of this disease. It cannot yet be said, however, that all cases of pulmonary tuberculosis are notified. The number of notifications for 1926 was 1,318, and for the preceding year 1,247.

Distribution of Pulmonary Tuberculosis in New Zealand.— It is of interest to record that the death-rate from pulmonary tuberculosis is higher in the South Island than in the North Island. This apparently has always been the case, due perhaps to climatic differences. The following table makes this clear :—

Death-rate from Pulmonary Tuberculosis per 10,000 Population.

Year.	North Island.	South Island.
1917	4·82	6·06
1918	5·40	6·29
1919	4·63	5·48
1920	5·31	5·93
1921	4·92	5·11
1922	4·62	4·98
1923	4·78	5·00
1924	4·39	4·48
1925	4·00	4·58
1926	4·3	4·5

The same is true, moreover, regarding other pulmonary diseases. The death-rate in the two Islands from pneumonia, broncho-pneumonia, and bronchitis combined is given in the following table :—

Death-rate per 10,000 Population in the North and South Islands of New Zealand from Pneumonia, Broncho-pneumonia, and Bronchitis combined, Pulmonary Tuberculosis having been excluded.

Year.	North Island.	South Island.
1917	5·32	5·85
1918	8·00	9·48
1919	7·24	6·78
1920	9·92	9·87
1921	7·10	8·02
1922	6·84	8·31
1923	6·78	9·97
1924	5·14	6·43
1925	5·99	6·56
1926	5·9	7·3

Pneumonic Influenza.

The table appended illustrates the course of this disease for the quinquennial period 1922–26.

Pneumonic Influenza in New Zealand, 1922–26.

Year.	Notifications.		Deaths.	
	Number.	Rate per 10,000 of Mean Population.	Number.	Rate per 10,000 of Mean Population.
1922	216	1·73	23	0·18
1923	1,144	8·98	223	1·75
1924	180	1·39	32	0·25
1925	69	0·52	23	0·17
1926	641	4·73	132	0·98

Last year's epidemic was about half as fatal as that of 1923.

SECTION 3.—NON-NOTIFIABLE DISEASES.

Cancer.

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

Number of Persons who died from Cancer, the Proportion per 10,000 Persons living, and the Percentage of all Deaths, 1915–26.

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.
1915	900	9,965	8·19	9·03
1916	909	10,596	8·27	8·50
1917	957	10,528	8·71	9·09
1918	936	16,364	8·49	5·72
1919	1,031	10,808	9·07	9·54
1920	1,029	12,109	8·72	8·50
1921	1,044	10,682	8·53	9·77
1922	1,066	10,977	8·52	9·71
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

It will be seen from this that New Zealand, in common with all civilized countries having a low general death-rate, shows a steadily increasing death-rate from cancer, last year nearly one person in every thousand living having died of this disease. Huge sums are being spent in an endeavour to ascertain the cause of this disease, in the hope that a means of prevention may be found. Even in New Zealand a sum of £2,000 was set aside last year for cancer research.

Factors in the Increase of Cancer.—First, this increase in the death-rate from cancer is in considerable measure more apparent than real, for the following reasons: Statistical inquiry and accuracy in compilation is improving year by year, thus a greater proportion of the deaths due to cancer are correctly assigned to that disease. Again, not only is skilled medical attention, including sojourn in well-equipped hospitals, more readily attainable, but each year the skill to test for and diagnose cancer is increasing. Moreover, sentimental objection on the part of relatives to the certification of death from cancer is yearly disappearing. It is evident, though, that the factors mentioned cannot account for the whole of the great increase in the cancer death-rate, and that there must have been a real increase. In reference to this smaller real increase, Mr. Butcher, Chief Compiler, Census and Statistics Office, Wellington, comments in the following sense: Paradoxical though it may seem to say so, even this real increase is in large part a reflection of the progress that has been made in the science of medicine and sanitation. New Zealand has been noticeably successful in reducing her rate of infantile mortality, and a certain measure of success has attended the efforts made in recent years to cope with tuberculosis. The judicious handling of infections and epidemic diseases, and the legislative safeguards against unnecessary occupational risks, have further increased every person's prospect of reaching middle life, whereupon he finds the selection of diseases in his older age confined mainly to heart-disease, arterial degeneration, apoplexy, cancer, and old age. Moreover, in New Zealand the average death from cancer occurs after age 60, so that if we could eliminate or reduce cancer this would have little or no effect upon the death-rate. The main point of difference, however, between cancer and the other principal causes of death in later life lies in the more painful nature and the prolonged agony of the illness preceding death. It is this that justifies every human effort to solve the cancer problem.

TABLE A.—NOTIFIABLE DISEASES IN NEW ZEALAND, 1926, SHOWING DISTRIBUTION BY MONTHS.

Month.	Scarlet Fever.	Diphtheria.	Enteric Fever.	Tuberculosis.	Cerebro-spinal Meningitis.	Poliomyelitis.	Pneumonic Influenza.	Pneumonia.	Erysipelas.	Puerperal Fever.	Abortion.	Eclampsia.	Tetanus.	Hydatids.	Trachoma.	Leprosy.	Ophthalmia Neonatorum.	Lethargic Encephalitis.	Food-poisoning.	Dysentery.	Actinomycosis.	Lead-poisoning.	Alastrim.	Totals.
January	92	102	15	88	5	..	5	21	11	17	8	8	4	13	2	..	4	8	1	..	..	..	..	404
February	91	89	27	96	2	4	2	17	16	20	13	1	2	4	1	..	4	3	..	..	1	2	..	395
March	116	162	18	127	2	4	1	20	19	13	7	6	3	6	..	..	3	5	..	..	1	1	..	514
April	123	283	53	108	2	1	3	34	18	14	7	4	..	1	1	..	3	2	..	5	..	1	..	663
May	206	196	28	87	2	..	9	38	28	16	11	2	..	3	1	..	2	7	11	5	..	..	..	652
June	192	274	23	105	1	..	37	88	16	10	10	3	2	3	2	..	1	2	..	7	..	1	..	777
July	150	189	11	110	1	1	345	225	24	17	6	6	..	3	..	..	..	1	..	1	..	..	..	1,090
August	123	157	16	110	4	1	188	151	21	12	8	4	..	8	..	..	2	3	..	..	..	..	..	808
September	120	102	24	118	7	2	34	81	21	11	12	6	2	9	1	..	2	2	..	..	..	1	..	555
October	122	146	21	106	4	..	7	68	30	25	10	2	..	5	1	..	9	3	1	1	..	..	..	561
November	110	156	42	131	2	1	6	69	16	14	7	6	1	5	..	1	1	5	1	2	1	..	..	577
December	138	119	24	132	3	8	4	68	13	21	8	6	2	7	1	..	1	1	12	..	..	..	..	568
Totals, 1926	1,583	1,975	302	1,318	35	22	641	880	233	190	107	54	16	67	10	1	32	42	26	21	3	6	..	7,564
Totals, 1925	1,025	1,518	278	1,247	27	1,159	69	579	181	225	111	74	20	35	29	2	36	21	18	..	4	2	1	6,661

TABLE B.—NOTIFICATIONS OF CASES OF NOTIFIABLE DISEASES FOR YEAR ENDED 31ST DECEMBER, 1926.

Name of Disease.	North Auckland.	Central Auckland.	South Auckland.	Coromandel-Opotiki.	Taranaki-Horowhenua.	Wairarapa-East Cape.	Central Wellington.	Nelson-Marlborough.	West Coast.	Canterbury.	Otago.	Southland.	Totals.
Scarlet fever	29	85	95	40	143	146	484	17	17	389	92	46	1,583
Diphtheria	44	214	72	57	366	318	246	43	68	313	211	23	1,975
Enteric fever	16	14	41	37	18	158	2	1	..	10	3	2	302
Tuberculosis	66	128	117	55	66	99	94	9	16	391	210	67	1,318
Cerebro-spinal meningitis	5	..	1	1	5	6	3	1	..	5	6	2	35
Poliomyelitis	1	3	1	..	2	..	1	..	1	7	6	..	22
Influenza (pneumonic, &c.)	28	133	83	43	50	45	32	13	13	161	33	7	641
Pneumonia	48	167	97	52	94	112	59	7	18	153	61	12	880
Erysipelas	10	51	21	6	24	34	35	1	1	28	20	2	233
Puerperal fever—						24	24	6	4	38	17	12	190
Ordinary	6	22	14	2	21								
Following abortion or miscarriage	4	41	7	5	7	6	6	..	1	29	1	..	107
Eclampsia	3	12	4	1	7	7	3	..	1	7	6	3	54
Tetanus	3	4	..	1	1	3	2	..	..	2	..	..	16
Hydatids	2	..	4	2	5	8	..	1	3	26	15	1	67
Chronic lead-poisoning	..	1	..	..	..	..	4	..	..	1	..	..	6
Trachoma	..	..	5	..	1	3	..	..	..	1	..	..	10
Smallpox	..	..	..	..	..	..	..	..	..	..	..	..	..
Ophthalmia neonatorum	3	7	..	..	5	5	4	..	1	4	2	1	32
Lethargic encephalitis	..	8	1	..	4	4	9	..	1	9	5	1	42
Food-poisoning	1	1	..	1	10	..	..	..	..	13	..	..	26
Leprosy	..	1	..	..	..	..	..	..	..	..	..	..	1
Antinomycosis	..	1	..	..	..	..	..	..	..	2	..	..	3
Dysentery	..	13	3	..	3	1	1	..	..	..	..	..	21
Totals	269	906	566	303	832	979	1,009	99	145	1,589	688	179	7,564

Table C.—Notifiable Diseases in New Zealand, 1926, showing Distribution by Age and Sex.

Disease.	Under 1 Year.		1 to 5 Years.		5 to 10 Years.		10 to 15 Years.		15 to 20 Years.		20 to 25 Years.		25 to 30 Years.		30 to 35 Years.		35 to 40 Years.		40 to 45 Years.		45 to 50 Years.		50 to 55 Years.		55 to 60 Years.		60 to 65 Years.		65 to 70 Years.		70 to 75 Years.		75 to 80 Years.		80 Years and over.		Total Cases at all Ages.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Scarlet fever	3	4	186	174	256	343	94	185	35	65	19	42	13	45	11	37	11	23	10	9	5	3	2	3	..	2	1	1	..	..	..	1	..	..	..	..	646	937
Diphtheria	15	13	267	228	358	331	120	168	52	92	49	64	21	43	24	40	16	16	14	18	6	7	..	5	1	5	..	1	..	1	..	..	..	..	..	..	943	1,032
Enteric fever	..	..	14	24	30	25	26	21	14	21	20	18	13	11	5	6	16	7	6	5	6	1	5	2	2	2	1	..	1	..	..	..	..	..	..	..	159	143
Tuberculosis	2	1	4	6	12	14	20	31	78	111	103	159	95	119	89	68	65	55	60	31	54	24	37	15	20	7	10	10	6	6	3	1	2	..	..	..	660	658
Cerebro-spinal meningitis	..	1	4	6	3	4	1	2	5	..	1	..	..	..	..	..	2	..	1	..	3	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	21	14
Poliomyelitis	1	..	3	3	5	..	2	..	6	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	17	5
Pneumonic influenza ..	7	7	28	10	15	15	15	12	35	11	22	13	22	21	29	27	38	36	43	38	37	13	36	11	17	6	15	10	9	11	7	7	8	3	2	5	385	256
Pneumonia	25	25	89	70	63	38	37	29	45	17	25	16	20	17	43	21	33	23	33	13	32	13	23	9	19	12	10	8	13	13	9	7	13	6	6	5	538	342
Erysipelas	2	7	3	11	7	1	2	3	3	6	5	..	6	17	13	7	9	12	17	12	10	15	11	13	3	6	3	9	3	4	4	2	1	2	4	..	106	127
Puerperal fever ..	..	..	..	..	..	..	..	1	..	22	..	44	..	47	..	46	..	22	..	7	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	190
Septic abortion ..	..	..	..	..	..	..	..	..	..	5	..	18	..	28	..	24	..	22	..	9	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	107
Eclampsia	..	..	..	..	..	..	..	..	..	6	..	18	..	14	..	8	..	6	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	54
Hydatids	..	..	..	2	3	..	4	..	4	3	3	2	2	5	5	3	3	1	5	1	1	4	5	2	2	1	2	..	2	1	..	..	..	..	..	1	41	26
Trachoma	..	..	..	..	..	2	1	..	..	..	1	..	2	..	1	..	..	..	2	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	7	3
Ophthalmia neonato rum	20	12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	20	12
Lethargic encephalitis ..	..	..	2	1	1	1	2	1	3	1	2	2	1	3	..	4	1	1	3	2	2	1	4	..	1	3	..	..	..	..	..	..	..	..	..	..	22	20
Smallpox	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Food poisoning ..	..	..	1	..	..	2	..	5	1	2	1	..	..	..	..	..	1	2	..	3	2	..	3	..	1	..	1	1	..	..	..	..	..	..	..	..	11	15
Leprosy	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..
Lead-poisoning ..	..	..	..	..	..	..	..	..	1	..	1	..	1	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	..
Tetanus	..	..	2	..	3	1	2	1	..	..	..	1	1	..	..	1	..	..	1	..	1	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	13	3
Actinomycosis ..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	3
Dysentry	..	1	5	5	1	2	..	..	..	..	..	..	..	..	..	..	..	1	1	..	1	..	..	..	..	1	..	1	..	1	..	..	..	1	..	..	8	13
Totals	75	71	608	540	757	779	326	459	283	364	252	398	197	371	223	291	196	227	196	149	160	83	126	62	68	47	44	41	34	37	23	18	24	12	12	11	3,604	3,960

Venereal Clinics.—Cases treated during the Year ended 31st December, 1926.

Reference.	Auckland.		Wellington.		Christchurch.		Dunedin.		Total.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Number of persons dealt with at or in connection with the out-patient clinic for the first time and found to be suffering from—										
Syphilis	52	22	62	23	50	16	28	15	192	76
Soft sore	22	..	..	..	10	..	..	..	32	..
Gonorrhœa	492	63	397	29	287	76	95	15	1,271	183
No venereal disease	74	25	198	76	26	16	17	1	315	118
Total attendance of all persons at the out-patient clinics who were suffering from—										
Syphilis	1,034	332	2,503	576	1,550	909	834	551	5,921	2,368
Soft sore	137	..	..	..	98	..	..	..	235	..
Gonorrhœa	14,502	459	30,855	480	9,076	2,760	1,969	309	56,402	4,008
No venereal disease	305	71	339	153	84	16	29	1	757	241
Aggregate number of in-patients' days of treatment given to persons suffering from—										
Syphilis	341	126	1,139	..	184	..	67	84	1,731	210
Gonorrhœa	1,361	169	5,785	..	278	..	191	40	7,615	209

SECTION 4.—NUMBER OF VESSELS INSPECTED DURING THE YEAR ENDED 31ST DECEMBER, 1926.

Port.	Number of Vessels inspected.	Prohibited Immigrants.	Infectious-disease Cases.	V.D. Cases.	Mental Defective Cases.
Auckland Health District—					
Auckland	358	127	47	..	..
Thames	1	..	..	..	..
Dargaville	3	..	..	..	..
Wellington Health District—					
New Plymouth	25	..	..	..	..
Wanganui	17	..	..	..	..
Gisborne	12	..	..	..	..
Napier	13	..	..	..	..
Wellington	165	42	3	4	1
Nelson	..	..	..	..	..
Picton	1	..	..	..	..
Canterbury Health District—					
Lyttelton	32	..	..	..	..
Timaru	2	..	..	..	..
Westport	7	..	..	..	..
Greymouth	..	..	..	..	..
Otago Health District—					
Oamaru	4	..	..	..	..
Port Chalmers	17	..	..	..	..
Bluff	36	..	..	..	..
Totals	693	169	50	4	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, 1926.

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.
Central Auckland	1,179	177	1,149	141	125	50	102	21	9	19
North Auckland	278	46	262	41	30	9	14	4	12	5
South Auckland	207	39	192	39	17	7	6	4	5	1
Coromandel–Opotiki	52	28	51	18	10	9	7	..	2	7
Taranaki–Horowhenua	165	43	164	21	9	..	2	..	8	..
Wairarapa – East Cape	337	18	333	13	14	1	6	..	7	..
Central Wellington	1,765	70	1,701	53	46	12	14	2	28	7
Nelson–Marlborough	167	10	159	9	10	2	..	1	10	3
Westland	122	39	95	33	6	8	3	5	3	3
Canterbury	775	131	728	114	79	23	59	18	22	4
Otago	588	65	266	48	29	9	16	4	7	5
Southland	198	1	139	1	8	..	7	..	1	..
Totals, 1926	5,833	667	5,239	531	383	130	236	59	114	54
Totals, 1925	4,464	472	..	..	473	90	283	24	132	21

TABLE 2.—SHOWING THE RESULTS OF WEIGHINGS OF BREAD, BUTTER, AND OTHER FOODSTUFFS RESPECTIVELY DURING THE YEAR ENDED 31ST DECEMBER, 1926.

Health District.	Samples weighed.						Samples not complying.								
	Number of Samples.			Number of Vendors.			Number of Samples.			Number of Warnings issued.			Number of Prosecutions recommended.		
	Bread.	Butter.	Other.	Bread.	Butter.	Other.	Bread.	Butter.	Other.	Bread.	Butter.	Other.	Bread.	Butter.	Other.
North Auckland..	470	194	1	41	31	1	56	19	..	2	1	..	3	..	..
Central Auckland	603	163	..	51	12	..	98	9	..	10	..	..	1	..	..
South Auckland..	565	24	..	50	4	..	62	..	..	4	..	..	1	..	..
Coromandel-Opotiki	360	84	..	30	11	..	..	..	..	..	..	..	..	..	..
Taranaki - Horowhenua	703	904	122	91	111	27	90	150	..	2	4	..	2	8	..
Wairarapa - East Cape	1,177	248	..	129	51	..	43	..	..	1	3	..	1	1	..
Central Wellington	606	387	..	67	60	..	6	6	..	2	..	..	1	..	..
Nelson - Marlborough	525	310	6	51	48	1	..	18	..	1	1	..	..	2	..
Westland ..	71	72	..	5	3	..	38	6	..	3	1	..	..	..	..
Canterbury ..	220	703	2	16	32	2	57	138	..	2	7	..	..	..	..
Otago	799	771	61	111	75	11	12	72	3	1	9	..	..	..	..
Southland ..	465	606	122	45	42	13	1	12	..	1	1	..	..	..	..
Totals, 1926 ..	6,564	4,466	314	687	480	55	463	430	3	29	27	..	9	11	..
Totals, 1925 ..	6,601	4,002	646	..	..	..	528	297	..	33	37	..	14	6	..

TABLE 3.—SHOWING INSPECTION OF PREMISES ENGAGED IN SELLING OR MANUFACTURING FOODSTUFFS DURING THE YEAR ENDED 31ST DECEMBER, 1926.

Health District.	Number of Premises inspected engaged in selling or manufacturing Foodstuffs.	Number of Instances Articles were "seized" or "destroyed."	Number of such Food Premises requiring Sanitary Alteration.	Health District.	Number of Premises inspected engaged in selling or manufacturing Foodstuffs.	Number of Instances Articles were "seized" or "destroyed."	Number of such Food Premises requiring Sanitary Alteration.
North Auckland ..	1,549	15	299	Canterbury ..	890	3	40
Central Auckland ..	2,118	47	331	Westland	496	9	50
South Auckland ..	3,046	6	457	Otago	1,694	14	189
Coromandel-Opotiki..	1,454	..	276	Southland	1,262	6	111
Taranaki-Horowhenua	1,410	48	60				
Wairarapa - East Cape	1,633	1	170	Totals, 1926 ..	16,552	172	2,043
Central Wellington ..	376	18	18				
Nelson-Marlborough	624	5	42	Totals, 1925 ..	19,770	179	2,448

TABLE 4.—LEGAL PROCEEDINGS FOR YEAR, 1926.

	Number of Prosecutions.	Amount. £ s. d.
Adulterated milk	97	777 0 10
Short-weight bread	21	77 14 3
Butter under standard	11	70 18 5
Ice-cream	7	30 8 0
Improper labelling	6	38 5 1
Exposing unsound fruit and vegetables for sale	9	40 4 0
Whisky (improper labelling)	19	232 3 0
Beer under standard	2	26 8 0
Lime-water under standard	1	13 11 6
Cocoa below standard	2	4 0 6
Meat and bread uncovered	5	9 13 0
Unclean utensils	1	0 13 0
Pollution of river	1	6 7 0
Unregistered plumbers	3	5 8 0
Hospital and Charitable Institution Act	3	11 10 0
	188	£1,344 4 7

PARTICULARS OF WORK CARRIED OUT AT THE GOVERNMENT VACCINE-STATION, WELLINGTON, DURING THE YEAR ENDING 31ST MARCH, 1927.

Calves received, 18; calves rejected, 1; calves inoculated, 17; calves used, 17; lymph sufficient for 12,960 tubes; lymph issued in tubes, 9,874; lymph issued in bulk sufficient for 11,450 vaccinations; amount of lymph in stock sufficient for 15,000 tubes. Sales of lymph, reports Dr. Lynch, Acting-Director, during the year totalled £204.

SECTION 6.—GENERAL.

During the year arrangements have been made to establish a new health district for Taranaki Province formerly administered from Wellington. Dr. Mecredy will there carry out the duties of Medical Officer of Health and School Medical Officer, and endeavour to co-ordinate the work of school and other nurses with that of Health and local-authority Inspectors.

In the Auckland District Dr. Hughes, one of the Department's most experienced and valued officers has, owing to illness, been compelled to relinquish duty for six months. Dr. Chesson has assumed control, and Dr. Turbott has been appointed to that district to complete establishment.

An important duty has been the preparation of data regarding the water-supplies of Auckland Province as evidence for the Commission appointed on the recommendation of the Board of Health to investigate this question. Dr. Mercer has been transferred from Wellington to Auckland.

The Wellington District complement of Medical Officers of Health has been reduced from three to two, owing to the separation of Taranaki Province. Dr. Shore, late of Dunedin, has assumed duty in Wellington.

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, and an ever-growing appreciation on the part of local authorities of their responsibilities and duties under the Health Act.

A cause for some concern is the tendency on the part of some smaller local authorities to appoint Sanitary Inspectors without consideration of the needs of adjoining local authorities or of the Department of Health. Medical Officers of Health have been advised to confer with the local authorities regarding this, and to endeavour to ensure that the distribution of Inspectors in districts is such as will ensure cheap, as well as efficient, performance of their duties.

Food and Drugs.—As regards the administration of the Sale of Food and Drugs Act during the year, thanks are due to the Comptroller of Customs and the Dominion Analyst and their officers for valued assistance and advice. The average amount of sampling has been well maintained, including that of spirits and beers. In the matter of bread-weighing and checking the weight of all packed foodstuffs, the Department will shortly be relieved of this work by the Department of Labour. During the year regulations were gazetted designed to control the manufacture and sale of soaps for human use. Other regulations include one which limits the amount of arsenic in apples and pears to $\frac{1}{100}$ grain per pound. After a lengthy investigation by the Dominion Analyst it was found that, save in isolated cases, any fruit marketed from New Zealand orchards would come well within the limits of such a standard, but it was deemed wise to establish this standard as a guarantee to oversea buyers.

Cemeteries.—By the 1926 amendment of the Cemeteries Act the administration of this Act was placed under the Minister of Health, and during the year Medical Officers of Health and their Inspectors have been in touch with trustees and local authorities in a survey of cemetery-control. The even distribution of Health Inspectors throughout the health districts renders supervision by them practicable, and already there are signs that marked improvement will follow their assumption of this duty.

The health of the workers in factories and workshops is a matter in which officers of the Departments of Labour and of Health join forces, and I wish to express my appreciation of the valued advice given during the year by officers of the Department of Labour.

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

T. McKibbin,
Director, Division of Public Hygiene.

PART III.—SCHOOL HYGIENE.

SECTION 1.—ADMINISTRATION AND MEDICAL INSPECTION.

I have the honour to report upon the work of the Division of School Hygiene for the year ending 31st March, 1927 :—

Staff.

The permanent staff consists at present of a Director, twelve School Medical Officers, and thirty-one school nurses. The appointment of Dr. Muriel Morgan as junior School Medical Officer in a temporary capacity has been extended for the current year. Dr. Bakewell, School Medical Officer, Wellington, was absent on leave during the whole year, which she spent in England and America studying important aspects of health work. Her place was filled by Dr. Mary Champtaloup, who has now been appointed to the permanent staff. There have been during the year several resignations and fresh appointments to the school nursing service.

Figures relating to Work accomplished.

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

Schools inspected—		
Of roll under 100	1,184	
Of roll 100 to 500	349	
Of roll 500 and over	161	
		1,694
Children examined—		
Complete examinations	66,285	
Partial examinations	51,828	
		118,113
Notifications sent to parents relating to defects requiring treatment		38,612
Health talks given to school-children		1,127
Parents interviewed		9,651
Public lectures and addresses to parents		81
The figures for the work of the school nurses are as follows:—		
Number of days assisted Medical Officer in schools		1,761
Number of days engaged wholly in clerical work		1,506
Number of children examined for medical schedule		82,371
Number of children re-examined after inspection of Medical Officer		33,324
Number of visits to homes in—		
Large towns	6,451	
Small country towns	2,285	
Scattered districts	2,115	
		10,851
Number of children taken personally to hospitals		368
Number of children taken personally to dental clinic		668

Findings of Medical Inspection.

Total number of children examined	66,285
Percentage found to have no defects	10·8
Percentage with defects other than dental	61·24
Percentage showing evidence of—	
Subnormal nutrition	7·45
Pediculosis	1·88
Uncleanliness	2·14
Skin—	
Impetigo	1·52
Scabies	1·18
Ringworm	0·14
Other skin-diseases	0·85
Heart-abnormality	0·96
Respiratory diseases	0·42
Total deformities of trunk and chest	20·21
Postural	8·11
Flat chest	0·65
Spinal curvature	0·70
Pigeon breast	4·46
Depressed ribs	2·64
Depressed sternum	2·95
Other deformities	0·70
Deformity of jaw and palate	8·89
Mouth, teeth—	
Dental caries	63·24
Extraction of permanent teeth	7·08
Mouth, teeth—*continued.*	
Fillings	21·63
Perfect sets of teeth	4·86
Nose and throat—	
Enlarged tonsils and adenoids	20·17
Obstructed nasal breathing	2·92
Enlarged glands	14·0
Goitre—	
All degrees	21·72
Incipient	17·37
Small	3·79
Medium	0·5
Large	0·06
Eye—	
External eye-disease	1·71
Vision—	
Total	3·14
Corrected	1·71
Uncorrected	1·43
Ear—	
Otorrhœa	0·32
Defective hearing	0·44
Defective speech	0·53
Mental—	
Feeble-mindedness	0·36
Epilepsy	0·03
Tuberculosis	0·02

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

Much that has been said in past reports is again applicable. It is satisfactory to note, however, that the above figures indicate not only an increase in the amount of work actually accomplished, but also an added interest on the part of the public in the work of the service. School Medical Officers last year, for instance, personally interviewed 9,651 parents, and gave eighty-one public addresses and lectures. School nurses paid 10,851 visits to homes.

The weekly health articles contributed to the press by officers of the Department were no doubt partly responsible also for added popular interest in health matters. One very satisfactory feature of the year's work has been the increased attention paid to notifications sent to parents relating to defects requiring treatment. This is, in part, the natural outcome of the closer association between parents and School Medical Officers above noted, but is also largely due to hard work on the part of the school nurses. Great credit is due to the tact and energy of the school nursing service.

In districts where it is possible for nurses to concentrate their attention on a small group of schools the proportion of defects treated has greatly increased, in many cases being over 90 per cent., and in a few individual schools 100 per cent. The percentage of treatment obtained necessarily declines as facilities for obtaining it become very inaccessible. The following return for one district gives some indication, however, of the extent to which treatment is obtained for defects notified :—

Area.	Defects notified and followed up.	Treated.	Percentage.
Large towns	3,742	3,338	89·2
Small country towns..	1,353	967	71·4
Scattered districts	678	426	62·8

SECTION 2.—MISCELLANEOUS.

I do not propose here to deal with aspects of the work which have been discussed in detail in previous reports, and shall confine my observations to a few points of special interest relating to the work of the year.

Health Camps.—The yearly health camp for under-nourished children, Wanganui district, was held for five weeks at Turakina, 115 children attending. Pupils of the special classes for mentally backward in Wellington (forty-nine in number) attended a health camp at the Central Development Farm, Levin, of eighteen days' duration. Marked benefit to the children concerned was again noted this year.

Nutrition Classes.—The nutrition class at the Normal School, Auckland, is being continued under the excellent management of Miss Earle. In Wanganui Dr. Gunn is including an extra daily ration of milk in the programme of a nutrition class, and observing the result. In Dunedin, the Sarah Ann Cohen Memorial School, largely owing to the generosity of the Hon. Mark Cohen, has been established. It is built on the Fendalton open-air plan. The pupils are selected from city schools because of malnutrition or tendency to tuberculosis. The daily regime has been carefully planned, but it is too soon as yet to estimate results.

Examination of Pre-school Children.—There has been considerable extension of the examination of pre-school children. Dr. Gunn in Wanganui now sets apart two days monthly for this purpose, and it is gratifying to note that mothers are eager to avail themselves of the opportunity thus offered. Dr. Elaine Gurr in Wellington made a comprehensive survey of kindergarten children. The value of medical examination for children between ages of two and five years is so great that it is purposed to make it as widely available as our limitation of staff permits.

Immunization against Diphtheria.—Preventive inoculation against diphtheria has now been carried out for some thousands of children. Dr. Collier deserves special credit for her work in this direction, as approximately 2,750 children received protective treatment for diphtheria in Southland during the year.

Special Investigation.—The following special investigations were carried out: (1) Inquiry into condition of rural-school children by Drs. Henderson, Wilkie, Stevenson, and Wilson in Auckland, and by Dr. Gunn in Taranaki. Much valuable material has been collected which is at present in process of condensation. (2) Inquiry into incidence of tuberculosis among New Zealand school-children by Dr. Mary Champtaloup in Wellington and Dr. Baker-McLaglan in Christchurch. A copy of Dr. Champtaloup's paper on this subject to the Australasian Medical Congress last February follows. (3) An account of the work of the school medical service in relation to goitre was given by Dr. Baker-McLaglan at the same Congress. (4) A paper, "Physical Growth and Mental Attainment of New Zealand School-children," the result of a joint investigation of the Education and Health Departments, was also presented.

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

ADA G. PATERSON,
Director, Division of School Hygiene.

INCIDENCE OF TUBERCULOSIS AMONG NEW ZEALAND SCHOOL-CHILDREN, 1926.

(Paper read at Australasian Medical Congress, 1927, by Dr. Champtaloup.)

INTRODUCTION.

An investigation into the incidence of tuberculosis amongst school-children was carried out during 1926 on 1,268 children in the Wellington and Canterbury Districts, New Zealand. The object of the nvestigation has been (1) To find the amount of tuberculosis occurring; (2) to learn what association exists between subnormal nutrition and latent tuberculosis; (3) to select groups of children requiring special provision; (4) to estimate the treatment necessary, either prophylactic or curative.

A comparison has been made with similar findings in other countries and with New Zealand post-mortem statistics. By means of reference to other authorities and careful individual examinations it is hoped that some degree of accuracy has been obtained in the estimate. While the number examined is rather small to allow dogmatic statements, the findings have yet been sufficiently uniform to make certain indications which are of value in estimating the provision necessary for certain groups of children. As is to be expected, the incidence has been shown to be considerably lower than in older countries; but there still remains important work to be done in this connection.

Outline of Scheme.

This investigation was carried out on 1,268 New Zealand school-children from various schools selected so as to obtain a group of average children. These were given the Moro percutaneous tuberculin test. Those showing a positive reaction formed a smaller selected group for further investigation by means of X ray and examination by a chest specialist.

(*a*) *Selection of Schools.*

The schools were selected so as to provide a group representative of country children and all classes of town children of ages from four to fifteen years. A graph showing the average weight and height for age of these children in relation to the standard for New Zealand, 1925, demonstrates that this is a group of average New Zealand children.

(*b*) *Test Employed and Reaction.*

The Moro test was selected as being the most convenient for use. It raised no objection from parents, and gave a minimum of disturbance and psychic reaction. It is claimed to give a correct response to within 2 per cent. of error. A small amount of 25 per cent. tuberculin ointment, about the size of a pea, was rubbed with the gloved fingers into the subclavicular space over an area of 2 square inches for one and a half minutes. If this was found to be negative after three days, the test was repeated in another spot; and, similarly, a third test was performed in those remaining negative to the second one.

The reaction varied in intensity from a slight miliary rosy rash to an extensive outbreak of papules which lasted as long as four weeks. So called "questionable" reactions were subsequently found to have as much significance as obvious ones. In only two cases did the rash spread beyond the site of inunction, and in none was there a general rash.

Time of appearance: The interval between inunction and manifestation was found to vary, 87 per cent. of positive cases responding to the first test, 13 per cent. to the second, and none to the third. In the Wellington District the reaction was manifested mainly in the first twenty-four hours, 73 per cent. appearing early, and none later than forty-eight hours. The Canterbury tests, on the whole appeared later.

Constitutional reactions were rare. In two cases a slight general malaise, and in two others a slight general reaction, with elevation of temperature, were recorded. These appeared on the day of inunction.

Observations on Incidence.

(*a*) *Incidence.*

Of the whole group tested, 14·1 per cent. gave a positive reaction. In Wellington there were only 10 per cent., as against 17·4 per cent. in Canterbury. This difference will later be shown to be largely influenced by the age incidence. For purposes of comparison a group of sixty adults was tested, 16 per cent. reacting. This figure is lower than expected, owing largely to the fact that most if these were dental nurses, and these belong to a carefully selected group. Subdividing into smaller groups, an interesting comparison is found: only 8·3 per cent. of Eurpoean country children were positive, as against 15·8 per cent. in town—nearly double. The Maori figures were much higher, 25 per cent. of these, all of whom lived in the country, giving a positive reaction.

Age Incidence.—A graph showing the age incidence also gives interesting comparisons. The Wellington and Canterbury results differ so widely as to deserve separate mention.

Wellington: As one would expect, the town children and the Maoris show a percentage gradually increasing with age, rising in the case of the European to 26 per cent., and of the Maoris to 50 per cent. With the country child it is not so, the incidence varying only between 5 per cent. and 8 per cent. It is of note that of town cases under seven years 7·3 per cent. were positive, while in the country there were none. While the numbers tested are too small for one to dogmatize, they are still sufficient to make certain indications. It would seem that more crowded conditions of living in town, and, in the case of Maoris, close association with affected persons, constitutes a greater danger of infection. With the country child, while living-conditions are not necessarily better, there is more open space and less contact. Possibly the failure to increase is due to a larger proportion of cases of bovine infection, which naturally occur during early years.

Canterbury: There the incidence is very much higher in earlier years, while at the age of thirteen it is equal in the two districts. It is possible that the happier state of affairs in Wellington during early years is due to a healthier climate, while the relatively greater increase may be influenced by the poorer housing-conditions. The question of a pasteurized milk-supply in Wellington, on investigation, does not appear to have influence in these figures.

Conclusions as to Incidence.—A study of other data for New Zealand shows that the figures so obtained are trustworthy. In 1913–14, 383 hospital children under fifteen years were given the Von Pirquet test, 24 per cent. being positive. This figure is doubtless higher than in the case of healthy children.

New Zealand post-mortem records for the past ten years have been carefully studied with a view to ascertaining the amount of tuberculosis. For children between five and fifteen (that is, the age group used in the Moro test) the total incidence of tuberculosis was 28·2 per cent. Excluding deaths directly due to tuberculosis, the figure was 14·1 per cent. This figure represents tubercular lesions in children dying of other causes, and corresponds to the amount of tuberculosis one expects to find n the supposedly non-tubercular school-child. It is interesting to note that this figure (14·1 per cent.),

is exactly equal to that indicated by the Moro test for the whole group of children tested. Analysing the lesions shown post mortem, in those dying of other causes 94 per cent. had T.B. glands, abdominal, thoracic, or cervical; of those dying of tuberculosis 70 per cent. showed mainly an acute or subacute illness, associated with old caseating or calcified glands. Hence the obvious importance of taking these school-children with their very probable glandular lesions, and so treating them as to obviate any further development of disease.

Harnburger's observations show the contrast with less favoured countries. He found in different groups of cases under fifteen years between 63 per cent. and 70 per cent. of tubercular lesions. Excluding deaths directly due to tuberculosis, one group between eleven and fourteen showed 53 per cent. of T.B. lesions.

In a recent investigation on Ontario school-children with the intracutaneous tuberculin test 32 per cent. gave a positive reaction.

In this connection it is of passing interest to note the New Zealand post-mortem figures for adults—26·9 per cent. showed tubercular lesions; excluding deaths due to tuberculosis, the figure is 19·5 per cent.

(b) Influence of Various Factors on Incidence.

Family History and Exposure to Infection.—An attempt has been made by personal interviews with parents to ascertain the influence of family history. One realizes that there is some diffidence in giving this information, and that the percentage should probably be higher. The results are of value, however, in indicating that it is exposure to infection rather than merely a family history which has an influence over the incidence. Of the total number giving a positive reaction, 69 per cent. gave no family history or history of exposure to infection. Of the remaining 31 per cent. there was a positive family history, but 66 per cent. of these also gave a history of exposure. These figures were obtained for Wellington. Canterbury gives very similar results. Taking those children of the original group who had positive family history, 61 per cent. gave a negative reaction. Of the remaining 38 per cent., history of exposure was given in 66 per cent.

Past History.—There was no indication that a previous history of measles or whooping-cough gave a greater liability to infection, since in both positive and negative cases the percentage incidence of these complaints was the same.

Environment.—The environment of these children has been classified according to general home conditions, ventilation, sunlight, and locality into three grades—(1) superior, (2) average, (3) poor. Contrary to expectation, the percentage from the poorer homes is only slightly higher than that from better homes: Of the first class, 31·4 per cent.; second class, 33·5 per cent.; third class, 35·1 per cent.

Milk-supply.—There was no indication of the influence of milk-supply, about half the children having been supplied with pasteurized milk and half from private dairies.

(c) Relationship of Nutrition to Positive Reaction.

It was thought that the test might show a fair proportion of children classified as of subnormal nutrition to have latent tuberculosis. This has not proved to be the case. The nutrition of each case was estimated by a comparison of height and weight for age with the normal standard according to tables. The tables used were from Toronto, as their figures very closely accord with New Zealand figures for 1925. A comparison of the occurrence of subnormal nutrition in the two groups, positive and negative, show them to be equal—26 per cent. cases are 5 per cent. or more below normal; while the positives give a slightly higher figure for superior nutrition—8·9 per cent. and 6·9 per cent. who were 10 per cent. or more above normal.

Further Investigation of Selected Cases.

(a) X-ray Examination.

In Wellington all positive cases were X-rayed, together with a control group from those negative to the test. Twenty-two per cent. of positive cases showed definitely a past or a healing lesion. These, with two exceptions, were all in the hilar region. These two showed active tuberculosis of adult type —one of the lung parenchyma (a girl of thirteen), and the other a pleurisy in a child of five. The child alone showed clinically signs suggestive of active disease. Of the remainder, as a group, hilar shadows were larger, and showed calcified areas to a greater extent than in the controls, although some of these also showed abnormal hilar shadows, possibly due to causes other than tuberculosis.

(b) Chest-examination.

It was not expected that physical signs alone in the majority of cases would give sufficient basis for definite diagnosis. Two children were, however, found to have definite pulmonary tuberculosis. This represents 0·15 per cent. of the total tested. In a similar investigation at Ontario 1 per cent. were considered to be suffering from active disease.

A small group has been selected for special care and treatment, but in this selection consideration has been given to the history of the child, physique, and nutrition, together with physical signs and X-ray. This group represents 16 per cent. of positive cases, or 2·36 per cent. of the total number tested. None of these were considered to be suffering from active disease, but the general picture suggested a latent tuberculosis which might readily under adverse conditions become an active lesion.

(c) Cases placed on Treatment.

The small group of children finally selected have been placed mainly on an open-air regime, but without disturbance of school life. Two are to be admitted for sanatorium treatment; one has been admitted to hospital and later transferred to a convalescent home. In Canterbury all cases have commenced immunization with tuberculin ointment.

SUGGESTED EXTENSION OF SCHEME.

(a) Observation.

This group is to be kept under close observation for an extended period. Each child has a chart on which is recorded the monthly weight seen in relation to its normal weight for age. An unsatisfactory chart calls for inquiry, instruction, and probably special treatment. In addition to this, each month the homes are to be visited by the school nurse, where conditions will be noted and advice given.

(b) Treatment.

The parents of each child have been personally interviewed with a view to obtaining satisfactory history and to enable sounder judgment on the case. Those requiring treatment have been further interviewed and special lines of treatment laid down. All have received printed instructions as to general mode of life, diet, &c.

Special lines of treatment are awaiting fuller development:—

Open-air Regime.—A number of children have been definitely placed on open-air regime, with outdoor sleeping.

Health Camp.—It is proposed that early in 1927 these children should be assembled in a health camp, where special attention will be paid to their particular needs, and to nutrition.

Immunization by Inunction with Tuberculin Ointment.—This was recommended by Sir Robert Philp, Professor of Tuberculosis, Edinburgh University. He claims that the method has a "remarkable inhibitory influence on the first buddings of tuberculosis in childhood" (see B.M.J., 24/3/23). This is supported by Dr. Blackmore, Cashmere, who has given valuable aid to this scheme. The treatment consists in weekly inunctions, with gradually increasing strengths of ointment, lasting over a period of months. This has been commenced in Canterbury, but has not as yet been put into operation in Wellington.

Ultra-violet Light.—This treatment is finding enthusiastic support in many quarters. It is suggested that those children ultimately requiring hospital or institution treatment may be so treated with benefit.

CONCLUSIONS.

This work is yet in its infancy, but we have been able to select a group of children who will require watching until the age of twenty-five, and a smaller group requiring special care by the means most appropriate to the individual cases. This, if carried out more extensively in the future, should constitute a valuable means of prophylaxis, whereby the incidence of tuberculosis may be considerably lessened.

PART IV.—DENTAL HYGIENE.

In connection with the work of my Division I beg to submit a report for the year ending the 31st March, 1927.

SECTION 1.—STAFF, CLINICS, ETC.

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

In the field fifteen dental officers and forty-one dental nurses, stationed as follows: Dental officers—Two at Auckland, one at Edendale, one at Huntly, two at Masterton, two at Nelson, one at Motueka, one at Christchurch, one at Hokitika, one at Oamaru, one at Dunedin, one at Rarotonga, one at Wellington. Dental nurses—Two at Auckland, one at Ponsonby, one at Avondale, one at Dargaville, one at Papakura, one at Whangarei, one at Hamilton, one at Te Awamutu, one at Taumarunui, one at Hunterville, two at Wanganui, two at Palmerston North, one at Dannevirke, two at New Plymouth, two at Napier, two at Gisborne, one at Waipukurau, one at Hastings, one at Hawera, one at Pahiatua, one at Lower Hutt, one at Christchurch East, one at Woolston, one at Westport, one at Greymouth, one at Temuka, one at Timaru, one at Oamaru, one at Papanui, one at Mosgiel, one at Dunedin, two at Invercargill, one at Gore, one at Clyde.

During the year somewhat heavy losses in staff have been sustained owing to ill health, resignations, &c. The period of service of the first draft of dental nurses has already expired, and that of the second will expire in October next. It will therefore be necessary to provide against ever-increasing staff losses in the future, as at no time under present conditions will the Department have more than ninety nurses in the field who are under bond. The period of service of several dental surgeons under their bursary agreements with the Department has also expired, and, as the number of incoming bursars is now all but exhausted, any replacements of fully qualified officers will have to

be made from outside the Service. The replacement of staff losses, together with the reinforcing of clinics where the numbers under treatment now exceed the capacity of the existing staff to deal with, correspondingly reduced the number of new clinics that can be opened each year, and if any reasonable annual extension of the service is to be aimed at it will, in my opinion, be necessary to increase the number of probationers to be trained each year, and also to reduce the age up to which children are eligible for treatment at school dental clinics.

Staff in Training.—The staff at present numbers sixty-two, including twenty-nine probationers who have completed one year of their training, and thirty-three new appointees admitted this month.

The primary examination was held in November, and was conducted by Dr. Ada Paterson, Director, Division of School Hygiene. There were twenty-nine candidates, and of these one candidate failed, while eleven passed with distinction. The senior probationers sat for their final examination in February. Of the twenty-five candidates, one was unable to take the examination on account of illness, while two failed to satisfy the examiner (Mr. K. C. Morpeth, of Wellington). The examination was of a searching nature, and included written, oral, and practical tests extending over three days. In his report Mr. Morpeth said, "The result reflects great credit on the candidates, and I desire to heartily congratulate all concerned." These twenty-two nurses are now available for duty, and will be stationed at clinics in the course of the next few weeks.

New Clinics.—Since the 31st March, 1926, new clinics have been established at Dargaville, Ponsonby, Papakura, Te Awamutu, Dannevirke, Timaru, and Edendale North. In addition, clinics will be opened during the next few weeks at Ashburton, Feilding, Otautau, Balclutha, Grey Lynn, Cambridge, Ohakune, Tauranga, St. Albans, Dunedin, and Eltham. With the exception of seven, however, these will be part-time clinics only, and have been so located as to work in with and relieve the congestion at some of the older-established clinics during certain periods of the year, in addition to undertaking a limited number of new schools. Most of the new clinics are, or will be, situated in buildings specially erected for the purpose, and the Department is in these cases able to insist upon and obtain good working-facilities.

Treatment performed during 1926.—The following is a summary of the operations performed from the 1st January to the 31st December, 1926, by dental officers, dental nurses, and probationers in training: Fillings, 84,723; extractions, 53,232; minor operations, 63,047: total operations, 201,002. Of this amount the dental nurses in the field, now standing at forty-four in number, have performed the following: Fillings, 50,375; extractions, 33,387; minor operations, 43,492: total operations, 127,254. The total operations performed by dental nurses in the field since the first of these were placed out in May, 1923, stands at the 31st December, 1926, as follows: Fillings, 142,710; extractions, 98,716; minor operations, 106,142: total operations, 347,568.

SECTION 2.—PROPAGANDA, ETC.

As in previous years, every opportunity has been taken to furthering the Department's propaganda regarding the prevention of dental disease. Displays were made at the Health Week Exhibition in Wellington and at the Child Welfare Conference in Auckland. Radio talks on dental matters have also been given. Various meetings of parents, School Committees, and other organizations have been addressed by members of my staff, while the dental nurses themselves in the course of their daily work impart to children and parents the elements of prevention.

General.—My Division has been able to co-operate during the year with the officers of the Ante-natal Branch. A lecture was given early in the year to the ante-natal nurses on the dental aspect of their work. More recently arrangements were made whereby a dental officer of this Division attends at the Department's ante-natal clinic, Wellington, once every fortnight to give advice and to afford any necessary treatment to expectant mothers.

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

During my recent visit to England and America I found considerable interest displayed in the methods adopted by the New Zealand Government in dealing with the problem of dental treatment of children, and I was asked on several occasions to address meetings on the subject. I took every opportunity of inquiring into school dental service as carried out in those countries, and after doing so I am of the opinion that none of the schemes that I investigated deals with the problem so effectively and at the same time so economically as the New Zealand scheme.

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

PART V.—NURSING.

I have the honour to submit my annual report for the year ending 31st March, 1927.

SECTION 1.—NURSES AND MIDWIVES REGISTRATION ACT, 1925.

Two examinations were held for the State registration of nurses during the year, in June and December. For these, 312 candidates presented themselves, of whom 248 were successful. From countries overseas forty-nine nurses were admitted to the register. Examinations were held in June and December, 1926, for midwives, at which there were 183 candidates, of whom 176 were successful and now registered. In addition to these, thirteen overseas midwives were registered during the year.

Examinations for the State registration of maternity nurses as laid down in the provisions of the Nurses and Midwives Registration Act, 1925, were held in May, September, and December, 1926. There were sixty-six candidates, sixty being successful.

Diploma in Nursing.—The prospects for a post-graduate course of training for registered nurses appear to be a little more favourable, the executive of the Hospital Boards' Association having expressed themselves as strongly in sympathy with the desire for the higher education of nurses who are to hold administrative or teaching positions. If the Hospital Boards of the Dominion thus recognize the necessity for raising the standard of instruction for those who will later be responsible for teaching and administration of schools in nursing it should not be long before such a course is instituted. With the establishment of the diploma in nursing the last obstacle will be removed, but the financial aspect is still the difficulty.

The two nurses sent abroad for special training in the subjects laid down for the post-graduate course are now attached to the Health Department. Miss J. Moore has for over twelve months been visiting the training-schools of the Dominion, lecturing to pupil nurses and advising the teaching staff regarding the newer methods of nurse teaching and training. All the South Island training-schools have now been visited by her, and the remainder of the North Island institutions will soon have had the benefit of her experience also. At best, the scope of her work is very far short of what was intended, and it is questionable whether the diversion of a specially trained officer to travel round the country in order to spend a few hours of each week in lecturing to nurses, as they can be spared, is making the best use of her attainments.

Miss M. Lambie, who qualified in public-health nursing in Toronto, is now entering the Department with the special task of co-ordinating the various nursing services throughout the country. She will begin operations by assisting in the establishment of a local health unit in Taranaki similar to those in existence in other countries.

There is now a preliminary training-school in connection with each of the four main hospitals, Auckland having established one during the year with a specially trained sister-tutor from England in charge. With the establishment of the nursing diploma it will be possible for our own nurses to qualify for such positions, few having the means to travel to Europe in order to take the courses of training now so readily available in other countries.

Nurses and Midwives Registration Board.—This Board met five times this year, during which a considerable amount of work was done.

Besides granting registration to some hundreds of nurses, midwives, and maternity nurses, and approval to various hospitals as training schools for general nurses, midwives, or maternity nurses, the question of a syllabus for the training of these persons was thoroughly considered.

A list of training manuals recommended for use in training institutions was published, and also a syllabus of training in cookery to be undergone by probationers training as general nurses.

A suggested system of carrying out the training of midwives and maternity nurses was issued to training schools concerned. Examiners were appointed to conduct the various examinations held throughout the Dominion. The question of registration of applicants with overseas qualifications was very thoroughly discussed and full information obtained thereon, after which the Board set up a general standard to be required of these applicants, and also indicated to Great Britain and the other dominions as to which classes of persons trained and registered in the respective dominions would be accepted for registration in New Zealand.

During the year the Nurses and Midwives Registration Act, 1925, was amended to allow persons of twenty-two years and upwards to register. The regulations under this Act were amended to allow registered nurses who had completed their training as maternity nurses, and were waiting for the State examination, to count the time between the completion of their training and their examination towards their training as midwives; also providing that any maternity nurse registered on account of previous experience only could commence training as a midwife, provided she passed the State maternity examination.

Departmental Hospitals.—King George V Hospital, Rotorua: Four nurses have been registered after undergoing whole- or part-time training since the institution was made a training-school. These are being encouraged to remain on the staff after qualifying in order to gain further experience before going elsewhere.

In addition to its usual activities this institution was called upon to assist in equipping the Royal camp at Tokaanu. The Matron personally directed and supervised the making of articles, so necessary for the comfort and convenience of the Royal guests.

Pukeora Sanatorium, Waipukurau: Miss Thurston having been granted twelve months' leave to visit England, Miss Lundon has been appointed Acting Matron in her place. There have been very few staff changes during the year.

Otaki Hospital and Sanatorium: The addition of new shelters for the accommodation of twenty more patients has relieved the congestion at the sanatorium and it has been possible to admit patients who had been on the waiting list for some time. Miss Pownall has managed so that without neglect of the patients no additional appointments to the trained staff have been necessary.

SECTION 2.—ST. HELENS HOSPITALS.

Wellington.—Dr. Agnes Bennett reports: "The ante-natal department has grown rapidly: 1,043 attendances at hospital the last six months of this year, as compared with 721 in 1925. The clinic now goes on for three days weekly. I believe that as a result of this there is a steady decline in the percentage of still-births and infantile deaths under fourteen days.

"The dental clinic, one afternoon a fortnight, is doing most satisfactory work, and the patients are being treated who cannot be persuaded to go to the general hospital or to their own dentists. Miss Newman, the Matron, was obliged to take six months' sick-leave during the year, her health having given way under the strain, but is now back at work. During her absence the Sub-Matron, Miss Boyce, carried on very successfully."

Christchurch.—Miss Trotter, former Sub-Matron at St. Helens, Invercargill, took charge here as Matron on the 1st November, after being attached for three months to the staff of the Auckland institution in order to gain further experience. Miss Price, R.R.C., acted as relieving Matron until Miss Trotter was available for the position. Dr. Bonar Lindsay states that there has been a considerable reduction in the number of avoidable complications, which he attributes to more experienced ante-natal supervision. Miss Wilson's work in charge of the clinic has proved invaluable. There have been about the same number of cases during the year, the booking having to be strictly limited on account of the cramped conditions, but there have been no maternal deaths. In the seven infantile deaths four were due to prematurity, two being twins born in the district.

Dunedin.—Of the 144 deliveries which took place within this institution, there were no deaths of mothers, and one infantile death from pernicious jaundice. There were 75 deliveries on the district.

Dr. Siedeberg's report is as follows: "I am glad to be able to report that we have passed through another year without a case of eclampsia, it being now eleven years since we had a case of this disease. There were ten premature infants, all of whom throve, including one born at six months and a half, whose weight was $2\frac{3}{4}$ lb. It had a very poor hold on life, but it was sent to Karitane Hospital, and, although its life was despaired of on several occasions, it finally began to thrive." Miss Holford and Miss Gow are, as ever, devoted to the work of their hospital and to the interest of their patients. The latter was obliged to have prolonged sick-leave during the year, but is fortunately sufficiently recovered to resume her duties.

Invercargill.—Miss Stubbs, after some years' service as Matron, retired on the 1st November, and Miss Mildred Yorke, previously sister in charge of the Stratford Hospital Maternity Annexe, was appointed in her place. There were 188 births of living children, one maternal death, and one infantile death.

Wanganui.—There were 156 births of living children, no maternal deaths, and two deaths of infants (premature twins). Dr. D. Wilson reports as follows: "The work of the institution has increased in the year 1926, and has been conducted to my satisfaction by Miss Bagley, and Sister Macdonald."

Gisborne.—There were no maternal deaths in the 162 deliveries taking place during the year. There were four sets of twins and five still-births. Of infantile deaths there were five.

Auckland.—Dr. Tracy Inglis reports: "A successful year. There has been an increase in the number of in-patients by thirty-eight, making a total of 707, which is a record number to date, and an increase of thirty-three district cases; total 266. Total in all of in-patients and district cases amounted to 973."

Lectures: "Forty-two lectures with four lantern lectures delivered to nurses in training; and in addition a refresher course of twelve lectures on ante-natal work, illustrated by lantern-slides, given to midwives and maternity nurses. These were well attended, an average of about fifty attending each night. Maternal mortality: One out of 707 in-patients; one out of 266 out-patients. Infant-mortality shows eleven deaths; three of these were very premature. The ante-natal clinic did good work during the year, especially as regards hygiene, care of the teeth, and treatment of albuminuria. The treatment of pyorrhœa may in time show a lessened percentage of puerperal sepsis. Matron Broadley did excellent work during the first nine months of the year, but was on leave the last three months owing to her father's illness. Her place was taken by Sister Potts, who filled a difficult position with tact and ability."

St. Helens Hospitals.—Statistics for 1926.

Town.	Births (Living Children).	Still-births.	Deaths of Mothers.	Deaths of Infants.	Outdoor Cases.	Pupil Midwives qualified.	Maternity Nurses qualified.
Wellington ..	475	19	2	6	89	13	5
Christchurch ..	325	7	..	5	177	9	6
Gisborne	157	5	..	5	4	2	3
Wanganui	159	3	..	2	9	7	3
Invercargill ..	188	4	1	1	15	5	1
Dunedin	144	4	..	1	75	6	..
Auckland	707	17	1	11	266	26	8
Totals, 1926 ..	2,155	59	4	31	635	68	26
Totals, 1925 ..	1,974	51	6	35	627	105	..

From the above figures it will be seen that the State maternity hospitals continue to do good work, the number of births of living children having increased by 181 since last year.

In all seven institutions there have been four maternal and thirty-one infantile deaths, as compared with six maternal and thirty-five infantile deaths in 1925.

MATERNITY HOSPITALS UNDER BOARDS AND ASSOCIATIONS.

Hospital.	Births.	Still-births.	Deaths of Mothers.	Deaths of Infants.	Cases attended Outside.
Timaru	120	4	..	2	..
Batchelor	201	8	1	9	1
Stratford	150	2	..	2	..
Lawrence	32	1	..	2	..
McHardy Home	209	8	..	..	..
Wairau	159	7	..	4	..
Picton	44	1	..	1	..
Denniston	49	4	..	1	..
Alexandra Home	229	7	..	2	100
Essex Home	136	7	..	3	..
Havelock	30	..	..	..	..
Cromwell	62	3	1	1	..
Motueka	72	4	..	..	..
Mangonui	51	2	..	..	..
Hokianga	47	..	1	1	..
Whangarei	222	5	..	7	..
Kawakawa	64	4	..	1	2
Kaikoura	52	..	..	..	..
Oxford	16	..	..	..	..
Waikari	33	..	..	2	..
Naseby	29	..	..	..	..
Opunake	59	1	..	..	..
Masterton	90	1	1	1	..
Rangiora	116	4	..	1	..
Methven	57	1	..	1	..
Ashburton	117	3	..	3	..
Geraldine	63	3	..	..	..
Te Puke	52	..	..	..	..
Thames	56	4	..	2	..
Whangaroa	14	..	..	1	4
Rakaia	44	..	..	..	1
Waiuku	67	1	..	1	..
Taumarunui	102	2	..	2	..
Matamata	96	1	..	..	..
Kawhia	13	1	..	..	..
Otahuhu	44	3	..	1	..
Whakatane	96	3	..	2	..
Raetihi	51	1	..	2	..
Waiuta	14	..	..	..	..
Amuri	26	..	..	..	..
Roxburgh	27	..	..	1	1
Leeston	44	3	..	..	..
Akaroa	27	3	..	..	..
Lumsden	27	1	..	1	..
Fairlie	38	3	1	1	..
Greymouth	153	3	..	5	..
Ohura	22	..	..	..	..
Lyttelton	22	..	..	..	..
Middlemarch	17	..	..	..	..
Warkworth	16	1	..	1	..
Totals	3,577	110	5	64	109
Salvation Army.					
Bethany Home	66	1	..	1	..
Christchurch	50	2	1	2	..
Wellington	72	2	..	2	..
Auckland	57	3	..	1	..
Dunedin	145	9	..	5	..
Gisborne	86	2	..	..	..
Russell	..	..	..	..	..
Totals	476	19	1	11	..

Superannuation for Nurses.

The Act providing for the superannuation of nurses came into force on the 1st April, 1926. This benefit is greatly appreciated by the nurses, especially those at the beginning of their career.

Mrs. Grace Neill, Assistant Inspector of Hospitals and Deputy Registrar of Nurses from 1895 to 1906 died in November, 1926. Mrs. Neill's work in securing State registration for the nurses of New Zealand is well known. She was also closely connected with the establishment of the St. Helens Hospitals instituted by Mr. Seddon for the dual purpose of providing safe maternity facilities at reasonable cost for the wives of working men, and for training midwives. Further reference to Mrs. Neill will be found in the Director-General's report.

J. Bicknell,
Director, Division of Nursing.

PART VI.—MAORI HYGIENE.

I have the honour to submit a brief annual report of the work of the Division of Maori Hygiene for the year ended the 31st March, 1927.

General Health.—The general health of the Maori people throughout the Dominion has, on the whole, been excellent. The supervision exercised by the district nurses to Maoris has been attended by splendid results. Their frequent visits to the various villages, and the instruction and teaching that forms such an important part of their duties, have had their effect on the attitude of the people towards medical treatment, and has been reflected in the general health. Unnecessary loss of life amongst children has been avoided, and infectious diseases, by being dealt with effectively in their early stages, have prevented the spread of epidemics that were such a deplorable feature of the past.

Epidemic Diseases.—There was no marked incidence of any of the usual epidemic diseases during the year. The most serious menace to Maori health is still typhoid fever, but, in spite of an occasional outbreak, its incidence amongst the Maori villages is steadily decreasing. The most serious outbreak occurred in Hawke's Bay. Every village in Hawke's Bay was visited by officers of the Department, and a comprehensive campaign of anti-typhoid inoculation was carried out. The Chairman and members of the Tamatea Maori Council were indefatigable in their efforts to assist the Department, and much time and expense was saved by their local knowledge and active co-operation. Much passive resistance was experienced from some of the followers of Ratana, but the more enlightened ones amongst them raised no objection when the position was explained. There was, however, a lack of that hearty assistance that should be extended to measures that are taken for safeguarding the health of their people. They formed a marked contrast to the spirit which animated that section of the community that supports the Maori Health Council. During epidemics, the attitude of relying on supernatural protection against typhoid fever is a distinct menace to health.

Inoculations.—Anti-typhoid inoculations continue to be carried out in districts where typhoid has occurred, as a routine method of protection. The result in the lowered incidence of this disease in districts where it was once endemic has more than justified this policy. Sporadic cases occur, but, except under exceptional circumstances in a new district, it is impossible for the cases to spread in a virulent epidemic. During the year two cases occurred in North Taranaki. An inoculation campaign was conducted, and met with hearty support from the chiefs of the tribes. In most districts there is always a certain number of objectors. Their numbers are usually increased by the followers of Ratana and certain interfering Europeans who have been influencing the Maoris against submitting to inoculation. It has become increasingly difficult to get a high pe centage of protection in districts where objectors are in any number. In spite of the difficulties, I look upon anti-typhoid inoculation as having saved more lives than any other single factor in preventive administration.

Sanitation.—Though much may be left to be desired, the general sanitation of Maori villages has improved beyond measure. A health survey was recently made of the villages in the Arawa district, with special attention directed towards sanitation and water-supplies. The Arawa Trust Board is steadily installing pure water-supplies and adequate latrine accommodation in each settlement in its area. Meeting-houses have been built or renovated and renewed, whilst public kitchens in connection with them have nearly all been provided. The improvement in the settlements of Ohinemutu and Whakarewarewa has been very marked. With the further carrying-out of the recommendations of the Royal Commission regarding these villages they should become model villages that would add greatly to the credit of the Maori race. The setting-up of the Lake Taupo Trust Board, with an assured finance, should also lead to the improved condition of the villages around Lake Taupo.

For Maori gatherings of the present day the provision of adequate latrine accommodation, disposal of refuse, and the general sanitary conduct of the meeting is taken as a question of routine, and the heads of the settlements welcome the assistance and instruction of the Department's Inspectors of Health. The viewpoint of the Maori has completely changed from that of some years ago. Village Committees and Health Councils are anxious to assist in preventing trouble and sickness. A

younger generation, with a modern education, is growing up, and naturally refuses to live under the conditions of the past. They are influencing and will form the public opinion of the near future.

Water-supplies.—Improved water-supplies continue to exercise the attention of the Councils. Owing to the breaking-up of the village community through individualization of land, it is difficult in some settlements to serve all the families. No matter how scattered the dwellinghouses may be, there is always a common rallying-place at the tribal meeting-house. It is here that the people congregate for tribal meetings and for the ceremonial pertaining to the dead. It is then that the contamination of a water-supply is most likely to be dangerous, and good water piped in from a safe source is a safeguard to health that needs every encouragement and financial assistance. The Maoris themselves are most anxious to have water-supplies installed in the various villages, and much benefit has accrued from the Department grant of a pound-for-pound subsidy having placed them within reach. The Maniapoto Council has been active during the past year in claiming three subsidies, whilst others are under consideration. The Arawa Trust Board is also considering ways and means of completing its scheme for installing a safe water-supply in each of the remaining villages in its district. A new water-supply was also installed by the Tauranga Council. A member of the staff of this Division has rendered invaluable service in personally supervising this branch of work. Much expense has been saved to the Councils by his obtaining material wholesale in Auckland. The completed work is examined and passed before final payments are authorized.

Maori Health Councils.—The Health Councils continue to function and to do good work. Besides carrying out their own routine, they are ever ready to assist the Medical Officers of Health and their Inspectors. Thus much valuable time and expense is saved, as pointed out in the case of the Tamatea Maori Council. A certain amount of opposition has crept up in some districts from the Ratana movement. Just as clerical attire and nurses uniforms have been adopted by untrained followers of this ambitious sect, so Ratana committees have been set up with their own by-laws. The apalling ignorance that exists amongst this section of the people is revealed by the fact that they believe that their committees can function in the place of the Village Komitis which were set up under the Maori Councils Act of 1900. The desire to set up a temporal as well as a spiritual kingdom has resulted in friction and disunion amongst some of the tribes. If opposition to the constituted authority of the Maori Health Councils becomes active, drastic measures will hav to be taken to demonstrate to this misguided section of the Maori people that there can only be one law for the Dominion. Meanwhile the Councils continue to be a potential factor in the health uplift of the Maori race.

Registration of Deaths.—A large number of cases are referred to this Division from the Registrar-General's Office for inquiry to be made as to the cause of death where this detail has not been filled in on the forms supplied to Registrars. As the isolation of so many villages has now been removed by the opening-up of the country and closer settlement, it is worthy of consideration whether every death without a doctor's certificate should not lead to a coroner's inquest. Cases of neglect to seek medical or nursing advice that have ended fatally have been revealed by Coroner's inquest in the Kaipara and upper Wanganui districts. These cases were amongst followers of Ratana. Compulsory registration of deaths does not solve the problem. The cause of death should be ascertained before burial. Where no doctor or registered nurse has been in attendance a Coroner's inquest is the only means of ascertaining with accuracy the cause of death. If no Maori could be buried until a death-certificate was obtained, not only would valuable scientific data be obtained but the people would be safeguarded to a certain extent from so readily accepting the treatment of unqualified teachers and tohungas.

Inspectors of Health.—Valuable work continues to be done by the two Assistant Inspectors appointed for Maori work. Of the work done by the European Inspectors of Health in Maori districts I cannot speak too highly. Co-operation between them and the Maori Councils have saved much trouble, and mutual support has resulted in greater efficiency in dealing with various health problems that have arisen in Maori settlements.

District Health Nurses to Maoris.—The work of the district health nurses to Maoris continues to be of the very highest value. They should not be regarded as having to attend merely to individual cases of sickness. They are health instructors who teach practically as well as theoretically. Each case treated in the village is a practical demonstration of what should be done. All the Maoris in their district form their special charge, and time and again they act as health inspector and medical man as well as nurse. Herein lies their great value, and their devotion to a wider scope and a higher ideal places them in a category different from their sisters in the profession who are concerned primarily with the nursing of the individual. The nurses to Maoris are part and parcel of a great movement in the forward march of a people who have much ground to make up. I feel sure that it is the consciousness of being allied with such a movement that has animated them and led them to suffer the many inconveniences in remote Maori districts that townsfolk know not of. As one of the race, who understand what they have done, I have nothing but the highest praise and admiration for their work. It is to be hoped that when they are detached from the Department and come directly under the Hospital Boards their wider and greater duties as missionaries of health will not be overlooked, and that their activities will not be restricted and confined to the narrow conception of actual nursing.

Conclusion.—The parts played by various factors in the improvement of the health of the Maori has been reflected in a practical way by the last census returns. From the previous census, of 54,000-odd, the population in 1926 had risen to 62,781.

TE RANGI HIROA,
Director, Division of Maori Hygiene.

PART VII.—MATERNAL WELFARE.

SECTION 1.—REPORT OF THE CONSULTING OBSTETRICIAN, HENRY JELLETT, M.D. (DUBL.).

I have the honour to submit my annual report as Consulting Obstetrician to the Department. I think that when the statistics of the year become available it will probably be found that they are satisfactory, and such as to bear testimony to the work of the Department, and especially to the work of Dr. Paget and of Dr. Elaine Gurr. I am very glad to know that the ante-natal clinics which have been started by the latter are to be extended, and are in future to form an essential part of every hospital recognized for the training of midwives. I hope that these institutions will also undertake the duty of providing sterilized maternity outfits for the use of patients in the districts which they serve. I am also, personally, very glad that I have been entrusted with the duty of inspecting the training given at these hospitals.

Forceps Application.—I have examined carefully the collected returns of the maternity hospitals of the country for the last two years with a view to determining the rate of forceps application in these institutions, and I may say at once that the rate is considerably lower than I had anticipated. As a result of what I had heard of the difficulty of, and delay in, labour in New Zealand women, I was disposed to regard a forceps rate of below 30 per cent. as one which must not be criticized too stringently. The statistics before me show that this is an entirely exaggerated view. Out of 148 hospitals with 50 or less admissions annually the forceps rate in 1925 was 12 per cent., and in 1926 14·5 per cent. Out of eighty-one hospitals with from 51 to 100 admissions annually the average rate in 1925 was 17·2 per cent., and 1926 14·9 per cent. Out of twenty-one hospitals with from 101 to 150 admissions annually the average rate in 1925 was 19·1 per cent., and 1926 18·8 per cent. Out of fourteen hospitals with 151 or more admissions annually the average rate in 1925 was 8·7 per cent., and in 1926 8·02 per cent. The average rate of forceps application for all the hospitals was in 1925 14·3 per cent., and 1926 13·7 per cent. Further, out of 264 hospitals in 1925 there were only thirty-two, and in 1926 only twenty-nine, in which the forceps rate exceeded 30 per cent. Moreover, these percentages are calculated not on the total number of births, but on the number of full-term births, because premature children should very seldom require the use of the forceps. If the average rate I have given is not exceeded in the case of patients confined in their own homes, then it cannot be regarded as showing that "meddlesome midwifery" is carried to an extreme in this respect. This is satisfactory; but, on the other hand, it throws into stronger relief the practice of those hospitals whose rate exceeds the 30-per-cent. limit which I have arbitrarily adopted. Taking the two years together, I find that in forty hospitals the annual rate was between 30 and 40 per cent., in ten hospitals between 40 and 50 per cent., in five hospitals between 50 and 60 per cent., in five hospitals between 60 and 70 per cent., and in one hospital over 70 per cent.

The exigencies of general practice are sometimes brought forward to account for these figures, and, although this cannot be adopted as a reason, it may possibly be regarded as an excuse. Still, is the excuse always warranted? Is a medical practitioner in a small country town so busy that out of one hundred labours which occur in his hospital in a year he must apply the forceps in forty-eight, or out of forty-five labours in twenty-nine, or out of ten labours in six?

Management of Midwifery Cases.—It is impossible for the officers of the Health Department to tell a qualified medical man that he conducts his midwifery cases improperly; but if a medical man runs counter to accepted opinion, then it is open to him to come forward and justify his practices. To do this he must establish four points: First, that he has a low mortality; secondly, that he has a low morbidity; thirdly, that the examination of the pelvic organs some weeks after labour, as carried out by a competent examiner, reveals as normal a condition as is found after spontaneous delivery; fourthly, that the result to the infants so delivered is good. If he can do all these things, then it is possible to say to him that in his hands the forceps has not as yet done harm; but it is necessary to add that he is setting a bad example to his less-skilled neighbour, and that he is running increased risks of being associated with an epidemic of sepsis in his own hospital.

While it is only right that credit should be given for the reduced rate of forceps application, it is necessary to remember that an average rate of 14 per cent. is still considerably higher than a normal female population should require. For example, it is more than twice that of the Queen Victoria Jubilee Institute in Great Britain (6·4 per cent.), in about fifty thousand confinements annually, and it is nearly six times that of the East End Mothers' Home in London (2·38 per cent.), where most of the arguments I have heard brought forward to account for a high forceps rate must be far stronger than in New Zealand. Yet the gross mortality of the Institute is 2·4 per 1,000, and the net mortality of the Home—*i.e.*, without the inclusion of "associated" deaths—is 0·67 per 1,000.

Dr. Fairbairn, in a paper to which I shall refer later, testifies to the value of sedatives in reducing the rate of forceps application. Perhaps I may recall that I advised some time ago the introduction of Murphy's inhaler as a means of inducing obstetrical anæsthesia, with the same object. It is very gratifying to learn from Dr. Paget that in hospitals where it is used the apparatus has so reduced the suffering of the patients as to make the forceps very seldom necessary. I think it is a pertinent question to ask why this same apparatus should not be more widely used in general practice and in hospitals which are not under the direct control of the Department.

Maternity Hospitals.—It is unfortunately impossible to draw any deductions from the death-rate in maternity hospitals as given in the statistics before me. These show that in 1925 the death-rate in the hospitals, excluding the statistics of extern maternities, was 0·23 per cent. of the total admissions, and in 1926 0·14 per cent. On the other hand, 175 and 216 patients have been transferred to other institutions in each year respectively. These are the cases amongst which a high mortality-rate may be expected, and, as I have no record of what happened to them, it is impossible to form any idea of what the total mortality-rate amongst patients confined in maternity hospitals and homes actually is. I think it would be well if this information was before the Department.

A similar remark applies to any effort to determine the mortality-rate associated with the various complications of labour which are recorded in the monthly reports.

Morbidity-rates.—The statistics of morbidity are unnecessarily confused, a fault for which I may myself be responsible. When drawing up the form for maternity hospitals I put in a column for cases of puerperal morbidity, and another column for cases notified. It was intended that every case that fulfilled the definition of morbidity should be included in the first column, and every case in which the degree of morbidity was such as to call for notification in the second column. In this way the first column would be a record of all the morbid cases, and the second column of all notifiable cases. Unfortunately, this idea has not been carried into practice, as is shown by the fact that the numbers in the second column are sometimes greater than those in the first column, although the opposite should be the case. It is probable that some hospital matrons, when they have got a notifiable case, enter it in the corresponding column, and omit to enter it in the column of morbidity. One point, however, I think can be taken as a fact—namely, that the proportion of morbid cases and notifiable cases recorded in the fourth group of hospitals (*i.e.*, those whose admissions are more than 150 a year) is very much higher in proportion than that in the other three groups. I am afraid this shows that in the smaller hospitals the same accuracy of record is not observed, and their own figures also tend to support this view. In my opinion, morbidity-rates of between 1 and 2 per cent. are too good to be actual. I think I am right in saying that a morbidity-rate of from 3 to 5 per cent. is regarded as very satisfactory in large maternity hospitals. The recording of morbid cases, and the notification of such as call for notification, is one of the important duties of matrons of nursing homes, and any confusion which is due to the present form of the monthly return should be set right.

In this connection I am glad to learn that the Department has adopted, or is about to adopt, the notification of puerperal pyrexia as supplementary to the notification of real or assumed cases of puerperal infection. I assume that the final diagnosis of the cause of such cases will be added to the records as soon as it is available.

Mortality Statistics.—Dr. Fairbairn has published (British Medical Journal, 8th January, 1927) some very interesting statistics (*vide* accompanying graph), in which he compares—(*a*) The maternal mortality, including associated deaths for England and Wales; (*b*) the similar mortality met with in the practice of the Queen Victoria Jubilee Institute midwives; (*c*) the actual child-bed mortality of the East End Mothers' Lying-in Home. His figures are set out on the accompanying chart. The contrast is very remarkable and deserves close attention. The East End Home is a self-contained unit with both a district and a hospital practice. Its ordinary work is carried on by midwives, and the ante-natal supervision and the medical aid, when called for, are in the hands of a local practitioner. It neither sends elsewhere its complicated cases nor takes difficult cases from outside its own patients. It thus shows what can be done by ante-natal care, the management of normal cases by midwives, and the assistance of a thoroughly experienced practitioner in difficult cases. Its forceps rate is 2·38 per cent.

Prevention of Maternal Mortality.—Some day it will come to be generally recognized that from 90 to 95 per cent. of women will conduct their labours more safely in the absence of any assistance, that for their comfort and general well-being the presence of a nurse is essential, and that in the remaining 5 to 10 per cent. medical assistance is imperative. The great problem that lies before us is how to recognize this 5 to 10 per cent. without in any way endangering the remaining 90 to 95 per cent. In general terms, the solution is greater ante-natal care, greater asepsis, and greater knowledge. The difficulty lies in the turning of the answer into practice.

I have little doubt that throughout the world the danger of interference in midwifery practice is increasing. I have often quoted the statistics of the Rotunda Hospital in support of my views on different points, and I regret to say I can again quote it here. From 1896 to 1910 the gross mortality was 3·4 per cent.; from 1910 to 1925 it was 6 per cent. It is probable that there were considerably more complicated and serious cases sent into the hospital in the second period than in the first, but I do not think that this explains wholly the difference in rate. The moral is obvious. If it is essential that the great majority of midwifery cases be attended by medical practitioners, at any rate let us at least attend them in such a way as not to harm the 90 per cent. who do not need us. Ante-natal care, asepsis, and knowledge are their safeguards, and if I do not include an absence of unnecessary interference it is because knowledge connotes it. The more we know, the more we shall avoid interference, because we shall realize its dangers and be able to provide safer substitutes. The more we know, the more our patients will find themselves among the 90 per cent. or more who can conduct a physiological labour on their own account.

I think that in the past year very admirable work has been done by Dr. Paget and Dr. Elaine Gurr in the promotion of asepsis and the encouragement of ante-natal care. This work must continue, but it is, in addition, necessary to make greater efforts to get the third essential which I have mentioned above—greater knowledge.

Training of Nurses.—A considerable advance has taken place in the education of nurses by the institution of two classes of nurse and the extension of the period of training. There is, however, ample scope and necessity for the improvement of the actual training as opposed to the period of training. For this reason I hope that my suggestions for uniform methods of teaching and of nursing, which have been approved by the Department, will be adopted generally. There is also urgent need of "refresher" courses for maternity nurses who have been for some time in practice.

Training of Medical Students.—The position in regard to medical students and practitioners is still more unsatisfactory. In the last two years there has been an average of 372 cases annually available for students in the two maternity hospitals at Dunedin. Twenty conductions are usually regarded as the essential minimum for the student. Consequently this number will provide the conductions necessary for approximately seventeen students annually, without leaving any cases available for nurses. The question then arises, How is it possible for these students to get an efficient training in practical obstetrics?

My solution is the provision of one large maternity hospital in each of the four centres, where proper training could be given and post-graduate courses instituted. I regard it as one of the fundamental conditions necessary to the raising of the standard of obstetrical practice in this country. There were ninety-nine deaths in 1925 from conditions other than sepsis, and if this number is to be reduced general obstetrical knowledge must be improved.

Dr. McKibbin last year drew attention to the fact that a reduced rate of maternal mortality could only be got by lessening the present rate in the rural areas of the country, and this again emphasizes the importance of improved pre and post-graduate teaching. If the Department can help the Otago University to provide greater facilities for practical work in obstetrics, and if the University will accept the help, such improvement should be possible. Perhaps I may be allowed to take this opportunity of again urging that the whole status of the teaching of midwifery at Dunedin requires to be raised by the creation of a Chair in Obstetrics. If lack of funds makes such a course impossible, it seems to me to be an object towards which the great resources of the Plunket Society might very worthily be directed.

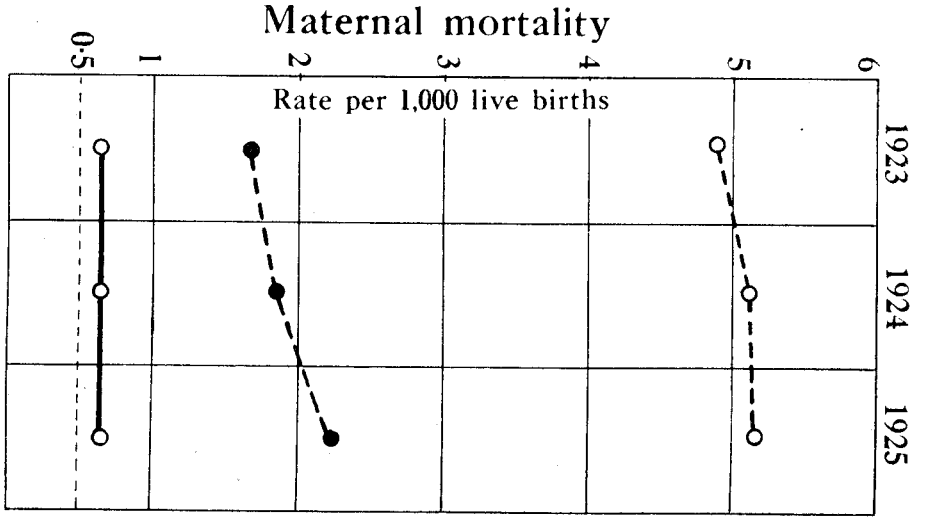
Treatment of Maternity Cases.—I have during the past year tried to obtain information regarding cases of particular interest or of maternal death which have been recorded from time to time in the monthly returns of the maternity hospitals. I am glad to be able to say that in almost every case the medical practitioner concerned has given me the fullest particulars possible. Indeed, in many instances he has done me the compliment of inviting my opinion on the course he had followed. I need not say that it is a great pleasure to me to meet with such requests, and if they had been more frequent I should have been still more pleased. Even an armchair criticism of the management of a particular case can be of service.

This being so, it seems to be ungracious if I in turn here criticize again the treatment which in some cases has been adopted. From what I have learnt I am afraid that there is still a tendency to adopt methods of treatment which have been proved for very many years to be valueless. Perhaps the gravest instance of what I mean is the adoption of *accouchement forcé* in ante-partum hæmorrhage and in eclampsia. I do not think there is an obstetrician of any standing—almost, I might say, throughout the world—who has not condemned such a practice. It has been associated with a mortality of from 50 to 80 per cent. in conditions which, treated in other ways, give a mortality of from 3 to 15 per cent. I am quite sure that those who adopt it consider they are doing their best for their patient, and that is one reason why I welcome every sign of a wish to ask for the opinion of others.

Caesarean Section.—Caesarean section again, though by no means followed by such serious consequences as is *accouchement forcé*, is still, when practised as a routine treatment, followed by a far higher mortality in the complications I have mentioned than is a more conservative treatment. I have dealt with this question very fully in a paper which I had the honour of reading before the recent Australasian Congress. The abuse of Caesarean section in obsetrical practice, and the accompanying neglect of the well-recognized methods of obstetrics, are coming to assume very serious proportions throughout the world generally. The causes are to be found in obstetrical ignorance due to the want of the proper teaching of practical midwifery, and in the ease with which the operation can be performed by any one who has acqiured a general surgical technique. The fact that even in the most skilled hands the operation, in healthy patients, is followed by a mortality of nearly 2 per cent., and that in those who recover the prospects of a future normal delivery are impaired, is overlooked.

Obstetrical Society.—Finally, I should like to express my pleasure at the inauguration of an Obstetrical Society amongst the medical profession of New Zealand. I am sure that such a society will be of great value in raising the standard of obstetrical practice, and that it will support and give added impetus to the work of the Department in the same direction. I need not say that if I, as Consulting Obstetrician to the Department, can be of any assistance, either in theory or in practice, I shall only be too glad to give to the society collectively what I have elsewhere expressed the wish to give to the medical practitioner individually.

CHART showing the Comparison of Maternal Mortality-rates (Registrar-General) in England and Wales in Cases attended by the Queen Victoria Jubilee Institute Midwives, and in Cases attended by or in the East End Mothers' Lying-in Home, London (Fairbairn).



The dotted line with hollow circles shows the rate for England and Wales; the dotted line with solid circles the rate for the Queen Victoria Jubilee Institute Midwives; the continuous line with hollow circles the average rate for the East End Home for three years.

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

I have the honour to submit to you my third annual report, covering the activities of the Health Department since 1924 to reduce maternal mortality.

Conditions to promote Safer Maternity.—In my address at the beginning of the campaign for this purpose, and in my report to you on the question of the further help that might be given by the Health Department by organizing efforts to promote better and safer conditions for pregnant and parturient women, I classified the dangers to which they were mostly subject as follows—(1) Toxæmias of pregnancy; (2) puerperal sepsis; (3) accidents of childbirth, including hæmorrhage—and stated my opinion as to the method that should be adopted to reduce these dangers to a minimum—namely, (1) the establishment of public ante-natal clinics with specially trained nurses; (2) the improvement in the training of midwives and maternity nurses in asepsis, and providing more trained maternity nurses; and (3) an increase in the number of maternity hospitals where abnormalities discovered in the ante-natal clinics could be sent for special treatment, and an improvement in the equipment of maternity hospitals. It is now over two years since action based upon that report was commenced, and I now review the results obtained and the methods of obtaining them.

Ante-natal Clinics.—As stated then, I regard ante-natal supervision as an essential basis of all efforts to improve results in the maternity work and advised the establishment of public ante-natal clinics in charge of specially trained nurses as the best method of attaining the object of reducing the number of toxæmias and eclampsias, besides being essential for the elimination of much of the danger from sepsis and accidents of pregnancy.

Dr. Elaine Gurr's report for this year shows what work has been done in this direction, and the very encouraging results obtained. Briefly reviewing this, it shows that twenty clinics have been established by or with the assistance of the Department, and that during the past year 3,461 prospective mothers attended the clinics on 13,175 occasions. This shows a considerable increase of patients and visits at the clinics, which is set out in tabular form in her report. The popularity of the clinics with medical practitioners and their patients is shown by these figures, and the result of the work done is reflected in the decreased mortality and morbidity, and fully justifies our expectations.

Inquiry into certain cases satisfies me that the chief factor in getting better results will be closer co-operation between medical attendants, patients, and their husbands, on the one part, with the clinic nurses and medical practitioners on the other. Inquiry into four maternal deaths occurring in women who attended the clinics established the fact that all of these would probably have been saved had that co-operation been forthcoming. Two of these cases are cases of malpresentation, which were discovered at the clinic, but owing to neglect to take full advantage of the discovery, due to want of promptness of action either on the part of the patient or doctor, much handling resulted which might have been avoided, and death from sepsis ensued. Another case was malpresentation resulting in death from shock. Neglect to take advantage of the discovery of the malpresentation at the clinic in this case must be laid at the door of the unfortunate patient, to whom, of course, it was impossible to fully warn of her prospective danger: but I have no doubt that had the husband been made fully acquainted of the danger to which his wife was exposed the delay, caused by her ignorance of the full extent of the danger, and consequent neglect to seek early help owing to nervousness, could have been avoided. The fourth case was a case of eclampsia. The pre-eclamptic signs were noted and reported to the medical attendant, but for some reason neglect to observe the warning and to take the necessary precautions eventuated, with the result that a fatality which probably could have been avoided took place.

Improvement in the Training of Maternity Nurses and Midwives in the Adoption of Aseptic Methods, and the extension of Facilities for carrying out the Training of Maternity Nurses and Midwives.—The above were the methods advised to reduce puerperal sepsis, and were carried out as follows: A standard aseptic technique was adopted and circulated, to be used in the training of all maternity nurses and midwives in aseptic methods. Arrangements were made to supply, through ante-natal clinics and otherwise, reliably sterilized maternity outfits for cases attended outside hospitals; also, an improved sterilizing equipment was required in all maternity hospitals. In order to get these results, the new Act governing the registration of midwives and maternity nurses was drawn up and passed, and the regulations under that Act brought up to date in accordance with the new methods adopted. This Act also provided for a more uniform standard of training for midwives and maternity nurses, and for control of the training schools for midwives and maternity nurses by the Registration Board. There are now thirteen training schools for midwives and nineteen training schools for maternity nurses established in the Dominion, and the standard of training has been raised and made more uniform by control by the Registration Board, and the repeated inspections of Dr. Jellett, Consulting Obstetrician to the Department, the Director, Division of Nursing, and myself.

I have during the last two years inspected all these training schools, and I am pleased to be able to report that the Health Department's efforts in this direction have in the majority of cases been ably seconded by those in authority. Six hundred and fifty-two maternity nurses practising before the passing of the Act have been registered, and are controlled by the regulations, which are designed to safeguard the patients and ensure as far as possible good nursing by these registered nurses. The new Act and regulations requiring all maternity cases to be nursed by registered maternity nurses, except in exceptional circumstances, has already, in my opinion, begun to have a good effect, and as its provisions become better understood and better appreciated, I am satisfied that the medical profession will find it of use in enabling them to insist upon the same high standard of maternity nursing as they have long since demanded in medical and surgical nursing.

There has been considerable difficulty in getting the necessity for strict asepsis in maternity work generally recognized, and there is still much to do before all medical practitioners and all nurses recognize that only by strict asepsis in maternity work can preventable sepsis be minimized.

I am glad to report that a considerable number of the profession actively support this view; but I cannot blind myself to the fact that in some few instances it is received with an amused and kindly tolerance, or even actively opposed and regarded as a useless fad. I am thankful to say that this view is gradually passing away, and is certainly only held by a minority of medical practitioners. I am encouraged to proceed along the same lines with the knowledge that some forty years ago the same attitude was prevalent among the majority of surgeons towards the pioneers in aseptic surgery. At that time Mr. Keightley, one of these pioneers, wrote scathingly in his "Index to Surgery" of "those surgeons who regard the cleanliness of a washerwoman as equivalent to asepsis." It probably took quite ten years from that time before asepsis in surgery was accepted as an absolute essential, and the operating surgeons in those days were fewer in number in proportion to the number of the profession than are obstetricians to-day. Further, the surgeon was a specialist, and his opinion carried weight with the general practitioner. The number of obstetricians to-day who can be regarded as specialists are much fewer than were the operating surgeons of thirty years ago, and in New Zealand are very few indeed; consequently the weight of their opinion exercised upon the general practitioner is less than was that of the surgeon of thirty years ago.

It is noticeable that the aseptic methods in private medical and surgical hospitals have been and still are more complete and attain a higher standard than the majority of maternity hospitals. I ascribe this not to unwillingness or want of appreciation of the nursing profession who manage maternity hospitals, but to the economic conditions governing maternity nursing and a lack of demand of a uniformly high standard by the medical profession.

The results and views quoted above support the opinion expressed in my first report to you—that with the adoption of an efficient aseptic technique puerperal sepsis can be very largely prevented.

I shall welcome the assistance of the newly formed Obstetrical Society (New Zealand Branch of the Medical Association) to create a uniform demand for better asepsis and the employment of well-trained maternity nurses to help carry this out.

Maternity Hospitals.—In accordance with your policy to promote the provision of more public maternity hospitals and wards in connection with public hospitals for maternity work, the Boards have been urged to provide these conveniences where required. The result has been an increase of public maternity hospitals and wards from thirty-eight in 1924 to fifty at the present time. There are also seven State (St. Helens) maternity hospitals and 222 private maternity hospitals or private hospitals taking maternity cases. I have inspected all these hospitals—many of them twice—and as a result I am able to report considerable improvement in their equipment and general management where such was required. Considering that the majority of the private maternity hospitals are ordinary houses converted to the use of hospitals, there is not much to complain of with regard to the conveniences absolutely necessary to the safe treatment of patients, and in many instances quite minor alterations have been suggested by me in the course of my inspection and generally provided, which have promoted the comfort and well-being of the patients and minimized the inconveniences of the nursing staff in their work. The economic factor bears largely upon this question and always must do so, and my aim has been to ensure essentials only and thus try to maintain a sound economic condition. My experience in this branch of the work confirms my original view that sound methods and sound technique, and the necessary equipment to carry these out, have more influence in promoting the welfare of the patient in the hospital than elaborate and expensive buildings. The equipment of maternity hospitals of five beds or over with efficient high-pressure sterilizers and the necessary dressing-containers, also with the appliances for treating hæmorrhage and shock, is now made compulsory by regulation. Where these have already been provided they have had undoubted influence in improving the conditions necessary for the safety of patients. Prior to bringing these regulations into force for the better equipment of hospitals with sterilizing-appliances efforts were made to overcome the economic difficulties in providing the improved equipment. Efforts have been made, in conjunction with various manufacturers, to provide a cheap and efficient high-pressure sterilizer, and cheaper dressing-containers, in which dressings can not only be sterilized but kept in a sterilized state. Up till recently containers of the required size were costing from £2 10s. to £3. A simple and efficient pattern container has been designed and manufactured at a cost to the user of from 12s. to 15s. I hope by this means to eliminate from the maternity hospitals containers for dressings which are not properly sterilized. In the past I have found that the use of biscuit-boxes and tea-tins which have been attempted to be sterilized by swabbing them with antiseptics, have been a source of danger. They are a class of container which no surgeon would for one moment allow to be used for storing sterilized surgical dressings to be used in an operating-theatre. As has been pointed out before—but it will bear repetition—sterilization to be efficient must be complete. The standard of sterilization for maternity dressings cannot be lower than that standard required for surgical dressings, if it is to be regarded as satisfactory.

Private Medical and Surgical Hospitals.—Besides inspecting the maternity hospitals, I have also inspected all private medical and surgical hospitals, and also various public medical and surgical hospitals. Some of these were deficient in equipment necessary for the proper conducting of their work, but I have to report in most instances there is now little to be desired in this direction. About half of the private hospitals I have inspected twice, and have reviewed the reports of the Medical Officers of Health and Nurse Inspectors on all these institutions, and am able to report that the general standard of private hospitals is such that patients and surgeons are supplied with efficient means for carrying out good nursing and treatment.

Private medical, surgical, and maternity hospitals are, I regret to say, occasionally necessary for economic reasons. They are difficult to manage in such a way as not to endanger the well-being of the maternity case, and new ones are only being licensed where local conditions make it unavoidable. The regulations for their conduct and for staffing them, if carried out, can and

should eliminate those dangers; but the responsibility for enforcing strict compliance must of necessity be more with the practitioners using these hospitals, as they are able to watch methods infinitely more closely than inspecting officers of the Health Department. I should be relieved of much anxiety if these mixed hospitals were unnecessary.

Summary of Returns of Maternity Cases.—Returns from 277 maternity hospitals have been received, each hospital giving the number of confinements (natural and instrumental), cases of hæmorrhage (unavoidable and post-partum) cases of eclampsia, morbidity, and sepsis.

The total births for New Zealand for 1926 was 28,473, representing approximately 28,160 confinements. Of these, 2,124 were confined at St. Helens Hospitals as in-patients, 3,271 at public maternity hospitals or in maternity wards attached to public hospitals under Hospital Boards, and 11,006 in private hospitals, making a total of 16,431 confinements in all maternity hospitals or wards, while approximately 11,739 were confined in their own homes. Of these latter, 605 were attended by St. Helens Hospital midwives or nursed by St. Helens Hospital maternity nurses as out-patients.

The figures shown above prove the importance of attaining a high degree of efficiency in the conduct, equipment, and management of maternity hospitals.

As complete returns of natural and instrumental births and cases of hæmorrhage, eclampsia, and morbidity are only obtainable for hospital cases, no comparison of results between these cases and those attended in their own homes is possible. Some useful comparisons between the methods adopted at different hospitals are, however, possible.

Morbidity returns are obviously useless under the present system, and this is found to be the case in all other countries as far as I am aware. "Morbidity" is defined at present as a temperature of 100° or over on any two occasions. The lowering of a recorded temperature from 100° to 99·8° on the next occasion excludes that case from being a "morbidity," though it is obvious from the practical point of view that there is no difference between that and a case showing 100° on two occasions. It is significant that the examination of many thousands of charts by myself compels me to face the fact that an extraordinarily large proportion of patients escape being classified as "morbidities" by 0·2° or 0·4° in their temperature on the second and subsequent occasions.

The records of instrumental deliveries in maternity hospitals show immense variation in practice, and from these some very definite conclusions may be drawn. Taking two hospitals out of a group of hospitals having over 150 cases per year, both of which are catering for the same class of patients and all of whom are attended by their own medical attendants, I find that in one hospital the instrumental deliveries amounted to 3·42 per cent., while in the other the instrumental deliveries amounted to 32·7 per cent.

Statistical figures are an excellent indication for critical inquiry, and their value depends largely upon the results of that inquiry. The instance of the low percentage of instrumental deliveries in the private hospital quoted above I have no hesitation in accepting as correct, and in supporting the opinion of the matron, which ascribed it to the use of the chloroform administered by the "Murphy" inhaler to produce analgesia or anæsthesia to the obstetrical degree. I have always contended that a larger number of instrumental deliveries were forced upon medical attendants by the natural, if sometimes unreasonable, demand for the relief of pain inevitable to parturition, and no doubt more keenly felt in highly civilized women. Satisfying this demand by the use of chloroform in proper manner removes the urge to the improper use of forceps, and so far is a gain to the patient and to the practitioner in preventing undue pressure being put upon him to use a means of hastening delivery and alleviating pain which he knows at heart is unsound practice. The result quoted above seems to me to amply justify the innovation of training midwives and maternity nurses in the administration of chloroform by means of the "Murphy" inhaler, which they may only use by direction of the medical attendant responsible for the confinement. It is to be hoped that medical men will accept and promote the use of chloroform by maternity nurses in their practices.

Statistical Returns.—The total deaths from puerperal cases for the last five years were as follows: 1922, 149; 1923, 143; 1924, 140; 1925, 131; 1926, 121—showing an appreciable decrease, which, if not fully satisfying, is at least encouraging. In 1923 the deaths were 5·11 per 1,000; in 1924, 5 per 1,000; in 1925, 4·65 per 1,000; in 1926, 4·25 per 1,000. The reductions, therefore, in the last three years, since the efforts of the Department and the medical profession were co-ordinated in an effort to improve maternity conditions, have resulted in a reduction of ·86 per 1,000—*i.e.*, 16·83 per cent. of deaths which formerly occurred have been prevented.

Taking the maternal deaths from the Government Statistician's report, and grouping the cases as follows, the results for the last five years 1922 to 1926 are as follows: Accidents of pregnancy and labour are 48, 47, 40, 41, 38; for puerperal septicæmia, 52, 52, 52, 42, 39; puerperal albuminuria and eclampsia, 35, 34, 36, 32, 31. These figures show that the most marked decline in causes of death was in puerperal septicæmia, showing that the efforts made by the Health Department in co-operation with practising members of the medical profession to reduce puerperal sepsis has had encouraging results. As I have pointed out on previous occasions, the reduction of puerperal sepsis needs organized effort besides the individual effort of the medical attendant. The same may be said of the deaths due to eclampsia, and, as has been pointed out in an earlier part of this report, the organization of public ante-natal clinics shows what may be attained in further reducing this class of maternal mortality. Prevention of deaths from accidents of pregnancy and of labour, including hæmorrhage, are mostly a matter of individual skill and knowledge on the part of the medical attendant; but in this class, again, ante-natal care, by enabling the danger to be foreseen, will enable the attendant to be forearmed and to make use of well-equipped maternity hospitals for cases showing signs that special treatment is required, so that even here organized effort is necessary.

Work for the coming Year.—During the coming year I hope to find sufficient time for more efficient field research into the causes of maternal mortality than I have had in the past. Hand-in-hand with

this work propaganda to instruct the public in the necessity of supporting the medical profession in their demand for a higher standard of work and for the co-operation of the patient might well proceed. As has been stated before—but it will bear repetition — an educated public opinion is necessary for intelligent co-operation between the patient and her husband, on the one part, and the practitioner and the health officer on the other. There is still ample work for officers of the Health Department, in co-operation with the medical practitioner, for further activities along the lines followed in the past, which if continued vigorously, will, in my opinion, ensure a further reduction in the maternal mortality and the reduction of much suffering and illness subsequent to the ailments and accidents of pregnancy. The results so far have been sufficiently encouraging to warrant a continuance of our efforts on the same lines as have been adopted in the last few years.

SECTION 3.—REPORT OF ELAINE GURR, M.B., BAC. SURG. (UNIV.) N.Z.

I have the honour to submit my report for the year ending 31st March, 1927. Statistical data is for the calendar year ending 31st December, 1926 :—

Administration.

Staff.—The staff consists at present of part-time Medical Officers, two tutor sisters, and three sisters in charge of ante-natal clinics. The Medical Officers of the State maternity hospitals in the four centres of New Zealand are assisted by the sister in charge of the clinics, and by the tutor sisters, who visit all clinics regularly to supervise the clinical work and to continue the ante-natal-clinic training.

Training.—An important change in the training of nurses in ante-natal work was instituted this year when the nurses and Midwives Registration Board decided to incorporate the ante-natal training and examination in the training and examination for midwives. The examination-papers and oral examination for midwives will include questions on ante-natal work, and unless candidates show a reasonably good knowledge of ante-natal work a pass in the midwifery examination will be withheld. Instruction in the methods of ante-natal diagnosis and treatment is now looked upon as an essential part of the training of the midwife, and within a few years, when the effects of this new teaching become apparent, a great diminution in fœtal and maternal mortality will result.

Work accomplished.

Clinics established.—During the last year two new ante-natal clinics were established—at the Plunket Society, Dunedin, and at the Plunket Society, Auckland. Arrangements were made for the extension of ante-natal work at the Whangarei Public Hospital, and at St. Helens Hospital, Dunedin.

Ante-natal work is still in the initiation stage, and has been chiefly confined to the four centres of New Zealand. It is hoped that during the next year an attempt will be made to extend it to the country districts, where it is urgently needed by women who are so situated that they are obliged to forgo many of the opportunities afforded to those who live within easy distance of welfare associations and ante-natal clinics.

The following figures, extracted from reports supplied to the Health Department by nurses in charge of ante-natal clinics, summarizes the year's work of the ante-natal clinics, extended by the Health Department, and enables a rapid survey to be made of the activities of the clinics :—

——	Wellington.	Auckland.	Christchurch.	Dunedin.	Rotorua.	Opunake.	Total.
First visit of primiparæ	613	476	384	44	24	20	1,561
First visit of multiparæ	644	629	492	84	32	19	1,900
Return visits	3,895	3,190	2,231	220	99	79	9,714
Sterilized maternity outfits	122	119	160	..	21	1	423
Homes visited	342	255	174	90	83	1	945
Albuminuria	52	102	90	39	4	6	293
Pre-eclampsia	3	16	..	..	..	..	19
Pregnancy kidney	..	3	5	..	..	..	8
Hyperemesis	4	23	3	4	..	..	34
Hydramnios	2	12	3	7	2	..	26
Multiple pregnancy	17	7	10	..	1	..	35
Malpositions	99	197	51	11	1	..	359
Contracted pelvis	8	22	14	2	..	1	47
Pruritus vulvæ	33	31	110	7	..	..	181
Dental caries	195	417	216	23	13	..	864
Goitre	57	148	78	26	..	..	309
Gonorrhœa	1	3	7	..	..	..	11
Syphilis	..	3	2	..	..	..	5
Skin-diseases	8	25	14	2	..	..	49
Hæmorrhoids	..	23	30	7	..	..	60
Varicose veins	267	307	225	39	6	3	847
Phlebitis	1	..	..	..	..	..	1
Diabetes	2	..	..	..	..	..	2
Wassermann test	9	20	3	10	..	..	42
Cervical and urethral swabs	8	85	8	..	..	..	101
X-ray examinations	12	4	1	..	..	..	17
Version	21	11	5	..	..	..	37
Induction	11	..	6	5	..	..	22
Forceps	65	53	24	3	1	1	147
Other operations	1	3	5	..	..	..	9
Eclampsia	3	2	1	..	..	..	6
Hæmorrhage	11	17	2	1	..	..	31
Abortions	5	1	1	..	1	2	10
Miscarriages	4	6	1	..	..	..	11
Premature labour	29	28	8	2	1	..	68
Still-births	34	18	18	2	1	2	75
Maternal deaths	4	4	2	..	..	..	10

Owing to the number of patients seeking ante-natal care, it has been necessary to enlarge six clinics and add to their nursing staffs during the year. The attendances at the clinics when compared with those of 1925 show a most satisfactory increase, as follows :—

—	New Cases attending Ante-natal Clinic, 1925.	New Cases attending Ante-natal Clinic, 1926.	Increase of New Cases attending the Clinics.	Total Attendances, 1925.	Total Attendances, 1926.	Increased Attendances for Twelve Months.
Wellington	975	1,257	282	3,531	5,152	1,621
Auckland	517	1,105	588	1,603	4,295	2,692
Christchurch	797	876	79	2,682	3,107	425
Dunedin	..	128	128	Not given	348	..
Rotorua	28	56	28	78	155	77
Opunake	11	39	28	18	118	100
	2,328	3,461	1,133	7,912	13,175	4,915

As shown above, the chief conditions diagnosed and requiring prompt treatment are—(1) Albuminuria ; (2) toxæmias of pregnancy ; (3) malpositions ; (4) septic infection, including etitis media, tonsilitis, pharyngitis, pyorrhœa, dental caries, septic vaginal discharge, skin-diseases ; (5) goitre ; (6) Diabetes ; (7) venereal disease.

Reduction of Maternal Mortality, Eclampsia, and Still-births.—Comparative Study made.

During the two years and a half that the clinics have been established they have demonstrated their value not only in reducing maternal mortality, but as necessary adjuncts to the public-health service.

In order to show the benefit to the community resulting from ante-natal care on the reduction of maternal mortality, eclampsia, and still-births, the following table is compiled. Maternal deaths due to childbirth in New Zealand are compared with deaths from the same causes among women who have attended New Zealand ante-natal clinics.

—	For the whole of New Zealand, 1926.	For Public Ante-natal Clinics, 1926.	Difference per Cent.
	Per 1,000 Live Births.	Per 1,000 Live Births.	
Maternal mortality	4·25	2·94	31
Still-births	31·1	22·64	27
Eclampsia	2·6	1·7	35

It will be seen that maternal deaths from all puerperal causes following confinement in New Zealand were 4·25 per 1,000 live births for 1926, while among women who attended the clinics it was 2·94 per 1,000, showing a reduction of 1·37 per 1,000 in the maternal death-rate.

The table shows a lessened incidence of still-births by 8·5 per 1,000 live births among mothers who attended the public clinics as tabulated above. Owing to the personal supervision given to all patients attending the ante-natal clinics, I think it is certain no cases of the conditions given above have been missed, while it is certain that many cases of eclampsia have not been recorded when making up the returns for the whole of New Zealand. Miscarriages showed a low rate of 3·2 per 1,000 live births in the public ante-natal clinics.

A point that should not be overlooked is that first births are always more dangerous both to mother and child than subsequent births, while that of all births occurring in the Dominion in 1926 35 per cent. were first births, in comparison with a percentage of 45 for such attendances at the ante-natal clinics.

It is hoped that a greater diminution in maternal and infant mortality in toxæmia and in the accidents of pregnancy and labour may be obtained by further extension of the work, especially to rural districts, which will be possible when more nurses specially trained in ante-natal work are available.

Still-births.—The ante-natal-clinics still-birth rate of 22·64 per 1,000 births is still high, and investigations as to the causes of seventy-five cases of still-births reported by the clinics during the last year are as follows : Albuminuria and toxæmias of pregnancy, 17 ; monsters and hydrocephalics, 3 ; birth-injuries, forceps deliveries, and malpresentations, 17 ; syphilis, 1 ; cause unknown, 37.

Since albuminuria and toxæmias of pregnancy are one of the chief causes of still-births, early diagnosis and early treatment of the toxæmias of pregnancy is necessary before any further appreciable diminution of the still-birth rate can be obtained. In clinical work it is our custom to place any given case of albuminuria into one of the two distinct groups—(1) that with albuminuria as the sole unusual feature, and (2) that with signs indicative of renal or possibly hepatic involvement. This section must be further subdivided according to whether there is evidence of chronic nephritis, which during pregnancy is termed nephritic toxæmia, or whether the condition is due to a special type of nephritis usually referred to under the heading of " Pregnancy kidney " or " Pre-eclamptic toxæmia."

It is in order to secure precision in diagnosis and as a valuable guide to treatment and prognosis that, in addition to a careful clinical examination, laboratory tests for urine and blood are employed. By studying the chemistry of the blood during pregnancy it is possible to arrive at conclusions concerning diagnosis and treatment of the utmost value to the obstetrician. According to Comyns,

Berkeley, and other authorities, the most important points for consideration are the quantitative estimation of urea and non-protein nitrogen in the blood, and the evidence given mainly by Fouchet's test on blood-plasma as to hepatic function. From these tests an obstetrician may be guided as to the correct line of treatment to be adopted for the toxæmias of pregnancy. This work has yet to be developed in the ante-natal clinics, but already results have been obtained which conclusively prove the value of the tests, and that it is only by means of co-operation between the obstetrician and biochemist that one can hope to gain knowledge in the study of deranged hepatic renal function.

The report of the Medical Research Council on the investigations at the several centres throughout Great Britain into the causes of dead-birth and neo-natal death has recently been issued. It is interesting to note that our findings confirm the findings of the Medical Research Council, who show that the most common causes of fœtal death are complications of labour and toxæmias of pregnancy (including under the latter term only albuminuria and eclampsia), and they show that at least 85 per cent. of the deaths due to complications of labour should be preventable by adequate ante-natal supervision. They also state that ninety-nine still-births out of a total of 465 were due to breach of transverse presentations, that with adequate care should be almost entirely preventable. Further, it is remarked that the infants lost through the complications of labour are often just the healthiest and best developed, and therefore those which the country can least afford to lose.

In a modest way our figures are necessarily taken from a small number, but entirely support the above statements. I cannot express my opinion better than in the following words taken from the above-mentioned report:—

"If ante-natal supervision were effectively used by all pregnant women many deaths such as are shown in this report would not occur, and such deaths might even be eliminated in certain of the classes considered. Such a state of affairs can, however, hardly be expected until the teachers in the medical schools and the teachers of midwives, as also the leaders of the numerous women's organizations, are convinced of the need for, and the scope of, ante-natal supervision. . . . It can hardly be doubted that much could be accomplished without additional cost if closer co-operation were established."

Sterilized Maternity Outfit.

The maternity outfits sterilized for patients attending the ante-natal clinics have proved a great assistance to medical practitioners and midwives. In order that the outfit may be available for women in the rural districts as well as those in the towns who are unable to attend a clinic, I suggest that outfits be made up by women's organizations, sterilized at local hospitals, and made available through central agencies for distribution to physicians, midwives, or mothers in poor circumstances. Detailed instructions for making the packages could be formulated and made available to any person interested. In addition a letter could be sent out to every registered midwife giving her a description of the package and the method by which it might be obtained in her community.

Importance of Anti-natal Records.

It would be an advantage if all ante-natal clinics would send to the Department of Health a copy of their monthly reports, as the proper tabulation of records through pre-natal clinics is essential to the knowledge of the causes, and the prevention of maternal and infantile deaths and morbidity. Such records are necessary for the study of the health of the individual, as well as a benefit to public health. Our object is to make complete records of the health of the individual even before birth. This is a stable foundation for the health registration of the individual, and all subsequent health-supervision should be based on this first and most important record, which antedates birth and extends through the most dangerous periods of life.

Social Service.

As stated by the Director, Division of Pre-natal Clinics, Detroit Department of Health, "The health of the individual depends largely on his social and economic status. To secure health in pregnancy and healthy progeny these conditions must be known, and, when necessary, aid must be given to secure them. For this purpose, social service is necessary."

The need for social service in connection with ante-natal work in New Zealand is great. Very frequently a mother is unable to take the necessary rest and care that is required, with the result that her resistance to infection is lowered and muscle-tone diminished, producing the unnecessary suffering and danger of a long and tedious labour, which is detrimental to both mother and child. In order that ante-natal work may be efficient, there is urgent need that co-operation be extended by those carrying on ante-natal work to every social-service agent which may help the expectant mother. Every assistance should be given such agencies as Mothers' Help Societies, which are of great value in protecting and promoting the health of mother and child during pregnancy. It is of interest to note that according to the Glasgow maternity and child-welfare scheme a rest-home for expectant mothers is maintained and mothers' helps provided at a small charge. Similar help would be greatly appreciated by New Zealand mothers. In the poorer districts it is often impossible for an expectant mother with a large family to carry out the instructions she receives at the clinic, and to take sufficient rest in the last few weeks of pregnancy, so that she may be physically able to bear and nurse her infant without undue strain upon herself or danger to the child. For this reason there can be no doubt that the establishment of rest-homes for expectant mothers by women's organizations would be one of the greatest benefits to the community, and would be an important factor in the reduction of maternal and infant mortality.

In conclusion, I desire to place on record my sincere thanks for the co-operation afforded me by the Plunket Societies, and St. John Ambulance, and to the tutor sisters in ante-natal work, Plunket nurses, and ante-natal nurses for the much valued help that they have given me.

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

SECTION 1.—CENTRAL AND SOUTH AUCKLAND HEALTH DISTRICTS.

Dr. T. J. Hughes, Medical Officer of Health; Dr. Mecredy, Assistant Medical Officer of Health.

Part I.

Infectious Diseases.

In reviewing the notifications of infectious disease recorded during the calendar year 1926 a general increase in the number of notifications recorded is noted. With the exception of the outbreak of influenza pneumonia which occurred during July and August, there were no pronounced outbreaks of infectious disease. The notifications recorded in these two months totalled, Central Auckland, 119, and South Auckland, 71; and of this number approximately 20 per cent. and 13 per cent. respectively proved fatal. Notifications of pneumonia during these months were also considerably above the average, and probably some were of influenza origin. Ordinary mild influenza was also prevalent throughout both districts at this time.

In regard to diphtheria, three small outbreaks were experienced during the year—one, of fourteen cases, at Akaaka, near Waiuku; one, of five cases, at the Children's Home, Grey Lynn; and the third amongst children attending the infants' classes at Maungawhau School, Mount Eden. In all these cases extensive swabbing of contacts was carried out, and carriers were detected and isolated in their own homes until the virulence tests were negative.

It is pleasing to record that only five cases of infantile paralysis were notified during the year, in comparison with the outbreak of 293 cases recorded during 1925. Of the other diseases but little can be said, except that the notifications of puerperal septicæmia, ordinary, dropped almost 50 per cent. in comparison with the previous year's figures. These cases have all been carefully investigated, and the most rigid precautions have been imposed upon contacts in order to obviate the spread of infection.

General Sanitation.

Considerable improvement in regard to sanitation matters is noted throughout the two districts, and in addition to the supervision of such matters the Department has undertaken a certain amount of educational work by the circularizing through newspapers of articles of public-health interest; and also Dr. Mecredy, Assistant Medical Officer of Health, has delivered lectures in most of the centres of population, particularly in the South Auckland Health District.

In regard to sanitary matters improvements have been effected in regard to the control of rubbish-tips, nightsoil-dumps, sanitary services, drainage schemes, and the administration of offensive trades. The Medical Officers of Health have also made many visits and issued the necessary condemnation-orders in regard to insanitary buildings in the city and suburbs.

Water-supplies.

A great deal of work has been entailed in the supervision of the water-supplies throughout the two districts. Inspection of the various catchment areas has been carried out, and analyses of the supplies have been made. Whenever necessary, recommendations have been forwarded to the local bodies concerned in regard to the improvement of their supplies.

The Auckland City supply has received much attention. During the abnormally heavy rains experienced in May both the pipe-lines from the Waitakere and Nihotapu catchment areas were washed away by the floods. This necessitated the cartage of water in many parts of the city and suburbs, temporary supplies being obtained from the One Tree Hill and Onehunga supplies and a good deal of water being pumped from the Western Springs. Chlorination of this latter supply was carefully supervised, and in addition consumers were warned to boil all water before using.

Work has also been commenced in the building of a new dam at the Huia catchment area.

During the year a new supply was obtained from a bore for the Manurewa School. Examination of this supply reveals the fact that the water is of a high degree of purity.

Inquiry and investigation was made in regard to the provision of a new water-supply for the Cambridge Borough.

The following is a list showing the various bacteriological and chemical examinations made during the year:—

In the Central Auckland Health District forty-four bacteriological and thirteen chemical examinations, and in the South Auckland Health District thirty-two bacteriological examinations, were made during the year.

Food and Drugs Work.

The supervision of food-sellers' premises and the control of the sale of food and drugs has necessitated a great deal of work by the Medical Officers of Health and Inspectors. A great deal of time has also been spent in the correction of labels and in advising upon labels submitted for examination. Various legal proceedings were necessary on account of breaches of the Sale of Food and Drugs Act. In the Central Auckland District twenty-seven cases were successfully determined, fines and costs imposed totalling approximately £185, and in the South Auckland District ten cases, with fines and costs amounting to £115.

The Medical Officers of Health have exercised direct supervision, and in many cases have made personal inspections of the milk-depots and bakehouses in the city and suburbs.

Shipping and Anti-rat Work.

During the calendar year 1926, 358 overseas vessels arrived at Auckland and were duly inspected by the Port Health Officer. From these vessels 137 prohibited or restricted immigrants were reported to the Customs Department. Eight vessels which arrived during the year were found to have cases of infectious diseases on board on arrival, and the cases and contacts were dealt with in accordance with departmental regulations.

The Department has long pressed the Harbour Board to institute a system of garbage-removal from vessels in port, and during the year this service was instituted, with very satisfactory results in regard to the improvement of conditions on the waterfront.

In connection with anti-rat work both the Auckland Harbour Board and the City Council have employed at least one full-time officer on this work throughout the year. Much of this work has been carried out along the waterfront, and traps have been set systematically and rat-poison laid. The catches of the City Council official have averaged approximately 125 a week, and in addition the Council have also issued free rat-poison to all householders making application for same.

General.

The Public Health laboratory at Auckland was closed down on the 31st March, 1926, and all equipment was handed over to the Auckland Hospital Board on the 1st April, all work now being concentrated at the hospital laboratory.

NORTH AUCKLAND AND COROMANDEL-OPOTIKI HEALTH DISTRICTS.

Dr. H. Chesson, Medical Officer of Health.

Part 2.

Infectious Diseases.

The general position regarding infectious diseases has been fairly satisfactory throughout the year. The epidemic of influenza pneumonia which occurred in the Central and South Auckland Districts in July and August was experienced in a minor degree in the North Auckland and Coromandel-Opotiki Districts, from which twenty-five cases and four deaths, and thirty-seven cases and ten deaths, were notified during these two months. Ordinary mild influenza was also prevalent at this time.

A small outbreak of diphtheria was experienced in the Thames district in May and June, twenty-one cases in all being notified, principally amongst school-children. Extensive swabbing of contacts was carried out and four carriers were thereby discovered. In addition the diphtheria toxin, anti-toxin immunization treatment was made available to all those children whose parents desired same, and over six hundred were thus immunized, the work being carried out by Dr. Wilson, School Medical Officer, assisted by some of the school nurses.

There have been no pronounced outbreaks of enteric fever through the year, but three small outbreaks occurred amongst the Maoris—four cases at Tauranga, four at Whangaroa, and six at Te Kaha, in the Bay of Plenty district. Certain other suspected cases were also notified from Te Kaha, but diagnoses were not confirmed. All the cases were carefully investigated, and the districts affected were given a general clean-up and their sanitary condition was improved as a result of the special inspections made. The district nurses to Natives also carried out special typhoid inoculations of Maoris in the districts, especially of all contacts of the cases that could be traced.

In regard to other diseases little can be said, incidence of cases being fairly steady, and cases being more or less of a sporadic nature. It is pleasing to note that fewer cases of puerperal fever occurred. All cases of this disease were carefully investigated, and all necessary precautions to prevent the spread of infection were strictly enforced.

General Sanitation.

Considerable improvement has been noted in the sanitation of the two districts. The local authorities generally show keenness to effect improvements, and have to a great extent complied with any recommendations or requisitions issued by the Department. Clean-up weeks have been held in various parts, with beneficial results, and advice has been given and supervision exercised regarding rubbish-tips, nightsoil-dumps, and drainage schemes, &c.

Water-supplies.

The usual supervision has been exercised over all water-supplies, and care has been taken to ensure that the gathering-areas should be in as sanitary a condition as possible.

A great deal of work has been done in connection with Lake Takapuna, which supplies the four northern boroughs. Considerable work has been done by the Lake Takapuna Board of Control in the removal of weed from the Lake.

During the year steps have been taken by the Dargaville Borough Council to obtain complete control of its watershed. Most of the farms have now been purchased, and the removal of stock from the area is in progress. This should effect considerable improvement in their supply.

A new water-supply has been provided by the Waitemata County Council at the Motutara Domain, and matters at the Muriwai Beach, where annual motor races are held, have been considerably improved thereby.

The following is a list of the bacteriological examinations made :—

North Auckland Health District.—Lake Takapuna, 1 ; Devonport, 2 ; Northcote, 2 ; Birkenhead, 3 ; Dargaville, 8.

Coromandel-Opotiki Health District.—Paeroa, 1 ; Thames, 4.

Food and Drugs Work.

The supervision of the sale of food and drugs and the inspection of food-sellers' premises have entailed a great deal of work on the part of the departmental Inspectors. The condition of premises retailing foodstuffs has been considerably improved as the result of action by the local authorities in the matter of their registration, which has been modelled on the departmental regulations. Various samples have been weighed and obtained for analyses. As a result of the sampling and analysis of foodstuffs various breaches of the regulations under the Sale of Food and Drugs Act, 1908, were detected. In many instances where minor offences occurred warning notices were issued, but it was necessary in quite a number of cases to institute legal proceedings. In the North Auckland District twenty-six and in the Coromandel-Opotiki District six persons were so proceeded against, and fines and costs imposed upon the offenders totalled £174 13s. 6d. and £58 5s. 6d. in the two districts respectively.

SECTION 2.—CENTRAL WELLINGTON HEALTH DISTRICT.

Dr. Findlay, Medical Officer of Health.

Part 1.

I have the honour to submit my report for the year ending the 31st March, 1927.

Infectious Diseases.

Scarlet Fever.—Number of cases, 484. As predicted in my report for 1923, and on the basis of an increased prevalence five-yearly, there has been a decided increase in the disease in Wellington City ; 383 cases were removed to isolation hospital. No deaths were certified.

Influenza (Pneumonic, Septicæmic, and Fulminant).—Thirty-two cases ; thirteen deaths. The majority of the reports upon notified cases showed the grave consequences of not lying up for a sufficient period. Complete rest for three days after the subsidence of temperature appears really necessary. Although few serious cases were reported, influenza of a mild type was very prevalent in the district. The 1925 wave in New Zealand was first felt in Wellington. Towards the end of December a form of what was thought to be mild gastric influenza made its appearance. This continued for some two months or more. It was not serious.

Pneumonia.—Fifty-nine cases notified, and nine deaths.

Diphtheria.—246 cases notified ; six deaths. Reports on these cases bear out the danger of delay. Medical men should carry out the advice of Sir Arthur Newsholme in a recent address, in which he stressed the possibility of a saving of life by the immediate administration of anti-toxin without waiting for the delay of several hours before the removal of the case to hospital.

Puerperal Fever.—Full-time cases : seventeen cases notified. Of the seventeen full-time cases notified last year, twelve occurred in maternity hospitals, four in their own homes, and one in which one case was allowed at a time. The majority of these cases were mild, prompt notifications being required in hospitals.

Of the total births in the Wellington metropolitan area (2,309 for 1926), 1,474 took place in maternity hospitals, 390 of which were in St. Helens. All cases of puerperal fever in hospitals were personally investigated by the Medical Officer of Health. One case occurred which tended to show the necessity for medical men exercising control over maternity nurses of the older type in making P.V. examinations.

Measles, German Measles, and Whooping-cough.—These diseases were very prevalent during the year, especially German measles. The attendance of several schools was very considerably decreased. Two deaths occurred from measles, and eight from whooping-cough. Five infants under one year died from whooping-cough in Wellington. One of the deaths from measles occurred in an infant under one year. Sixty-five deaths from whooping-cough occurred in the four large cities last year. The necessity for the greatest care with regard to infants suffering from this disease is indicated.

Chronic Lead Poisoning.

Of four cases which were notified, two occurred in a paint-factory, one an employee in a battery-repair shop, and the other a painter who had been some years at the trade. The cases occurring in the paint-factory almost certainly developed through inhalation. Prompt measures under the regulations were taken with regard to these men.

General Administration and Health Conditions.

Wellington City.—City Council Organization : In November the new City Engineer commenced his duties. During the year rearrangement of Sanitary Inspectors' duties and districts was adopted, with improved results. I have had various interviews with Councillors and members of the Council's staff *re* increased efficiency. Throughout the year frequent inspections were made by the Medical Officer of Health in company with officers of the Council.

Health Week: This was held in October, and was very successful. It is estimated that some ten thousand people attended lectures, exhibitions, demonstrations, &c., at the Town Hall. The health talks to shops and factories by medical men constituted, possibly, the most valuable feature of the campaign.

Rat Nuisance: During the year 357 rats were caught on ships and 474 on the wharves; all were examined for plague. I tender my thanks to the Harbour Board for their most helpful co-operation in this matter. Measures taken by the City Council were unsatisfactory. The Council's rat-catcher has now been placed under the Chief Sanitary Inspector, with considerable improvement in results. I advise the adoption of the Auckland system, in which no charge is made to the occupier.

By-laws: The city sanitary and health by-laws are being consolidated.

Food Premises (City): New by-laws have been adopted, providing for registration, &c. A gradual improvement is taking place. It is proving a difficult matter to remodel some of the existing unsuitable premises. I am urging the City Council to license private boardinghouses. Difficulty has been experienced in controlling the sale of fruit by Indian hawkers in the streets. Some prosecutions have recently been taken, with improved results.

Lower Hutt.—The population of this borough and that of Petone is increasing by leaps and bounds. General sanitation good and efficiently carried out.

Town-planning: This borough is probably the first in New Zealand to produce a town-planning scheme. An area of 200 acres has been set aside at the mouth of the Hutt River as an industrial area, and 250 acres will in addition be reclaimed in the course of time. This industrial area is destined to become perhaps the most important industrial locality in the Dominion. The closest co-operation exists between the Medical Officer of Health and the Council with regard to town-planning, &c., and other important matters in the borough.

Housing: New dwellings erected for the year, 395. The largest housing scheme in the Dominion is being effected in this borough. The scheme is undoubtedly doing much to solve the housing problem in the Wellington metropolitan area. Lower Hutt is eight miles from Wellington by rail, and with the construction of a special railway-deviation, and by concession fares to serve the settlement, workers in the city will be well served. Brief details of the scheme are as hereunder: The Government purchased 700 acres of land. Commencement was made in 1926 with 75 acres, divided into $\frac{1}{6}$th-acre sections. Concurrently, streets were laid out by the Council's staff with the aid of financial grants from the Lands Department, building proceeding at the same time. Finance for house-building is found by the State Advances Department. The Hutt Housing Committee generally supervises the scheme, accepts designs, finds the material, &c., and lets all contracts. There are some eighteen to twenty different contracts. No contractor finds material, but the quantity of all such is scheduled to prevent waste. A certain proportion of the houses are factory-cut and transported from the Government house-factory at Frankton Junction. Ownership of these houses is being acquired on the average of a cost of £1 2s. per week. This will in thirty-four years pay principal and interest. The cost of each house (five rooms, all conveniences, land, concrete paths, fences) is £895 to £910. One hundred and twenty-seven of these houses were occupied in less than a year, with an average of four children per home. Within the next twelve months it is hoped to have three hundred houses completed. The area is to be known as Moera Garden Settlement. The whole undertaking is carried out on approved town-planning principles. To Mr. Strand, Mayor of Lower Hutt, the father of the scheme, I am indebted for the more exact details.

Petone.—Sanitary conditions good. The water-supply (artesian and upland surface) is satisfactory; 9,051 ft. of additional water-reticulation has been provided during the year.

Administration: An assistant is to be provided for the Sanitary Inspector. This borough is much too large for one Inspector to perform sanitary work and also to be expected to attend to other matters, such as traffic. Care is necessary with regard to situation of factories in this borough.

Eastbourne.—Water and Drainage: A water and drainage scheme is an urgent necessity. In November I personally interviewed the Council upon the question. Financial difficulties were such, however, as to preclude the undertaking. In January and February of last summer the rainfall was 0·68 in. and 1·82 in., as against the mean 3·31 in. and 3·20 in. for sixty-six years. The plight of young families depending upon tank-water alone could only be prejudicial to health. I am watching the matter very closely, with a view to drastic action, if required.

Day's Bay.—Although Day's Bay is part of the Hutt County, the locality, in company with Eastbourne, adjoining, is in urgent need of water and drainage. Day's Bay and other eastern bays should, if possible, obtain water from the City Council main at Waiwetu. The matter has been, and is being, represented to the Hutt County Council, with a view to joint action by the county and the Eastbourne Borough Council for the provision in the very near future of a water-supply.

Sale of Food and Drugs Act.

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

'ce-cream Manufacture.—In Wellington City I recently visited the more important premises where this article is manufactured. Our requirements have been instrumental in practically eliminating the manufacture of ice-cream by small vendors. It is thus possible to gradually attain a higher standard in the remaining factories. This work is being continued and improvements effected as opportunity offers.

Eating-houses.—During the year the Medical Officer of Health paid various visits of inspection in company with the City Council officers. The regulations are again proving effective in improving conditions, and unsuitable premises are gradually being eliminated or improved.

Port Health Inspection.

One hundred and sixty-eight overseas ships were inspected by the Port Health Officer. Fifty-eight infirm and prohibited persons were dealt with under the Immigration Restriction Act.

Inspector Frew has carried out good work in connection with sanitary supervision of ships and other duties for the Department in regard to ships. Special attention has been paid to rat infestation.

Quarantine Station.

This, under pressure, can now accommodate 476 people. There are forty-one hospital beds and 435 general. A new telephone-cable has been laid to the station, and certain necessary repairs made to the buildings, which are in good order.

Epidemic Organization.

During the year I submitted to His Worship the Mayor of Wellington a draft outline of epidemic organization. Similar drafts were also prepared and forwarded to the Chairmen of the surrounding local authorities. I also conferred with the Chairman and administrative officers of the Hospital Board *re* emergency hospital accommodation.

Child Welfare Act.

The Act of the last session is proving of help in connection with children living under bad conditions.

Picture-theatres.

Throughout the district there is room for improvement in ventilation in some of these. It is hoped to collect more scientific data upon these.

Hotel Inspections.

The standard of sanitation is good. There is room for improvements, however, in the smaller hotels with regard to the provision of sanitary conveniences. In some cases it would appear necessary to amend local by-laws on the matter.

Industrial Hygiene.

Joint inspections with Labour Department by Medical Officer of Health and Inspectors. Special inquiries were made with regard to the spray-gun process in motor-shops. Inquiries are still being made *re* basic slag and adoption of approved handling thereof. I hope in the future to devote more time to inspection of factories. Although the standard of health of the factory worker in Wellington is probably superior to that in many other parts of the world, an opportunity presents itself for health propaganda therein to the workers, such as at health week.

Administration.

During the year the closest co-operation and co-ordination existed between the Medical Officer of Health and the Divisions of School Medical Work and Ante-natal Hygiene. The location of these Divisions in the District Office building materially assists this object.

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

TARANAKI-HOROWHENUA HEALTH DISTRICT.

Dr. J. Boyd, Medical Officer of Health.

Part 2.

I have the honour to submit my annual report for the year 1926.

During the year efforts were made to induce those counties in my district which are not provided with proper by-laws to agree to a conjoint by-law on similar lines to that lately agreed to by the Hawke's Bay county councils. Several conferences were held, and it would now appear that the necessary steps will be taken shortly to have a conjoint by-law drafted.

Water-supplies and Drainage.

New Plymouth Borough Council placed before the ratepayers a loan proposal for the purpose of extending and improving the existing water-supply. This is a rather ambitious scheme and includes (in fact, is largely concerned with) an extension of the borough hydro-electric works. The present water-supply is derived mainly from the Mangamahoe Stream, which varies greatly in quality. The new proposal would impound the waters of the Waiwakaiho River (a good water) and the Mangamahoe Stream. An area of from 90 to 100 acres would be flooded to a maximun depth of 90 ft. This proposal was not carried when first voted on, but it is again being placed before the ratepayers.

A comprehensive sewerage scheme has been prepared by the Borough Engineer, New Plymouth, and is ready to place before the ratepayers if the water-supply-loan proposal is carried. A sufficient and satisfactory water-supply is badly needed by New Plymouth, and a sewerage system is a matter of equal urgency.

Samples of water from the majority of public water-supplies in the district were taken and submitted to chemical and bacteriological examination. These did not call for serious comment, with the exception of the water-supplies of Foxton and Marton. Analyses of these latter waters have shown in former years that they are of very doubtful quality. Marton Borough Council have been making some alterations to their reservoir, but the desirability of some form of treatment is realized. On visiting Foxton recently at the Council's request the question of purification of the water by means of filtration or chemical treatment was considered. As the supply is pumped direct from 300 ft. bores to an airtight concrete well, from which it is then pumped at a pressure of 60 lb. to the water-tower, it will be a costly matter to provide means for filtration or chlorination. An inflammable gas accumulates in the well when the pump is working. This was demonstrated by ignition. A flame about 4 ft. high burned for a minute or so. The Foxton residents do not appear to be affected injuriously by their water-supply, although visitors, particularly at the military camp on the race-course, have previously developed enteritis. All water used at the military camp is now boiled.

Palmerston North water-supply has given cause for uneasiness, not because of its quality, but by reason of the defective and insufficient mains. The Council was written to, and a reply was received stating that the incoming Council were recommended to place a loan proposal before the ratepayers for the purpose of improving the supply to the town. The reservoir is badly silted. It is proposed to include in the loan proposal a sum for cleaning it out.

Palmerston North Borough Council was also requested to state what steps it is proposed to take to deal with a nuisance caused by the backing-up of sewers in the vicinity of Boundary Road. Reply was made that the incoming Council would be recommended to place a loan proposal before its ratepayers to deal with this matter also.

Otaki Drainage.—The existing conditions in Otaki have caused much concern, and the Board of Health has had the matter of the completion of the sewerage scheme under consideration. An order requiring tests of the existing sewer to be made is being complied with by the Otaki Borough Council, but up to this date tests have not been made, owing largely to difficulties caused by the nature of the ground and the great flow of water. It appears to be doubtful, in view of present knowledge, if the existing sewer can be utilized.

Food-inspection.

Samples of food products produced in the various parts of the district have been taken for the purpose of analysis from time to time, and the necessary action in cases of breaches of the regulations has been carried out.

Milk.—Samples are taken with fair regularity. The standard required by the regulations is reached generally as far as fats, solids, &c., are concerned, but I cannot say that in all cases a clean milk is produced.

Infectious Diseases.

Enteric Fever.—Owing to the development of several cases of enteric fever during the latter end of the year, particularly in the New Plymouth and Palmerston North districts, it was considered advisable that preventive immunization of Maoris should be undertaken. Earlier in the year some uneasiness as to the possible spread of enteric fever amongst the Ratanaites was felt, owing to the Hawke's Bay outbreak and the fact that the Maoris from the East Coast were visiting Ratana Pa frequently. The Maoris at Ratana Pa were given one inoculation, but refused to submit to the second injection owing to some aspersions being cast on the sanitation of their village.

In January, 1927, Dr. Rangi Hiroa, Director, Division of Maori Hygiene, inoculated the majority of the Natives at the Wanganui River pas and in the New Plymouth area. I had previously inoculated a large number of Maoris at Manaia and Puniho (Taranaki). The majority of the Maoris from Porirua, up to and including the Levin district, have now been given two inoculations of T.A.B., and it is hoped that the immunization campaign may be continued.

Scarlet Fever.—During the end of the year scarlet fever has been prevalent in the district, but has been of a mild type. Palmerston North and Wanganui had the majority of the cases.

Diphtheria.—This disease has been prevalent all through the year. The seasonal incidence is not so clearly marked as usual. Since December, 1926, there has been only a slight decrease in notifications.

Immunization of the boarders at the New Plymouth High School was carried out during the year, with good effect so far. However, most of the boys are over the most susceptible ages.

I wish to place on record my appreciation of the cordial co-operation of the staff of the District Health Office and the Inspectors in all parts of my district.

WAIRARAPA-EAST CAPE, NELSON-MARLBOROUGH HEALTH DISTRICT.

Dr. W. B. Mercer, Medical Officer of Health.

Part 3.

The administrative and inspectorial work has been carried out quite satisfactorily, despite the fact that the outlying parts of my district are some hundreds of miles from the District Office. This is mainly due to the faithful way in which our Inspectors carry out their duties and to the excellent staff work of the District Office.

Infectious Diseases.

The year 1926 has been an eventful year for infectious diseases. In the Wairarapa - East Cape Health District the incidence of the three infectious diseases, scarlet fever, diphtheria, and typhoid

fever, has been considerably increased. A return prepared by Senior Inspector Gardiner demonstrated this increased incidence clearly. The incidence is due mainly to—

(1) Outbreak of typhoid fever in Hawke's Bay County in March, April, and May, which affected about forty Maoris and white people, the Maoris having the larger number of cases. The outbreak, which was carefully investigated by me and which was the subject of a special report, was directly traceable to Maori origin. There is considerable evidence that the movements of Ratana's followers have been the cause of spread of infection in a number of cases. All the white cases came from one locality, Westshore. The type of disease was severe, and the mortality higher than usual. There were also small outbreaks in the Poverty Bay District about the same time. Later in the year an outbreak at Masterton directly traceable to milk-infection occurred and affected eight white people—children and young adults.

(2) Prevalence of diphtheria in Poverty Bay District: During the autumn and winter, 1925, diphtheria was more prevalent than usual in this part of the health district. The disease died down in the spring and summer, only to commence again in the late autumn of this year, and during the months of March, April, May, June, and July 147 cases were notified. The disease was peculiar in type, in that a number of cases had only nasal manifestations of the disease. The isolation wards of the Cook Hospital were kept busy, and at times there were as many as forty cases under treatment; a few of these would be admitted as "suspect carriers." Fortunately, diphtheria was not prevalent in any other part of the Wairarapa - East Cape Health District, with the exception of Hastings. The infection here was, however, confined to one of the four large public schools in the town.

(3) Small outbreak of scarlet fever in the Hawke's Bay District (Waipawa County): This outbreak originated from some overlooked cases attending the Takapau and one or two other country schools in the same district. From these overlooked cases quite a small outbreak occurred, in which not only school-children but several adults became infected.

As an offset against this excess of these infectious diseases in the Wairarapa - East Cape Health District there is a very low incidence recorded for the Nelson-Marlborough Health District.

Influenza.—Influenza, generally of a mild type, was undoubtedly prevalent in both health districts in the winter and early spring, but, fortunately, it was not followed by pneumonia, except in a few cases. I, however, saw a few cases of pneumonic influenza of the pandemic type, and the rapid and destructive spread of the disease in the lungs was well exemplified in two post-mortem specimens I saw of fatal cases of pneumonic or septicæmic influenza. The local hospitals were easily able to cope with the mild epidemic.

No other notifiable infectious disease calls for much comment, except that it is gratifying to note that, although there was a greatly increased incidence of infectious diseases in the Wairarapa - East Cape District, tuberculosis notifications declined from 125 in 1925 to 99 in 1926. There were no cases of poliomyelitis notified.

Immunization.

From infectious diseases and their incidence we can proceed to the important subject of immunity. During the year more work has been done in my two health districts in active immunization than has ever been previously carried out. Resulting from the typhoid outbreak in Hawke's Bay, which was undoubtedly of Maori origin, though, unfortunately, quite a number of white people, mainly children, got infected, Te Rangi Hiroa carried out a T.A.B. inoculation campaign in the Hawke's Bay District. About eleven hundred Maoris received the two inoculations in the various Maori settlements in central and southern Hawke's Bay. I also inoculated, in addition to some contacts, about forty white people living at Westshore. Also at two or three settlements in the Poverty Bay District inoculation with T.A.B. has been carried out.

Inoculation against Diphtheria.

A fairly extensive campaign was carried out by me in Gisborne Borough in November. I inoculated about one thousand children attending the four large public schools, and also about one hundred children under school age. It is not difficult to carry out diphtheria inoculation in public schools. When the advisability of this prophylactic treatment is presented to parents the voluntary response is fairly satisfactory. But it is not so easy to get at the pre-school child. Children of this age are the most susceptible to diphtheria. In addition to the Gisborne schools, Dr. Clark inoculated quite a large percentage of the children attending the Hastings West School, where cases of diphtheria kept occurring all through the winter and spring. Dr. Keith, School Medical Officer, also inoculated a school at Murchison, in the Nelson-Marlborough Health District. I regard this prophylactic treatment against diphtheria as a most important line of work in preventive medicine.

General Sanitation.

A high standard of work has been kept up and carried out by our Inspectors and certain local-authority Inspectors, which is gratifying and encouraging to the Medical Officer of Health.

Water-supplies.

During the year the water-supplies of all the larger and some of the smaller towns have been kept under supervision, and samples taken in certain instances. The Medical Officer of Health has no immediate cause to be alarmed about the water-supplies of any towns in these health districts. In one or two cases the intakes require more protection, but, on the whole, all the water-supplies stand the present bacteriological tests quite satisfactorily.

Milk-supplies.

The same cannot be said about the milk-supplies, however. The standard of purity in some cases admits of improvement.

Food-supplies.

Considerable improvements have been made in nearly all the larger towns in the premises where foodstuffs are prepared, handled, and sold. Our departmental regulations governing food-shops are now being carried out, and opposition of certain local authorities is gradually lessening.

Tuberculosis Work.

All our own Inspectors and most of the local-authority Inspectors endeavour to follow and keep in touch with tuberculosis cases, and send in a list every six months of cases living in the district. The migratory habits of T.B. cases cause considerable difficulty in tracing the movements of these people from one health district to another. We are, however, now getting better returns of admissions and discharges of chronic T.B. cases into and out of the public hospitals.

Nurse Inspectors' Work.

The work of Miss Broad and Miss Lea is very satisfactory. They make at least two inspections of all private hospitals in their districts a year, and furnish complete reports to the Medical Officer of Health. With one or two outstanding exceptions, the general management of private hospitals is quite satisfactory. In addition to inspecting private hospitals, the Nurse Inspectors visit all registered midwives and maternity nurses in their districts, as well as dental nurses. Recently the inspection of beauty parlours, masseuses, and chiropractors' premises has been added to the list of their duties.

SECTION 3.—CANTERBURY-WESTLAND HEALTH DISTRICT.

Dr. T. F. Telford, Medical Officer of Health.

Part 1.

Infectious Diseases.

Scarlet Fever showed an increase over the preceding year, of thirty-two cases.

Diphtheria likewise showed an increase over the preceding year, of 147 cases. This is largely accounted for by an outbreak of this disease in the Ashburton Borough and Ashburton County, the total cases running to 133

Regarding both scarlet fever and diphtheria, the total increase in each case respectively is below the average for the preceding five years.

Enteric Fever.—There were only nine cases notified under this heading, as against thirty-one in the preceding year, and four of these cases arrived in this health district while incubating the disease. Two cases were traced to Dunedin, one to Wellington, and one to Ohakune, in the Wellington District.

Puerperal Fever.—I am glad to know that this disease shows a diminution over the preceding year, the figures being forty-four, as against forty-seven.

Food Poisoning.

There were thirteen cases notified, the majority of the cases being in one outbreak, which was traceable to pressed corned beef, the infecting organism being the *Bacillus coli.*

Anthrax.

During March a case of anthrax was reported, the lesion being situated on the left side of the face of the man contracting the disease. This man was engaged in an occupation necessitating the handling of imported hide-trimmings from India. Bacteriological examination of the hair in the shaving-brush proved negative to anthrax, as also the various samples taken at the works where this man was employed, the samples comprising dust from the various places where these imported hide-trimmings were stored and handled, also portions of the trimmings which were open to suspicion. Further examinations are being made of the material submitted, and the result will not be known for some time yet.

Tuberculosis.

The notified incidence of this disease shows a distinct upward tendency in this district. The notification of this disease is very faithfully carried out in this district, and in all cases of suspicion they are referred to Dr. Blackmore, Medical Superintendent of the Christchurch Consumptives Sanatoria, who decides whether the case is positive or not. It is likely, therefore, that more incipient cases are notified in this district than in others, where the facilities of expert opinion are wanting. During the year 648 school-children were treated with Moro's ointment for diagnostic purposes, and of this number 113 reacted positively. Of the 113 cases, only two children had definite chest symptoms. These two are being treated in the sanatorium at the present time.

Sanitation.

Christchurch.—The Christchurch Drainage Board's extension scheme is progressing rapidly, and already three localities are ready for reticulation—viz., Riccarton, Spreydon, and Opawa. The pumping-stations in connection with these areas are also complete. A difficulty is likely to arise in making the household connections with the sewers, owing to the statutory limit placed upon the rate of interest on loans which local authorities raise for this purpose.

Redcliffs.—All the sewer-mains and septic tanks in connection with the Redcliffs scheme are now complete, it only remaining for the house connections to be made, and this work is now progressing actively.

A drainage scheme is also being put in at the Selwyn Huts encampment, in the Springs County.

Offensive Trades.

Certain of the offensive trades have not been run as satisfactorily as these trades can be conducted, and in one or two instances I have had occasion to recommend that the responsible local authority in whose area these trades are situated prosecute. This has had a salutary effect upon the remainder, owing to the publicity given in the newspapers.

Water-supply.

The Christchurch City Council has decided to carry out the water-reticulation scheme authorized by the ratepayers last year. It is now found that the sum so authorized is sufficient, owing to the deflation in prices since that time, to allow of the cost of putting in the necessary mains.

Nightsoil-removal System.

I have to advise that this service is now in operation at Pleasant Point, and one will shortly be in operation, I hope, in connection with the Cobden Town Board, in the West Coast Health District.

Rubbish-dumps.

I am glad to note that there has been a big improvement in the Greymouth Borough Council's rubbish-dump, situated near the railway in Herbert Street.

Food and Drug Work.

This has been carried out as regularly as circumstances would allow during the year. The work in connection with milks has been much more active owing to the fact that Mr. Grigg, the District Analyst, now has an assistant. Further, an extensive survey, lasting three months, is being carried out for the Christchurch City Council, the investigation comprising both the bacteriological and the chemical sides.

During the year it has been found necessary to warn a few vendors whose milks showed signs of obvious dirt. I regret to record the fact that there have been quite a number of watered milks during the year, and this risk will be run by a certain type of vendor until he finds the risk is made too costly. The small fines now being inflicted in the Court are not sufficient to act as a true deterrent.

The samples of the various foodstuffs taken during the year comprise a varied assortment. On the whole, these were mostly up to standard.

The total fines and costs for the year for the Canterbury and West Coast Health Districts amounted to £237 5s. 1d.

In conclusion, I would thank my staff of the various branches for their loyal support during the year, and for the capable way in which each officer has fulfilled his or her duties.

NORTH AND SOUTH CANTERBURY.

Colonel Dawson, Assistant Medical Officer of Health.

Part 2.

Scarlet Fever.—There are a large number of cases of scarlet fever of a mild type which pass undetected in the scattered districts, where parents are reluctant to send for medical aid for minor cases. These, however, are infectious, and are frequently the starting-point of an epidemic.

Diphtheria.—Diphtheria in Ashburton accounted for 133 cases, with four deaths. A large number of adults, particularly in the later months of the epidemic, were attacked. Twenty-nine cases, or 21·8 per cent. of the total, were adults over eighteen years of age. The epidemic started about Christmas, 1925, in Tinwald School. The family of the local storekeeper were attacked, and owing to a delay in notification the shop was not closed or disinfected for three or four days. During this time many children visited it. It was subsequently discovered that a boy who had been attending school for three months with a discharging ear was a diphtheria-carrier. He had frequently visited Ashburton, and a number of cases were his direct contacts. During the epidemic several carriers were found. The disease was widely and evenly spread throughout the district. No particular food-supply, water-supply, or school could be held responsible other than Tinwald, where it originated. The season was a dry and dusty one. The epidemic ceased with the spring rains.

Diarrhœa.—An outbreak of acute diarrhœa resembling ptomaine poisoning and gastric influenza occurred in the Ashburton Borough and County about the end of September. It lasted for three weeks. It not being notifiable, our attention was not drawn to it until the 20th October, when an immediate investigation was made without the source of infection being traced. The epidemic was then over, and neither cases nor material were available for investigation. The local authorities' Inspectors have been warned in future to report such occurrences, even if they are not notifiable. Incubation period: About forty-eight hours. Duration: About forty-eight hours, with one or more relapses at forty-eight hours' interval in some of the cases. Distribution: The majority of the inhabitants of Ashburton Borough were attacked, and a large number in the county. As far as can be ascertained, the cases occurring in the county had partaken of food in Ashburton. Christchurch people who had

stayed in Ashburton were also affected. Although the staff of the refreshment-rooms were attacked heavily, no cases were reported amongst the railway passengers who had taken food at the Ashburton refreshment-rooms. Symptoms: Acute diarrhœa and colic of sudden onset and lasting forty-eight hours; vomiting in some cases. Mortality: One fatal case, an infant of three months.

Pneumonic Influenza.—The country districts escaped lightly. Of the 174 cases notified, forty cases occurred in the country districts of Canterbury, and, of these, thirteen occurred in Ashburton and five in Timaru. There was one case in May at Amberley, and one case in June in Timaru. In July thirty cases. Of these, there were four cases in Timaru. The first case was a visitor from Auckland, who arrived in Timaru suffering from the disease and died shortly after his arrival. Seven cases in Southbridge and neighbourhood; eleven cases in the Ashburton District. There were only three cases in North Canterbury outside the Christchurch area. In August there were seven cases—three in the Southbridge area, two in Ashburton, and two in North Canterbury.

Local Authorities.

Four local authorities adopted the Plumbing and Drainage Regulations, and all the local bodies are revising their by-laws, with a view to complying more fully with the Health Act.

The Mackenzie County Council has instituted a nightsoil system for the Town of Fairlie, and has taken considerable trouble to make their scheme a good one.

The Temuka Borough Council has satisfactorily arranged for an extension of their sewerage scheme.

Camping-grounds.

An inspection has been made of the seaside camps. There is a tendency to crowd houses or other buildings of a semi-permanent nature. Representations have been made to the local authorities, suggesting a minimum area for a camp-site. The Lake Ellesmere Domain Board is putting in a water-carriage system with a septic tank.

Trade Wastes.

The fatty effluent from dairy factories and wool-scouring plants is a frequent cause of nuisance, and it is a difficult substance to satisfactorily treat. In view of the value of fat as a by-product, there would appear to be room for more research into the disposal of this particular form of trade waste.

Spray Painting.

This comparatively new process is being carefully watched. While there is obvious discomfort on inhaling the vapours for the first time, as far as our limited experience goes there is no obvious permanent harmful effect on the workers. The Government Analyst, the employers, the employees, and the Medical Officers of Health are in frequent consultation as to the best methods of ventilating spray-painting shops, and the other matters affecting the welfare of the workers in this particular process.

Mortuaries.

Arrangements are being made for the erection of mortuaries at Methven and Rakaia; and the Temuka Borough Council have expressed their opinion that a mortuary is necessary for Temuka, and they are deliberating as to what steps they should take to secure one.

SECTION 4.—OTAGO-SOUTHLAND HEALTH DISTRICT.

Dr. Crawshaw, Medical Officer of Health; Dr. Shore, Medical Officer of Health.

The following diseases showed an increase in 1926 as compared with the previous year: Scarlet fever, 138 (94 in 1925); diphtheria, 234 (199 in 1925); influenza, 40 (3 in 1925). A decrease was apparent in the following: Poliomyelitis, 6 (104 in 1925); puerperal fever, 29 (34 in 1925); erysipelas, 22 (31 in 1925).

Diphtheria.—During the year two outbreaks occurred at Kaitangata—one about the end of March and the other in October. A special report by Dr. Shore is appended.

About the beginning of August the Medical Superintendent of the Public Hospital, Dunedin, Dr. Falconer, drew attention to the repeated outbreaks of diphtheria in the Jubilee Ward. Even though all precautions were taken and the ward fumigated, patients still developed this disease. On looking over the facts it appeared that there must have been either some continuous source of infection in the ward or that fresh infection must have been introduced at frequent intervals. On making inquiries it was found that certain patients had been in the ward right from the beginning of the trouble, and that no nasal swabs had been taken. It was arranged that nasal swabs should be taken, and also that swabs be taken from all wounds in the ward. The nasal swabs were negative, but two taken from wounds showed positive results. The patients whose swabs were positive were isolated in a side ward. After this no further cases appeared. The results obtained from the wounds show the necessity of devoting attention to them as well as to throats and noses when diphtheria appears in a surgical ward.

Pulmonary Tuberculosis.—Work in connection with this disease in the vicinity of Dunedin and suburbs has been carried out by Nurse Inspector Jeffery. An outline of this officer's activities during 1925 and 1926 has already been furnished.

Infectious Diseases, Dunedin City.—From 1st November last the Dunedin City Council arranged to take over all infectious-disease work in the city. The Council appointed Mr. S. G. McDonald to carry out this work.

Food and Drugs.

Food analyzed or weighed.—During the year 641 samples of various foods were taken for analysis and 2,497 were weighed. The number of food-premises inspected was 2,876.

Food-supplies seized and destroyed.—In addition to large quantities of food examined and passed, the following goods were seized and destroyed in lots of various sizes: 20 tons cocoa-beans, 27 lb. shelled Barcelona nuts, 22½ lb. walnut halves, 6 bags shelled Barcelona nuts, 24 lb. whitebait, 156 cases apples, 20 cases kippered herrings, 4 cases Spanish hazel-nuts.

Improved Methods.—In my last annual report reference was made to the necessity for improvement in the handling and delivery of such foodstuffs as milk, meat, and bread. Some improvements have taken place in this connection, and it is pleasing to observe that one or two milk-vendors are adopting the bottle system of delivery. In at least one case a complete plant is being installed. A large number of dairymen now use covered motor delivery-vehicles, and this minimizes the objectionable features of dipping from the tops of 10-gallon cans, and the consequent pollution during wet weather from rain, hands, and hats. Two bakers in Dunedin have installed wrapping-machines for bread. Endeavours have been made to improve the methods of handling butcher meat from abattoirs to retail premises. Improvements have already been noted, and it is hoped to obtain still further results.

Private Hospitals.

During the year private and maternity hospitals for Otago and Southland have been periodically inspected by Nurse Inspector Beswick. Improvements have been made in the equipment of a number of the private hospitals. A large number have installed high-pressure sterilizers and a number of facilities for the washing and storing of utensils. Improvements have also been made in certain cottage maternity hospitals. All midwives in practice have been visited, and most of their bags inspected. These are in excellent order. The majority of the maternity nurses who have recently been registered have been visited, and the regulations explained to them. The licensee of one private hospital was prosecuted for failing to complete her register, and the owners of three unregistered homes were prosecuted. Convictions were entered in all cases.

Nurse Inspector.—In addition to her work in connection with tuberculosis, this officer has visited Kaitangata and Balclutha to swab contacts when the diphtheria outbreaks occurred at these places. This officer also inspected and reported on the premises of chiropodists, beauty parlours, chiropractors, masseurs, and skin specialists.

Water-supply.

Invercargill.—The Invercargill Borough Council sunk a new bore on the water reserve, and were successful in obtaining a good supply. A poll of the ratepayers of Invercargill was taken recently on the matter of a gravitation scheme from Dunsdale, and carried.

Milton.—The Milton Borough are still pumping water direct from the river into the mains, an intermittent supply being maintained pending the erection of new storage tanks. It will be remembered that the water-tower was blown down about two years ago.

Oamaru.—The recently constructed reservoir on the South Hill to supply that portion of the town has given every satisfaction, there being ample water for all purposes.

Sanitary Works.

In Dunedin City and suburbs the work of sewer-extension is being steadily pushed forward by the Dunedin Drainage Board. Special storm-water culverts are also being constructed in Hanover Street and vicinity to cope with the storm-water from the hill districts.

A conference of representatives of the local bodies interested was held to discuss the question of drainage of Kaikorai Valley and Green Island. As the provision of a water-supply for those factories now using the stream-water is not at present possible, and in order to permit manufacturers to still use the stream-water but return the waste into the sewers, it was proposed that landowners with rights over the water should be approached to waive their rights. This proposal was agreed to, and the various local authorities are now being approached to obtain the names of persons concerned, with a view to taking further action in this direction.

Oamaru.—The drainage-work in this town is now under way, and about 250 houses are connected to the new sewers. The drains in South Oamaru are being connected, and the sewage discharged into the South Oamaru Creek is much less than formerly.

Bluff.—The Bluff Borough has constructed several good drains to replace the old open ditches. The majority of householders are now connected with these sewers, which are used for waste water only.

Balclutha.—The Borough Council are carrying out street-channelling and general improvements to various low-lying districts. Owing to lack of underground drainage the practice of discharging waste water into the street-channels at times causes a nuisance, particularly in dry weather. The only satisfactory solution will be the provision of an underground drainage scheme.

Gore.—The Gore Borough Council have carried out two small extensions. A great deal of work remains to be done, but this will probably prove difficult and costly owing to poor levelling when the original main sewers were laid.

Mataura.—This borough is considering the completion of their sewerage scheme, and it is probable that a poll will be taken for permission to raise the necessary money.

The Wallace County Council are at present considering the drainage of Ohai. This is a very scattered township, the population of which is increasing rapidly, and drainage is essential.

The drainage at the various camps belonging to the Public Works Department at the Miller's Flat railway-construction works is giving satisfaction.

Bruce Woollen-mills, Milton.—The settling-tanks constructed at the mills to minimize the pollution of the Tokomairiro River have been completed and are giving satisfaction.

Refuse and Nightsoil Removal.

Queenstown.—A new site for a rubbish-dump has been procured. An improvement is noticeable in the sanitary work carried out in this borough.

Refuse-collection services are now provided at Naseby, Cromwell, Alexandra, Roxburgh, Arrowtown, and Clyde. Periodical clean-ups are held at Ranfurly and Waipiata.

The Lake County Council have been asked to provide a rubbish-dump at Pembroke, and the Maniototo Council have also been requested to provide refuse and nightsoil services at Ranfurly.

During the year a nightsoil-removal service was inaugurated in the county area comprising Waikiwi, Collingwood, and Grassmere. This service has now been in operation for one month and is working satisfactorily.

General.

Mutton-bird Industry.—An investigation was made into the methods adopted in connection with the cleaning and packing of mutton-birds. These birds are caught on the Titi Islands, adjacent to Stewart Island, by the descendants of the original Native owners of Stewart Island during the months of April and May of each year. Permits to take the birds are issued by the Commissioner of Crown Lands, Invercargill. It was found that there was room for considerable improvement in the methods adopted by the Natives. Suitable regulations were drafted, and after consultation with the Commissioner of Crown Lands, Invercargill, these were agreed to by the Natives concerned.

Fish-market, Dunedin.—As I have already reported, arrangements are now in hand for the removal of the fish-sale depot from its present site to the Pelichet Bay Railway-yard. A suitable building is to be erected by the City Council. It is gratifying to report that finality is now assured.

Cemeteries.—During the year the work of inspection of cemeteries was taken over by the officers of this Department. This has entailed a large amount of work for the Inspectors concerned, but will no doubt in future ensure that these grounds are satisfactorily administered and cared for. In the case of many of the small cemeteries it has been found that sections 23 and 24 of the Act are not being complied with. In several instances the trustees were not provided with a copy of the Act, and they were not aware of their responsibilities.

New Zealand and South Seas Exhibition.

Up to the date of closing—the 1st May—the departmental display at the Exhibition continued to attract numbers of interested visitors. After this date the work of packing and returning the various exhibits occupied a considerable amount of time.

Propaganda.

Suitable lectures by departmental officers have been broadcasted at intervals during the year from station 4YA, Dunedin. This form of public-health education serves a useful purpose in bringing the work of this Department before the public.

Several newspaper articles on health subjects have also been written by Dr. Shore and myself.

Diphtheria in Kaitangata, 1926.

During the year 1926 the Township of Kaitangata experienced two outbreaks of diphtheria, the outbreaks being separated by a period of approximately six months. The first epidemic occurred in March-April, and showed a total of forty-five cases, and the second outbreak, which occurred in October-November, showed fifty-one cases. The March-April epidemic was essentially a "school epidemic." Thirty-three of the total of forty-five were school cases. The pre-school group escaped almost completely, there being only three cases in this group. A very large percentage (approximately 70 per cent.) of the school cases occurred in two standards.

It is somewhat surprising that this epidemic did not assume greater proportions, as when Schick testing was done it was found that over 60 per cent. of the children gave positive results. Extensive immunization work was carried out, and practically all the parents readily gave consent. It was therefore a source of surprise when diphtheria again appeared in the borough during the months of October and November. The epidemic was of a much more severe nature. The total number of cases was fifty-one. The distribution of cases as regards school attendance was considerably different from the March-April epidemic. The primary department and the pre-school group gave a much greater incidence of cases than did the previous outbreak. The pre-school group gave 25 per cent. of total cases. The post-school population gave about 35 per cent.; the primary department about 26 per cent.; and the remainder of the school only about 14–15 per cent. Also this latter visitation was of a more explosive character than the former, the period of time in this being only nineteen days, as against twenty-eight days for the March-April.

The investigation of the milk-supply also gave some interesting findings. The two chief suppliers, taken as representatives of the borough, gave the following results:—

	Number of Houses supplied.	Number of Cases March-April.	Number of Cases October-November.
Milkman A..	.. 109	15	47
Milkman B..	.. 104	11	..

Showing that there was strong evidence in support of the contention that the October-November epidemic was milk-borne. This is further strengthened when it is known that the third case in the October-November period was a member of Milkman A's family, and that the milkman was himself affected later on in the epidemic.

This mass infection per medium of milk would be largely responsible for the overwhelming of the "immunity" of the victims, and would account for the altered age of distributon

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

SECTION 1.—QUEEN MARY HOSPITAL, HANMER.

Dr. P. CHISHOLM, Medical Superintendent; Dr. LUMSDEN; Miss E. HODGES, A.R.R.C., Matron.

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

In general the year has been uneventful, and the work in the institution has been satisfactory. Of chief importance has been the opening of the new hospital for women. Every endeavour has been made to economize within the limits of the efficiency of the institution. The cost of the institution has increased, and this has been due to a general increase of the number of patients seeking admission. There has been a slight increase in the number of service patients, and a very marked increase in the number of civilian patients. The new block for accommodation of women was completed and opened in November. The year has been a somewhat busy one; the arrangements for the opening of the new hospital entailed a considerable amount of work and anxiety. Staff difficulties have been more marked, especially in regard to obtaining and retaining a trained nursing staff.

Male Patients.—The type of patient admitted during the past year was similar to that of other years, excepting there has been a tendency to send the more or less mild psychotic patient to Hanmer. This type of patient is not suitable for treatment here, nor would it be wise to allow such patients admission. A very considerable number of service patients are still presenting themselves for treatment, many of them having had some previous "war service illness" and have again broken down under the stress of civilian life. The general treatment employed is the same as heretofore, and we have relied chiefly on the institutional regime, exercise, occupation, and such medical therapy as may be indicated. There has been no trouble, and apparently the patients are well contented with their surroundings. During the past year I have not had any complaints from patients in regard to either their treatment or the general conditions appertaining in the hospital.

Female Patients.—The number of female patients steadily increased during the year. The old hospital, which was originally set up to carry seventeen beds, was at the time of closing carrying thirty-five beds. The new hospital was opened on the 27th October, 1926. Fifty beds are available, and since the end of the first week of opening there has been no vacant bed in the hospital. The treatment amongst the women is similar to that in the male hospital, excepting that in regard to the female patients more physiotherapy was carried out. As with the men, I consider that the chief value of treatment is the ordered life, the regime, and the encouragement and enforcement of exercise. As also with the male patients, there has been a tendency to send the mildly psychotic women for treatment, and I fear that a considerable amount of harm would undoubtedly accrue if the tendency to call this hospital a "borderland" hospital should persist.

General.—There has been a fair number of cases of ordinary illnesses admitted from the district, and undoubtedly the hospital serves a useful purpose apart from the special work which is done. There have been two deaths in hospital, both male patients, and in each case admitted from the surrounding district, suffering from pneumonia.

Medical Staff.—In August, 1926, Dr. Sowerby, for four years on the staff of this hospital, was appointed Medical Superintendent of the Thames General Hospital. His services to the institution have been much missed, and he was a valuable and conscientious Medical Officer.

Nursing Staff.—I have been greatly indebted to the work of the Matron and senior nursing staff of the hospital for their loyal and hearty assistance during the year.

Massage Staff.—This staff has been kept to a minimum: three masseuses and one masseur have been employed for some 140 patients in hospital. In addition to dealing with the hospital patients, the massage staff deal with out-patients, from whom a very considerable income is derived. The Department has been under the charge of Sister Wilson, who is an extremely competent and careful charge of this department.

Male Staff.—The senior male staff remains unchanged, but there has been the usual number of changes in the junior staff. Lack of accommodation for married men in Hanmer still remains a serious handicap. Every endeavour has been made to keep the staff at an absolute minimum, but owing to the fact that the institution maintains so many extra services—*i.e.*, bathhouses, tea-kiosk, water-service, electric light—and in addition our great isolation, tends to make the number of male employees greater than that of a general hospital in a town. The institution has been particularly well served by the office staff, and these employees have cheerfully faced the extra amount of work that has been entailed during the past year.

Farm.—The farm-manager has proved capable in overseeing the farm, and, as far as I can judge, the conduct of the farm is satisfactory. The demands of the institution have been well supplied by the farm, and we have been much indebted to Mr. Bruce, Agricultural Adviser to the Department, for his advice and assistance.

Tea-kiosk.—On the whole, the tea-kiosk has improved in regard to receipts; at the same time expenses have been kept down. The tea-kiosk serves a useful purpose to the public, and I think it is now approaching the stage of being self-supporting.

Bathhouses.—The bathhouses and swimming-pools are used by the public to a very great extent, and appear to be as popular as ever they have been in the past.

General Maintenance.—The general maintenance of the hospital has been carefully attended to, and the buildings are in an average good state of repair.

Dangers of certain Press Publicity.—During the past few years I have had forced to my notice a matter of some importance to the class of patients who come under our care at this hospital. Patients suffering from even a mild neurosis are particularly open to suggestion and are extremely afraid for themselves. The public Press of New Zealand is particularly exempt from making very much of a certain type of tragedy, the publication of the details of such a happening having a very serious effect on certain types of people: I refer chiefly to the publication of details of such tragedies as a mother killing her children, and in certain cases of suicide. Beyond any question, such accounts in the public Press do influence certain types and does set up a state of fear in their minds lest they might be tempted to do some similar act. It must be recognized that suggestion plays a very large part, and I am of the opinion that the suppression of all details would be to the benefit of the people of the country. I am well aware that in New Zealand we are particularly free of a Press which stresses such details, but I think still further good would be achieved if such details could be even further suppressed. I think it will be found that if the details of a particularly eccentric type of suicide be published it is followed by others of a similar type. However, my chief object is in respect to tragedies where a mother has killed her children. I have seen large numbers of women who, being in a mildly nervous condition, desire to know whether they are likely to do the same thing. They state that since reading of such a tragedy they become frightened for themselves in respect to their children.

In conclusion, I wish to express to you my appreciation of the work of the staff of the hospital and the very great support I have received from them in the conduct of the hospital.

I also beg to thank the Hon. the Minister of Health and yourself for your support and advice during the year.

SECTION 2.—KING GEORGE V HOSPITAL, ROTORUA.

Dr. L. A. Lewis, Medical Superintendent; Miss Searrell, A.R.R.C., Matron.

I have pleasure in submitting the annual report of this hospital for the year ending 31st March, 1927.

Towards the end of the year Dr. L. A. Lewis took over the administration of the institution, Dr. Wallis remaining on the staff as surgeon in charge of the Orthopædic Section. Dr. Dorset has resigned from the hospital.

An attempt is being made to concentrate the services of the hospital with a view to facilitating administration. To this end the two Lowry Wards have been closed and patients transferred to the main block. The office has also been moved to the main block, and this has greatly helped administration.

Orthopædic Section.—The influence of the last infantile-paralysis epidemic was still felt throughout the year. A good proportion of those discharged will require to be readmitted later for appropriate treatment, but in the meantime, with correct supervision in their own districts, they do not require treatment as in-patients. The technical work in the physiotherapy, splint, plaster, and surgical-boots departments has proceeded satisfactorily. During the year 125 plaster operations were performed. The number of surgical operations performed was 324.

Buildings and Grounds.—The new laundry has now been completed, and contains modern facilities for washing. A new boiler-house has been built, with two boilers installed. These boilers now supply the whole of the hospital with steam for heating, laundry, cooking, and sterilizing, &c. Wilton furnaces have been placed in the boilers, and this has effected fuel-economy, together with disuse of the old incinerator. For the purposes of disinfection a McGregor steam disinfector has been erected, and it may also be used as a fumigator. In the kitchen three steam cooking-pans and three vegetable-steamers have been placed, and they have proved a great help to the kitchen staff.

Isolation Hospital.—With regard to the Isolation Hospital, no epidemics have occurred, although there has been an increase in the number of patients treated as compared with last year. More cases of typhoid fever appear to be admitted than any other infectious disease. It would be to advantage if the Isolation Hospital was housed in the same grounds as this hospital. With rearrangement of the housing of the departments in the present buildings at King George V Hospital this could easily be effected.

Private Wards.—A small number of beds are now available for private cases. The hospital could considerably enlarge its sphere of usefulness by an extension of this service. The accommodation is already insufficient to meet the demand.

It is pleasing to note that greater use is now being made of the hospital by the patients from the town and surrounding districts.

The Women's Club continued their good services of sewing children's clothes. The Red Cross Society distributes extra comforts to the military patients, and provides entertainments for the children. The Rotorua Sunshine League organized a "Hospital Day," over £400 being collected. This sum will be used to provide outings, extra comforts, &c., for this hospital and also the sanatorium.

Two nurses were successful in passing the last State examination, one gaining honours.

SECTION 3.—OTAKI SANATORIUM.

Dr. E. Irwin, Acting Medical Superintendent; Miss M. Pownall, Matron.

It is to be regretted that Dr. Curtis had to temporarily relinquish duties in August; Drs. Atmore and Irwin subsequently carried on the work.

At the beginning of the year there were forty-eight patients in the institution, and during the year there were thirty-five admissions. Twenty-nine patients were discharged, of which ten had the disease arrested, twelve were relieved, and seven unrelieved.

The programme of building improvements inaugurated last year has been completed, thus providing accommodation for twenty more patients. All buildings have been rewired and brought under the Mangahao scheme, thus dispensing with the necessity for the engine-room. A 4 in. water-main has been laid from the borough supply, and owing to the increased amount of water available a properly equipped fire-controlling apparatus has been installed.

Thanks to the bequest of the Brown McMillan fund, and very largely owing to the exertions of Mr. Morse, the local picture-theatre proprietor, patients are enabled to enjoy pictures weekly, while an occasional outing in the Matron's car adds to their pleasure.

The staff work amicably together, and the patients appear to be contented and happy.

In regard to the hospital, at the beginning of the year there were four in; since then eighty-five have been admitted, and eighty-nine discharged, including twenty-six relieved, fifteen unrelieved, and nine died. An ambulance has been provided by the Palmerston North Hospital for the conveyance of patients who are considered unsuitable for treatment in the Otaki Hospital. The trees which were planted in the swamp were destroyed by fire, and the area has been replanted and the new trees well established. It is proposed to plant three acres on the other side of the road in the swamp with eucalyptus trees; the gardens generally have been improved. The farm under the Agricultural Department has shown a very satisfactory return, the produce generally being of good quality.

SECTION 4.—PUKEORA SANATORIUM, WAIPUKURAU.

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

The year which has just closed has been remarkable for many changes of a progressive nature. The expenditure for new buildings and new services is the highest on record for one year in the history of this institution, which is thus rendered more and more efficient as a complete unit for the work of treating sufferers from pulmonary tuberculosis.

There has been a decrease in the number of patients treated during the past twelve months, but there has also been a decided decrease in the number of notifications of T.B. for the North Island, and very noticeably so in the hospital districts within more easy reach of the Pukeora Sanatorium. For eight months of the year 1926–27 (the only figures at present available for this review) notifications dropped from 250 recorded in the previous year to 158, corresponding periods being compared in each case. From observance of the notification figures—not entirely reliable as a basis for assumptions as to incidence of the disease—and from consideration of the steadily decreasing death-rate, we are able to say that there is much less pulmonary tuberculosis, particularly in the North Island of New Zealand.

This sanatorium has 174 beds available for male patients, and of these the average number occupied daily has been 91·05. It will thus be seen that there is ample provision made for treatment of all cases which can be reckoned suitable for sanatorium.

I am pleased to report that the average type of case referred here for treatment during the year has improved, and in consequence the average number of days per patient under treatment has lessened again. The average mean residence per patient this year is the lowest figure on record—viz., 113 days, or approximately four months When it is remembered that no set period can be so determined for patients—that the time needed for repair depends upon the extent of damage already done—it will be readily admitted that the above average stay per patient, considered with the percentage of cases treated in which the disease has been "arrested," is the shortest treatment period possible and compatible with efficient hospital control. In regard to the question of how long a patient should remain in sanatorium, R. C. Wingfield says the correct answer should be, "I do not know how long it will take, but you must remain under treatment until you have made the maximum amount of improvement possible in your case." With military pensioners it is easy to convince the patient to accept this view, but with civilians economic pressure—*e.g.*, the plight of the patient's wife and children during his stay in hospital—has a very distinct bearing on the length of treatment we can advise. It is interesting, nevertheless, to note that at this sanatorium for the year there is but eight days difference between the average mean residence period for military pensioners and civilian patients, with the advantage to the former. The percentage of service patients—*i.e.*, those ex-soldiers whose disability is accepted by the Pensions Board as due to war service—is diminishing year by year, and has now reached the low figure of 28·9 per cent. of the total patients treated during the year.

It is pleasing to record that there is an increasing tendency with medical practitioners of good standing to refer cases for an educative period of treatment as soon as the diagnosis is made, and such use of the sanatorium by the private medical practitioner is welcomed.

Women's Temporary Accommodation.—The temporary accommodation provided in February, 1926, was closed on the 30th November, 1926, when additional accommodation became available at the women's sanatorium, Otaki. During the ten months thirty-four women were treated. The average mean residence in days was 128·2, and the results of treatment were as follows: Disease arrested, 13; improved, 18; unrelieved, 2; died, 1. The unrelieved cases were transferred back to hospital annexes.

Staff Changes.—The retirement of Miss Thurston, C.B.E., R.R.C., in March of this year constitutes not only a loss to the Department but also to the entire nursing service of the Dominion. Miss Thurston was well known as Matron-in-Chief of the N.Z.A.N.S. during the war period, and I feel sure that a very wide circle of friends and co-workers join with us, who have been more intimately associated with her in recent years, in wishing her a very pleasant holiday and many years of health and prosperity in retirement. For the period intervening between Miss Thurston's departure and

the appointment of Miss A. L. Lundon as Matron, Miss E. M. Taylor, late of Apia Hospital, Samoa, filled the breach very acceptably. Miss Lundon, whom we gladly welcome to Pukeora, joined the staff as Matron on the 4th April, 1927.

New Buildings.—The completion of the new kitchen block in brick, with attendant storage accommodation, at a cost of £6,000 gives us the services of a completely up-to-date kitchen. Additional apparatus in the shape of an electric dish-washing and sterilizing machine and a steam hot cupboard in the servery makes the handling of meals much more easy for the staff, and means increased comfort to the patient. The installation of steam throughout the sanatorium was another work recently completed, making ample supplies of hot water and steam for sterilizing purposes available at any moment.

The Public Works Department's contract for rewiring throughout the sanatorium for the distribution of Mangahao current was completed during the year. This work and the installation of new motors were performed at a cost of approximately £2,000. A stand-by plant for the pumping of water in case of fire is at present in course of installation. Mangahao power has proved much cheaper than that produced from our own plant.

X-ray Department.—The new X-ray plant supplied by Messrs. Watson and Sons was installed soon after the beginning of the year. The cost of installation was again much reduced by making use of the labour of our own maintenance carpenter. The plant has given much excellent service throughout the year without any fault having occurred in its working. X ray is of decided help in the treatment of pulmonary tuberculosis, both in diagnosis and prognosis, and this institution is unique in its possession of such an up-to-date equipment. Every patient is X-rayed on admission and on discharge, and the records kept.

During the year 214 X-ray films have been taken, and twenty-nine treatments by X ray have been given in five cases of tuberculosis of the larynx, with satisfactory results in four of the cases. The provision of an adequate X-ray service is essential in procedures like artificial pneumothorax, a treatment commenced in 1885, and lately again come into prominence by reason of X ray now admitting of better control.

Dispensary.—The total value of drugs issued during the year 1926–27 is £259 1s. 6d., as compared with £272 10s. 7d. during the previous year—a very low figure based on the cost per occupied bed. This figure is also the lowest figure on record for the cost of drugs since the inception of the institution. Native-school orders to the value of £36 17s. have been dispensed in addition to supplies of local anæsthetic, and mouth-washes for school dental clinics to the value of £85 5s. The area covered in the supply of dental clinics extends from Wanganui in the North to Marlborough in the South. In the sanatorium laboratory 641 sputum examinations have been made and 200 milk-tests carried out.

Farm.—Our requirements from the farm have been met in all particulars, with the exception of the supply of cream, which was not available in the early part of the winter.

Canteen.—In September, 1926, a canteen was opened for the sale of tobacco, confectionery, stationery, and toilet requisites to patients and staff. The sum of £30 was advanced as a loan from the Patients' Recreation Fund to provide the initial capital. This loan has been refunded, and the canteen profits are now being placed to the credit of the Patients' Recreation Fund. The canteen is in charge of a member of the staff, and has proved after seven months' trial to be, in addition to a source of revenue for patients' recreation purposes, a boon to all residents at Pukeora.

Patients' Recreation Fund.—The balance now in hand stands at £39 14s. 9d., two donations having been made—one, of 10s., made annually by Mrs. Thomas, of Carterton, and another, of £2 16s., the proceeds of a collection taken up on Anzac Day at Makotuku, Hawke's Bay.

Red Cross Society.—We have received, as in former years, a considerable quantity of gifts from the various branches of the society in this district. Weekly visits by the various committees have continued, and the keenest interest is maintained by members of the society in the welfare of our patients. Financial help from the central executive of the Red Cross Society has again made possible the continuance of moving-picture programmes three times a week at this institution.

During the year a new wireless receiving-set was presented to the institution by the Hastings Branch of the Red Cross Society, thanks being due largely to Mrs. T. H. Lowry for her interest and activity in procuring the set, which is of the "Elstree" pattern, valued at £100, and supplied by Messrs. Hartle, Gray, and Co., Auckland. The new set, which replaced the old one in use since 1924, is of a powerful type, supplying no less than five loud-speakers, placed in various situations throughout the institution. It has already proved a very great boon to the patients, and our thanks are due to these ladies for their timely gift.

The institution was honoured by a visit at the end of the parliamentary session last year from the Hon. the Minister of Health, accompanied by Dr. Watt. The Minister inspected the institution and gave timely advice to the patients, and at the close of his inspection made kindly reference to the good work being attempted in the institution.

At the close of another year's work I have to again record my thanks and appreciation of the loyalty and co-operation of all members of the staff in what has been accomplished.

APPENDIX.

PHYSICAL GROWTH AND MENTAL ATTAINMENT: NEW ZEALAND SCHOOL-CHILDREN.

By Ada G. Paterson, M.B., Ch.B., L.M., Director, Division of School Hygiene, and E. Marsden, D.Sc., F.N.Z.Inst., late Assistant Director of Education.

The provision of right nurture and sound education for children is dependent upon a realization of the factors influencing their physical and mental development, of which, therefore, it is of first importance that we should possess exact knowledge. With the object of obtaining fuller information on these subjects, and of their interrelation, a joint survey was carried out by the New Zealand Education and Health Departments, officers of the school medical service (Health Department) undertaking the necessary physical measurements.

This survey was conducted in October and November, 1925. Briefly described, it consisted in (1) the application of standard educational achievement tests to pupils of Standards III, IV, V, and VI; (2) recording of physical measurements of the same children within a month of their receiving the attainment test; and (3) an effort to correlate the data so obtained in order to deduce such conclusions as would increase our knowledge of the physical and educational needs of the children.

Method.

Owing to the enormous amount of labour involved, a selection of only about one-fifth of the schools of the Dominion had to be made. We aimed at including a representative proportion of children from schools of various grades and geographical distribution, but actually only about 24 per cent. of children to whom physical measurements were applied were from schools Grade 1–3 (*i.e.*, up to 120 attendance). As the actual percentage of children in these schools is 35 per cent., it follows that the number of rural children included in our survey is somewhat low. The effect of this selection will be discussed later in the paper. Owing to the small proportion of New Zealand children who attend other than State primary schools, our findings may otherwise be regarded as fairly representative of the whole Dominion.

As the survey was carried out in Standards III to VI only (ages averaging 10 to 14), it follows that older dull and feeble-minded children in lower standards were not included, and also that intelligent and comparatively young children who pass out of school early were omitted. For the 11- to 13-year-old groups, however, the results are comprehensive and reliable. The number of children concerned in the whole survey was approximately twenty thousand.

Measurements.

When these were taken the children were wearing indoor clothing, but no shoes. Weighing-machines used in the various districts were of a uniform type, specially purchased from Messrs. Avery and Co.

The sitting height and circumference of chest were taken by the methods described in Dreyer's "Assessment of Physical Fitness." In the case of chest-measurement the measure taken was that of the normally-breathing, not expanded, chest.

The data collected in the present investigation may be expressed in three ways. Take, for example, heights: (1) The "mode" or commonest measure—*i.e.*, the measure of which there are most cases; (2) the "median" or middle measure; (3) the arithmetical mean, commonly called "the average." Following the data for other countries (quoted), No. 3 has been used—*i.e.*, the arithmetical average.

The above three measures would be identical if the distribution in each case were "normal"—*i.e.*, as many cases above the average as below it—and symmetrically distributed. In general, however, this is not the case, the distribution being a "skew" one. An examination of the results showed, however, that, in the case of heights, the average, median, and mode did not differ by more than 0·15 in. In the case of weights the "average" is in excess of the "median" by about 1½ lb. for boys and 2½ lb. for girls.

From general statistical principles it is known that the modes or most probable values will be correspondingly lower, although they were not determined exactly. This shows that there are many cases of weights considerably higher than the average, the "majority" of children, however, being below the arithmetical averages given in the tables by about 4 lb.

In the case of sitting height for both boys and girls the average is, if anything, greater than the median for ages 10 to 13, and less than the median for children over 13.

In the case of chest-measurements the average exceeds the median by about 0·2 in. in both sexes for ages over 12. The degree of accuracy or probable error of the figures given in the tables has not been calculated. Apart from the possible errors of sampling, in the matter of which care was taken, the probable error depends on the number of cases and the "standard deviation" as deduced from the distribution of the measures.

Table 1.—Physical Measurements by Age: Boys.

Nearest Age.	Number of Cases.	Height.	Weight.	Sitting Height.	Chest.
		In.	lb.	In.	In.
10½	747	53·85	69·2	..	25·0
11	987	54·7	71·8	28·3	25·25
11½	1,189	55·5	73·7	28·5	25·6
12	1,287	56·1	76·5	28·7	25·9
12½	1,282	56·9	79·7	29·0	26·2
13	1,224	57·8	84·0	29·4	26·5
13½	1,062	58·8	87·7	29·7	27·2
14	829	59·8	92·3	30·2	27·8
14½	577	60·8	97·0	30·7	28·4

Table 2.—Phsyical Measurements by Age: Girls.

Nearest Age.	Number of Cases.	Height.	Weight.	Sitting Height.	Chest.
		In.	lb.	In.	In.
10½	769	53·45	67·0	27·7	23·95
11	1,012	54·4	71·0	28·0	24·3
11½	1,142	55·5	74·3	28·5	24·8
12	1,188	56·65	79·2	29·2	25·2
12½	1,161	58·1	84·6	29·8	25·7
13	1,119	59·1	90·2	30·3	26·1
13½	1,023	59·8	94·5	30·7	26·5
14	714	60·55	99·8	31·0	27·0
14½	437	61·3	104·4	31·2	27·3

Table 3.—Comparison of Data: Boys—Heights (Inches).

Authority.	Number of Cases.	Nearest Age.				
		10.	11.	12.	13.	14.
Present investigation	9,184	52·85	54·7	56·1	57·8	59·8
Australian (Harvey-Sutton) ..	24,862	51·8	5 ·6	55·2	57·2	59·4
British Association (all classes) ..	12,600	51·8	53·5	55·0	56·9	59·33
British Association (artisan) ..	7,900	50·7	52·7	53·7	55·8	..
Glasgow (Mackenzie)	34,900	49·6	51·3	53·0	54·6	..
English (Greenwood)	367,000	50·8	53·0	54·9	56·1	..

Table 3A.—Comparison of Data: Girls—Heights (Inches).

Authority.	Number of Cases.	Nearest Age.				
		10.	11.	12.	13.	14.
Present investigation	8,565	52·9	54·4	56·7	59·1	60·55
Australian (Harvey-Sutton) ..	22,328	51·6	53·6	55·8	58·2	60·1
British Association (all classes) ..	2,800	51·1	53·1	55·7	57·8	59·8
British Association (artisan) ..	1,500	49·0	51 5	54·0	56·2	..
Glasgow (Mackenzie)	34,100	49 0	50·8	52·9	55·1	..
English (Greenwood)	353,000	50·6	53·0	55·5	56·8	..

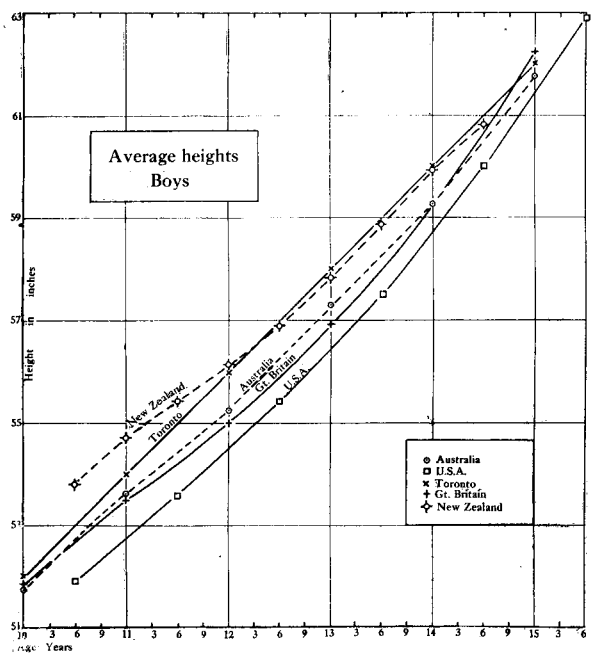
Table 4.—Comparison of Data: Boys—Weights (Pounds).

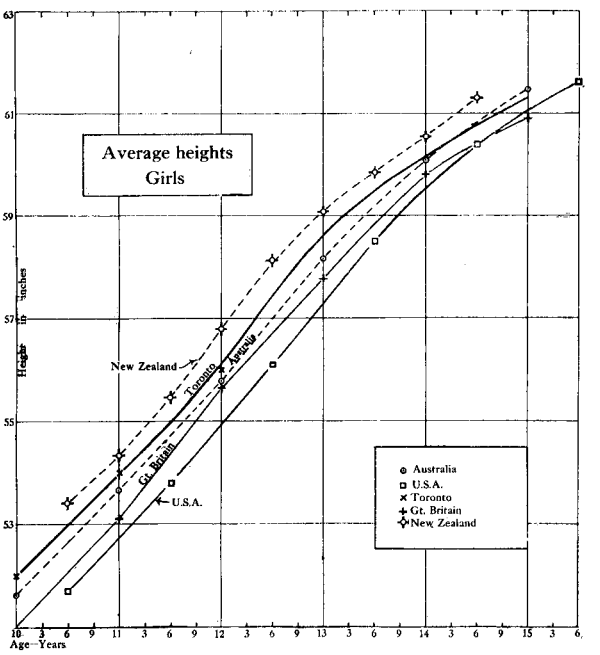
Authority.	Number of Cases.	Nearest Age.				
		10.	11.	12.	13.	14.
Present investigation	9,200	66·3	71 8	76·5	84·0	92·3
Australian (Harvey-Sutton) ..	24,862	61·5	66·5	72·2	78·6	88·2
British Association (all classes) ..	10,200	67·5	72·6	76·7	82·6	92·0
British Association (artisan) ..	3,100	64·0	69·0	73·0	79·0	..
Glasgow (Mackenzie	34,900	58·3	63·1	68·1	73·5	..
English (Greenwood)	363,900	60·4	66·4	72·7	77·4	..

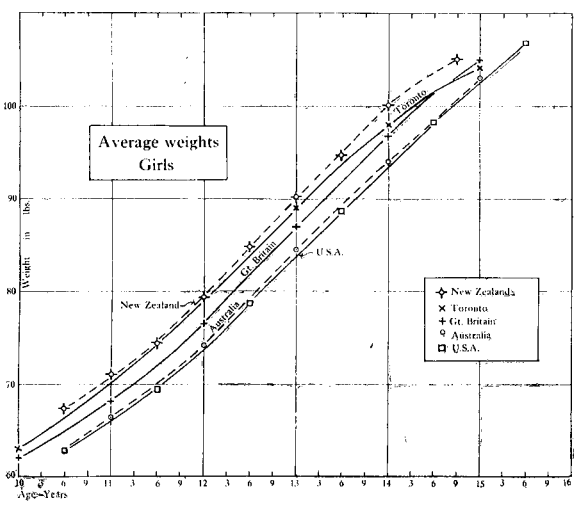
Table 4A.—Comparison of Data: Girls—Weights (Pounds).

Authority.	Number of Cases.	Nearest Age.				
		10.	11.	12.	13.	14.
Present investigation	8,565	65·0	71·0	79·2	90·2	99·8
Australian (Harvey-Sutton) ..	22,328	60·7	66·4	74·3	84·6	94·1
British Association (all classes) ..	2,900*	62·0	68·1	76·4	87·2	102·7
British Association (artisan) ..	1,500*	60·5	66·8	74·9	84·9	..
Glasgow (Mackenzie)	34,100*	56·1	61·1	67·2	75·1	..
English (Greenwood)	347,100*	58 7	65·5	73·9	80·4	..

* These numbers include children below 10 years of age.







Graphs 1, 2, 3, and 4 give the height and weight results of the present investigation compared with those of other countries. The figures for the British Association Committee (Antropometric) refer to the findings of the Committee originally set up in 1883, which it will be noted are appreciably higher than those of Greenwood (1908–11) based on 720,000 English children. The Toronto figures are taken from a publication of the Departnent of Public Health, Toronto. The American figures are those of Boas (see Terman's " Hygiene "). The Australian figures are from Dr. Harvey-Sutton's " Report on School Antropometry " (N.S.W., 1918–19), to which publication we acknowledge much indebtedness.

Since the above was written a publication of the Detroit Board of Education, June, 1921, has come into our possession. In this publication the results for 250,000 American children are quoted from the work of T. D. Wood, M.D. These results approximate those of Toronto shown in the above graph.

Heights.

Comparative results are illustrated in graphs, figs. 1 and 2, and the larger measurements in the case of New Zealand children will be noted, particularly in the case of girls. For boys the figures approximate those of Toronto, except that there is a 0·6 in. greater height at the age of 11. For girls the greater height is well marked throughout, showing a maximum at 12½ years, where New Z aland girls are 1 in. taller than those in all other countries mentioned, with the exception of girls in Toronto, who, as in the case of the boys, tend to approximate nearer to the New Zealand standard.

Goitre and Excess of New Zealand Girls in Height.—School medical statistics for 1926 show that approximately 24 per cent. of New Zealand school-children suffer from goitre, of which 18 per cent. is incipient. It is interesting to note that this has apparently not prejudicially affected the average growth of the New Zealand girl. The desirability of a comparison of the heights and weights of goitrous and non-goitrous children is indicated, and in a future survey this point will be given consideration.

The corresponding figures in the case of weights are shown in Graphs 3 and 4. For boys the New Zealand figures are at least equal to those referring to other countries, while, as in the case of heights, the girls show a well-marked excess.

It is to be noted that, as the proportion of country children in our survey was comparatively low, the New Zealand figures determined are really less than the true average for the whole Dominion, since, as will be seen later, country children show superiority in growth over city children.

The exact interpretation of these comparative results is complicated by lack of knowledge of the conditions under which weights are taken in different countries, also by ignorance of the seasonal variance in rates of growth related to the time of year at which measurements were taken.

Table 5.—Ratio Standing and Sitting Height.

Age.	Boys.			Girls.		
	Standing Height.	Sitting Height.	Percentage Sitting to Standing Height.	Standing Height.	Sitting Height.	Percentage Sitting to Standing Height.
	NEW ZEALAND.					
	In.	In.		In.	In.	
11	54·7	28·3	51·7	54·4	28·0	51·5
12	56·1	28·7	51·1	56·7	29·2	51·5
13	57·8	29·4	50·8	59·1	30·3	51·2
14	59·8	30·2	50·5	60·55	30·0	51·1
	GLASGOW.					
10	49·9	26·23	52·5	49·6	26·0	52·37
11	51·6	26·96	52·22	51·2	26·78	52·35
12	52·7	27·18	51·53	53·6	27·83	51·84
13	54·7	28·21	51·15	55·9	28·98	51·56

BOAS: AMERICAN CHILDREN (BOTH SEXES).

Age.	Standing Height.	Sitting Height.	Percentage Sitting to Standing Height.
	cm.	cm.	
11	1,308	681	52·0
12	1,367	709	51·8
13	1,384	712	51·6
14	1,467	752	51·1

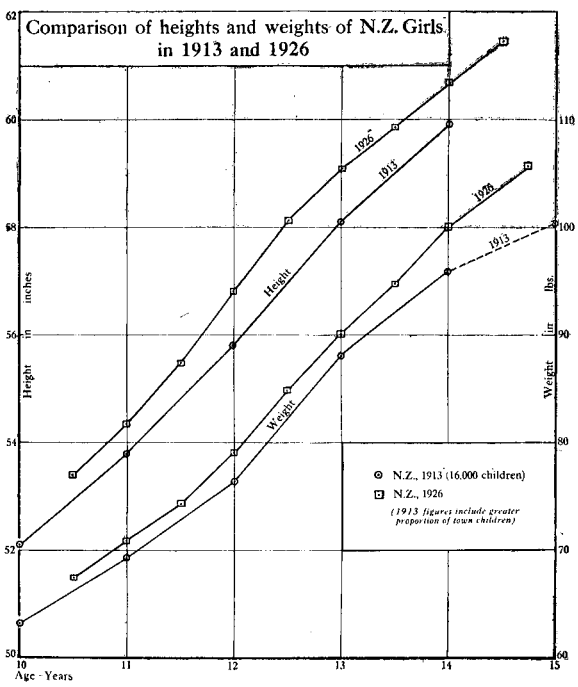
Sitting Height.

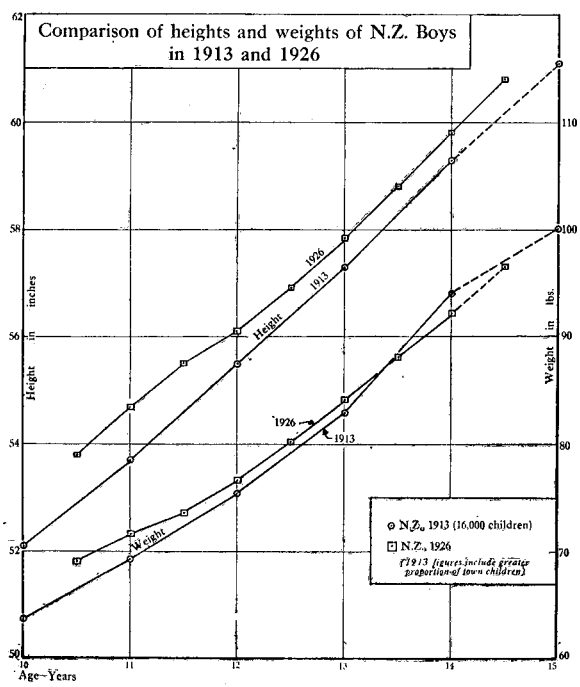
Measurements with regard to sitting height are indicated in Tables 1 and 2. A comparison was made with the data relating to Glasgow children quoted by Tully in the *Journal of Hygiene*, 24th November, 1924, and the comparative results are shown below. It will be noted that Glasgow children are smaller in both sitting and standing height; but the interesting fact appears that the ratio of sitting to standing height is less in the case of New Zealand children, indicating that New Zealand children are relatively longer in the legs.

Compare also findings of Boas (height and sitting height for American children), quoted on page 49 in "Poverty, Nutrition, and Growth" (Medical Research Council, 1926), which indicates that the ratio of sitting height to standing height is relatively less in New Zealand children than in American. It is apparent that the ratio of sitting height (or trunk-measurement) is for children over 12 greater in girls than in boys. This is in accordance with the observation of Bowditch, quoted by Stanley Hall in "Adolescence," in which he states, "Women appear to be relatively longer in the body than men." See also "Poverty, Nutrition, and Growth," page 49, in which is quoted the finding of Bean (1922): "From an examination of 1,445 white children (British, American, and German-American) and 776 Filipino children he gives figures to show that sitting height is inverse to stature; while with a small stature the sitting height is relatively great, with a large stature the sitting height is relatively less, within the race . . . The sitting height is greater in the female than in the male, even when they are of the same type and stature."

Comparison of New Zealand Measurements, 1913 and 1926.

In 1913 a record was obtained showing the heights and weights of 16,000 school-children. A comparison of the 1913 results with those obtained in 1925 for the years 10½ to 14½ indicates a definite improvement in both height and weight during the last twelve years, as is seen in Graph No. 6 A and B. The increase in height is approximately ½ in. for boys in the years 12, 13, and 14, and for girls approximately 1 in. for the same period. The 1925 weight-measurements for boys show an improvement of from 1 lb. to 2 lb. for the years of the survey, with the exception of the fourteenth year, at which time the 1913 records show a temporary advantage of nearly 2 lb. For girls the 1913 results are definitely and consistently lower for both height and weight, 0·8 in. improvement in height being noted, and approximately 2 lb. to 4 lb. advantage in weight, during the age period 11 to 14 years.





Owing to the fact that the school medical service was in 1913 just beginning, and its staff was small, a great proportion of the more accessible and therefore city schools were examined, so that the 1913 survey contains a less proportion of the taller country children. Making allowance for this fact, however, the results indicate a definite improvement in height and weight for New Zealand school-children during the last thirteen years. This is clearly shown by comparing average height and weight of city children, 1925 survey, with the 1913 figures, when we find that the 1925 results show superiority in height (boys and girls) 0·45 in. and in weight 0·7 lb.

Pearson, however, deduced that the race shows a tendency to increase in stature, and Davenport (1917) supports Pearson's finding: see page 106 of "Poverty, Nutrition, and Growth." It is possible that New Zealand conditions of selection tend to increase this tendency.

Similar observations have been made in other countries. Dr. Soren Hansen, Director of the Danish Anthropological Survey, contributed an article at the first International Eugenics Congress (London, 1912), on the "Increase of Stature in certain European Populations," in which he gave statistics to show that the boys attending Marlborough College from 14 to 15 years old increased in height 0·56 in. in twenty-five years, and also states that the height of the fully-grown Dane in the course of fifty years had gone up by 3·69 cm.

Professor Phillipps, of Amherst College, is quoted by Stanley Hall in his book on "Adolescence" as stating, "The young women in American colleges to-day are almost certainly an inch taller and four or five pounds heavier than they were ten years ago. The young man of to-day," he says, "at every age is taller and heavier than the man previous to 1894, the difference, as a rule, amounting to an inch in height and three pounds in weight."

In considering probable factors which have influenced the growth and development of New Zealand children since 1913 we recognize the following:—

(1) Improved methods of child welfare; expansion of the Royal New Zealand Society for the Health of Women and Children; work of the school medical service, &c.

(2) Reorganization and development of system of physical education in schools.

(3) Better schools in regard to general hygiene and furniture; adoption of more suitable clothing.

(4) Improved sanitation in the home and abroad; adoption of more suitable clothing.

(5) Decreasing birth-rate.

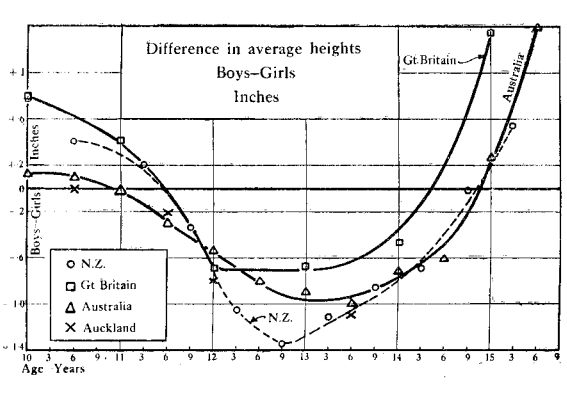
(6) Increased ratio of children of New-Zealand-born parents.

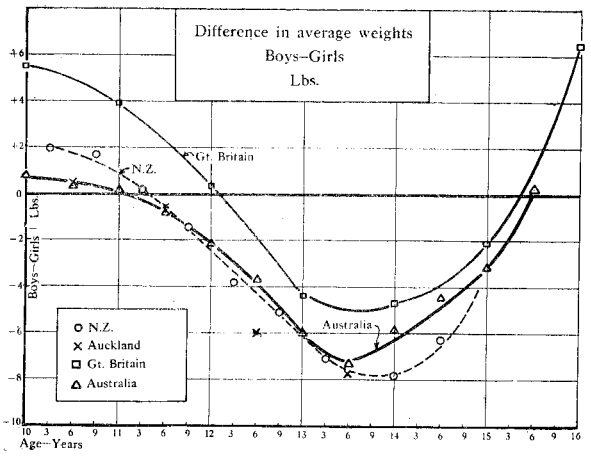
Rate of Increase in Height and Weight: Boys and Girls.

In height we find a fairly-well-marked maximum rate of increase for girls at a little under 12 years and approximately at the same time a definite minimum rate of growth for boys.

In the case of weight a pronounced maximum rate of increase is shown for girls at a little over 12 years, while for boys the rate of increase does not show a pronounced maximum or minimum between the ages of 11 and 14, and is fairly constant between 12½ and 14 at 9½ per cent. These results suggest the advisability of a differentiation of educational curriculum for boys and girls between the ages of 11 to 14, and no doubt have a bearing on the fact that the percentage of boys who win Junior National Scholarships (age-limit, 13 years) is twice that of girls. The present survey also showed diversity of interests of boys and girls at this stage, the boys securing 20 per cent. higher scores than the girls in geography and history, although the girls scored equally or higher in reading and comprehension, there being very little difference between the sexes shown in the total score.

It is interesting to note the age at which the girls attain superiority in height and weight in the various countries. This gives an indication of the period of the commencement of growth-acceleration of the girls. In Australia this occurs approximately at 11 years of age, in New Zealand at 11½ years, and in Great Britain at 11½ years in the case of height and 12 years in the case of weight. It is worthy of note, however, as will be seen from the figures for the Auckland District, which are indicated by crosses on the diagram, that the conditions in Auckland approximate more nearly to those in Australia. In general, however, it should be noted that the maximum excess of girls both in height and weight over boys is considerably larger in New Zealand than in Great Britain or Australia. These results are shown in the following graph, which shows the period of onset and amount of differentiation in growth between boys and girls.





It would appear that climate is not without influence on the period of differentiation of development, as in Graph Z, the indication being that in Australia and in the northern part of New Zealand differentiation occurs at approximately the same period. An interesting comparison will be possible when data for Maoris, Rarotongans, and other native races are available.

Table 6.—Average Physical Measurements by Age, showing Rate of Increase: Boys.

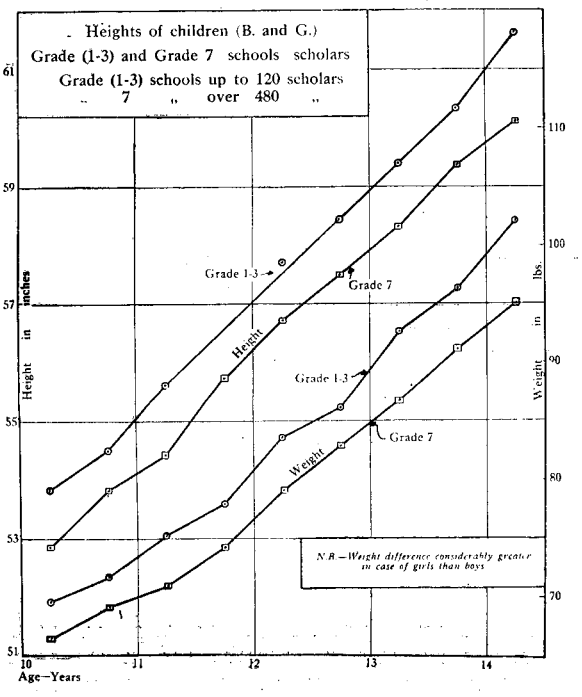
Nearest Age.	Height.	Yearly Increase.	Percentage of Yearly Increase.	Weight.	Yearly Increase.	Percentage of Yearly Increase.	Sitting Height.	Percentage to Standing Height.	Chest.
	In.	In.		lb.	lb.		In.		In.
10½	53·85	..	..	69·2	..	..	..	..	25·0
11	54·7	1·65	3·0	71·8	4·5	6·3	28·3	51·8	25·25
11½	55·5	1·4	2·5	73·7	4·7	6·4	28·5	51·5	25·6
12	56·1	1·4	2·5	76·5	6·0	7·8	28·7	51·2	25·9
12½	56·9	1·7	3·0	79·7	7·5	9·4	29·0	51·0	26·2
13	57·8	1·9	3·3	84·0	8·0	9·5	29·4	50·8	26·5
13½	58·8	2·0	3·4	87·7	8·3	9·4	29·7	50·5	27·2
14	59·8	1·95	3·2	92·3	9·3	10·1	30·2	50·5	27·8
14½	60·75	..	..	97·0	..	..	30·7	50·3	28·4

Table 6A.—Average Physical Measurements by Age, showing Rate of Increase: Girls.

Nearest Age.	Height.	Yearly Increase.	Percentage of Yearly Increase.	Weight.	Yearly Increase.	Percentage of Yearly Increase.	Sitting Height.	Percentage to Standing Height.	Chest.
	In.	In.		lb.	lb.		In.		In.
10½	53·45	..	..	67·3	..	..	27·7	51·9	23·95
11	54·4	2·05	3·8	71·0	7·3	10·3	28·0	51·5	24·3
11½	55·5	2·25	4·0	74·3	8·2	11·0	28·5	51·45	24·8
12	56·65	2·6	4·75	79·2	10·3	13·0	29·2	51·5	25·2
12½	58·1	2·45	4·2	84·6	10·0	11·8	29·8	51·3	25·7
13	59·1	1·7	2·85	90·2	9·9	10·9	30·3	51·3	26·1
13½	59·8	1·45	2·4	94·5	9·6	10·15	30·7	51·4	26·5
14	60·55	1·5	2·45	99·8	9·9	9·9	31·0	51·5	27·0
14½	61·3	..	..	104·4	..	..	31·2	51·0	27·3

Height and Weight according to Rural, Small Towns, or City Areas.

Children were divided into groups: (1) Children attending schools below Grade IV—that is, those living in rural areas; (2) children attending schools of intermediate grades—that is, those living in country towns; (3) city children. Children of the first group (those of the rural areas) show a definite superiority in the average for both height and weight over children in country towns or large cities. This finding is in accordance with that of various authorities in England, America, and Australia.



Compare with results of "Preliminary Study of Standards of Growth in the Detroit Public Schools," Packer and Moehlenan, Detroit Educational Bulletin, June, 1921, in which it is deduced that boys grow faster than girls up to 10½ years, and girls faster than boys from 10½ years to 15 years.

Weight and Height according to Father's Occupation.

Children were divided into groups according to the occupation of the father, as follows:—

Professional: (1) Architect; (2) chemist; (3) clergyman; (4) dentist; (5) doctor; (6) journalist; (7) lawyer, solicitor; (8) surveyor; (9) teacher.
(10) *Clerical:* Including accountant, agent, book-keeper, Civil servant, "Post Office," public servant, secretary, and similar occupations.
(11) *Shops, Trading, &c.:* Auctioneer, barber, bookseller, butcher, chemist, hairdresser, hotelkeeper, "merchant," photographer, shop-assistant, storekeeper, traveller, warehouseman.
(12) *Industrial (higher):* Blacksmith, bricklayer, carpenter, contractor, electrician, engineer, linesman, "manager," mechanic, "operator," painter, plumber, policeman, "Public Works," "Railways," and similar occupations.
(13) *Labouring, &c.:* Carrier, caretaker, driver, navvy, porter, seaman, watchman, watersider, "worker."
(14) *Farming.*
(15) *Not stated.*

The children of farmers are tallest, being closely followed by those of professional men. With regard to weight, however, farmers' children are seen to be markedly heavier than the average, the difference increasing with age, while the children of professional men, though taller than the average, show no excess in weight. It is to be noted that the superiority of farmers' children is most pronounced at 13 years—*i.e.*, period when food and fresh air, &c., are most in demand.

Investigations in various parts of Europe and America agree in showing the superiority of the children of the well-to-do classes over those of the less privileged, both with regard to height and weight. Terman, in the "Hygiene of the School Child," page 37, says, "In some cases social class is even more potent in determining size than race itself." In New Zealand, however, the average of well-being is at least as great as, and probably greater than, in any other country. Extremes of poverty and riches found in older lands and incidental to industrialism are absent, the necessities for healthy growth being available for almost all. It follows that superior social status does not give such distinctive advantages in nurture and in education in New Zealand as it apparently does in older lands.

Table 7.—Heights by Father's Occupation (Inches).

Age.	Professional.	Clerical.	Shops.	Industrial.	Labouring.	Farming.
10 years 6 months to 11 years 5 months	55·1	54·4	54·5	54·4	54·4	55·1
11 years 6 months to 12 years 5 months	56·7	56·7	56·3	55·8	56·4	56·8
12 years 6 months to 13 years 5 months	58·75	58·4	58·2	58·1	58·2	58·8

Farmers' children taller than average by 0·4 in.; children of professional men nearly as tall as those of farmers.

Table 7A.—Weights by Father's Occupation (Pounds).

Age.	Professional	Clerical.	Shops.	Industrial.	Labouring.	Farming.
10 years 6 months to 11 years 5 months	72·4	70·7	72·1	71·6	..	74·2
11 years 6 months to 12 years 5 months	77·5	78·7	78·1	77·3	77·8	80·8
12 years 6 months to 13 years 5 months	85·4	85·5	85·3	85·8	85·2	90·5

Farmers' children heavier than average, difference increasing with age; children of professional men, although taller than average, show no excess in weight.

Height and Weight by Age and Parentage.

Approximately five thousand children were divided into groups as follows: (1) Both parents born in New Zealand; (2) one parent born in New Zealand and one abroad; (3) both parents born abroad.

A comparison of the average height and weight of different groups at various ages failed to establish definite superiority in any group with regard to height. With regard to weight, no marked difference is to be noted between groups (1) and (2), though there is evident a consistent slight advantage in the average of group (1) to that of group (3).

As New Zealand's population is over 90 per cent. British stock, in view of the superior stature and weight of New Zealand children to those of Great Britain (already quoted), results suggest either the influence of selection in immigrants to this country or a rapid approximation to the New Zealand type on the part of their children. It is interesting to note that Dr. Harvey-Sutton found that Australian children with two Australian-born parents were taller and heavier than those with one Australian-born parent, and showed even greater superiority in height and weight over those with two parents born abroad.

Table 8.—Heights by Age and Parentage (Inches).

Age.	(1) Both Parents born in New Zealand.	(2) One Parent born in New Zealand and one Abroad.	(3) Both Parents born Abroad.
10 years 6 months to 11 years 5 months ..	54·6	54·5	54·2
11 years 6 months to 12 years 5 months ..	56·4	56·5	56·4
12 years 6 months to 13 years 5 months ..	58·4	58·3	58·3
13 years 6 months to 14 years 5 months ..	60·2	60·15	60·2

Table 8A.—Weights according to Age and Parentage (Pounds).

Age.	(1) Both Parents born in New Zealand.	(2) One Parent born in New Zealand and one Abroad.	(3) Both Parents born Abroad.
10 years 6 months to 11 years 5 months ..	72·0	71·8	70·2
11 years 6 months to 12 years 5 months ..	78·45	78·6	78·1
12 years 6 months to 13 years 5 months ..	86·5	86·8	85·8
13 years 6 months to 14 years 5 months ..	95·25	95·5	94·2

Physical Growth and Mental Attainment.

In considering the interrelation between the physical growth and good mental attainment the total results of this survey show that the average height and weight of children of good mental attainment is greater than those of inferior ability.

Children were divided into three groups—superior, average, and inferior intelligence.* The average height and weight of the superior group at ages 11 to 14 was found to be uniformly greater than those of average children, and still more markedly so for those of inferior intelligence (see Tables 9 and 9A). This observation is in accordance with many others made in Europe and America: see Terman, "Hygiene of School Life," and Stanley Hall, "Adolescence."

Records of height and weight for the boys residing at Otekaike, a school for the feeble-minded, show that they are below the average for New Zealand school-children both in height and in weight.

When mental attainment is considered in relation to the occupation of the father it is found that children of the professional classes show superiority, the superiority being most marked for the children of doctors and of journalists.

We have apparently inconsistent results, in that we find country children on the average taller and heavier than town children, and yet, as far as the "academic" test determines, intellectually inferior. This apparently contradicts our finding that increased height and weight, on the average, go with increased mental development. Nevertheless, in considering either the town or country group by itself, our conclusion holds good. The real interpretation may possibly be that individuals above the average in academic attainment but of smaller physique, who are therefore not equally endowed as manual labourers, tend to migrate towards the city. Town life, no doubt, is a contributing factor towards the result.

The relationship of physical growth to mental attainment is important in view of the popular idea that tall children should be given lighter tasks at school in order that the greater output of energy required in growth should be compensated for by a less expense of mental energy. If, however, good physical and mental development go together this is an unsound practice, as the mind equally with the body requires food appropriate to its stage of growth, and, instead of being benefited by restriction, is dulled and thwarted. This does not mean that intelligent children should be crammed to the fatigue point, but that education conducted on sound lines must consider not only the chronological age of pupils but must take note of the stage of their mental development.

There is evidence from scholarship results and also from the Education Department intelligence survey of 1924 that where adolescent acceleration occurs earlier, as in the northern parts of New Zealand, the mental development is correspondingly quickened temporarily. This has a practical bearing upon the junior-high-school system, which takes into consideration individual aptitudes and mental attainment, and with its variable curriculum should be adaptable to differing individuals.

* The intelligence score was derived from general tests, including and largely dependent on tests in "reading and comprehension" and arithmetic reasoning. The test result correlated well with results of Otis and Terman group tests.

Table 9.—Heights in Inches according to Intelligence.

Nearest Age. (A.)	Intelligence. Inferior. (B.)	Average.	Superior.
11	54·4	55·3	56·0
12	56·2	56·6	57·0
13	57·0	58·4	59·2
14	59·8	60·1	60·5

The degree of intelligence inferiority of children as based on I.Q. and referred to in column (B) is not quite the same for each age in column (A).

Table 9A.—Weights in Pounds according to Intelligence Score.

Age. (A.)	Intelligence. Inferior. (B.)	Average.	Superior.
10 years 6 months to 11 years 5 months ..	70·9	72·1	75·0
11 years 6 months to 12 years 5 months ..	78·1	79·0	80·2
12 years 6 months to 13 years 5 months ..	86·2	88·0	89·6
13 years 6 months to 14 years 5 months ..	94·0	94·7	97·5

The degree of intelligence inferiority of children as based on I.Q. and referred to in column (B) is not quite the same for each age in column (A).

Conclusions.

1. New Zealand school-children between the ages of 10 to 15 years show excess in height and weight when compared with the available statistics relating to those of Australia, Great Britain, America, and Toronto.

2. New Zealand town school-children have definitely improved in height and in weight during the years 1913–25.

3. Sitting height relatively to standing height is less in New Zealand children than in Glasgow children.

4. There is no definite difference to be found in height of New Zealand children grouped according to birthplace of parents, New Zealand or abroad. In weight, children of New-Zealand-born parents show superiority.

5. Children of farmers are tallest and heaviest. Children of professional men are almost as tall as farmers, but show no excess in weight over the average.

6. The average height and weight of children attending rural schools is appreciably greater than of those living in the city.

7. The average height and weight of children with good mental attainment is greater than of those with inferior ability.

In conclusion, we wish to express our indebtedness to Mr. W. Yates, of the Education Department, for his willing assistance in the compilation of the tables.

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Table 9.—Heights in Inches according to Intelligence.

Nearest Age. (A)	Intelligence. Inferior. (B)	Average.	Superior.
11 ..	54·4	[illegible]	56·0
12 ..	56·2	[illegible]	57·0
13 ..	57·0	58·4	59·2
14 ..	59·8	60·1	60·5

The degree of intelligence inferiority of children as based on I.Q. and referred to in column (B) is not quite the same for each age in column (A).

Table 9A.—Weights in Pounds according to Intelligence Score.

Age. (A)	Intelligence. Inferior. (B)	Average.	Superior.
10 years 6 months to 11 years 5 months ..	[illegible]	[illegible]	[illegible]
11 years 6 months to 12 years 5 months ..	78·1	79·0	80·2
12 years 6 months to 13 years 5 months ..	86·2	88·0	89·6
13 years 6 months to 14 years 5 months ..	94·0	94·7	97·5

The degree of intelligence inferiority of children as based on I.Q. and referred to in column (B) is not quite the same for each age in column (A).

CONCLUSIONS.

1. New Zealand school-children between the ages of 10 to 14 years show excess in height and weight when compared with the available statistics relating to those of Australia, Great Britain, America, and Toronto.

2. New Zealand town school-children have definitely improved in height and in weight during the years 1913–35.

3. Sitting height relatively to standing height is less in New Zealand children than in Glasgow children.

4. There is not definite difference as is found in height of New Zealand children grouped according to birthplace of parents, New Zealand or abroad. In weight, children of New Zealand born parents show superiority.

5. Children of farmers are tallest and heaviest. Children of professional men are almost as tall as farmers', but show no excess in weight over the average.

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