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NEW ZEALAND.

DEPARTMENT OF HEALTH.

ANNUAL REPORT OF THE DIRECTOR-GENERAL OF HEALTH.

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

HON. P. FRASER, MINISTER OF HEALTH.

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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 1937–38.

PART I.—GENERAL SURVEY.

The year 1937 is memorable for an outbreak of poliomyelitis, which from point of view of magnitude and severity ranks with the major epidemics of 1916 and 1925. Other noteworthy features of the year were, on the one hand, a rise in the death-rate and, on the other, a further rise in the birth-rate, a drop in the death-rate from tuberculosis, a continued low level of infant mortality and a substantial reduction in deaths from puerperal causes other than deaths from septic abortions.

VITAL STATISTICS.

(Exclusive of Maori.)

Death-rate.—The death-rate was 9·08 per 1,000 mean population, as compared with a rate of 8·75 in the preceding year. This is the highest rate since 1920, when it was 10·15. In view of the increasing number of people in our midst of advanced years the rise in the death-rate was not unexpected. The Government Statistician in his report on the vital statistics for the year 1936, commenting upon the changes in the age-constitution of the population and its effect on the death-rate, had this to say :—

> " There appears to be little likelihood of any further drastic reduction in the death-rate from diseases of infancy and early adult life, and unless public-health measures meet with more success in the prolongation of human life-span through the amelioration of the degenerative diseases of old age, the time cannot be far distant when the death-rate will begin to advance fairly rapidly."

Infant Mortality.—The infant-mortality rate was 31·21 per 1,000 live births, being slightly higher than the record low figure of 30·96 in 1936.

Still-births.—The still-birth rate was 29·38, representing a slight improvement on the 1936 figure of 29·5.

Birth-rate.—The total births were 26,014, equivalent to a rate of 17·29 per 1,000 mean population. This is the highest rate recorded since 1931.

Maternal-mortality Rate.—The maternal-mortality rate, including deaths from septic abortions, was 3·57 per 1,000 live births, as compared with 3·70 in 1936. The number of septic abortions was 23, against 14 in 1936.

The trend of the maternal-mortality rate is shown in the following table :—

Deaths from Puerperal Causes, 1928–37.

Year.	Number.	Rate per 1,000 Live Births.	Year.	Number.	Rate per 1,000 Live Births.
1928	134	4·93	1933	108	4·44
1929	129	4·92	1934	118	4·85
1930	136	5·08	1935	101	4·21
1931	127	4·77	1936	92	3·70
1932	101	4·06	1937	93	3·57

The Government Statistician in the *Abstract of Statistics* for March, 1938, brings out a point which may well be referred to here :—

> " Among the deaths due to puerperal causes each year are included a considerable number resulting from conditions which should not be considered a normal hazard of the puerperal state. While it is impossible to differentiate these definitely, there can be no doubt that the great majority of septic-abortion cases should be classed under this heading. A truer index of maternal mortality than is afforded by the figure of puerperal mortality can thus be arrived at by deducting from the latter all cases of abortion where septic conditions are reported.

" *Deaths from Puerperal Causes, excluding Septic Abortion, 1928–37.*

Year.	Number.	Rate per 1,000 Live Births.	Year.	Number.	Rate per 1,000 Live Births.
1928	120	4·41	1933	82	3·37
1929	110	4·11	1934	76	3·12
1930	106	3·96	1935	78	3·25
1931	98	3·68	1936	78	3·14
1932	75	3·02	1937	70	2·69

> " On this basis the 1937 maternal-mortality rate shows a substantial decrease from the previous year, and is, in fact, the lowest rate ever recorded in New Zealand."

Infectious and other Diseases.

(Exclusive of Maori, unless otherwise stated.)

The total number of cases of notifiable diseases in 1937 was 4,203, compared with 3,652 in 1936. This increase is largely accounted for by the epidemic of poliomyelitis, to which reference is made later. Otherwise the year was comparatively uneventful.

Scarlet Fever.—This disease was less prevalent, 924 cases and 6 deaths being reported, as against 1,152 cases and 8 deaths in 1936. The death-rate was 0·04 per 10,000 (0·05 in 1936).

Diphtheria.—Five hundred and ninety-nine cases of diphtheria were notified in 1937, as compared with 513 cases in 1936. Twenty-four deaths were recorded, giving a death-rate of 0·16 per 10,000, as compared with 20 deaths and a rate of 0·13 in 1936.

Medical workers at the Connaught Laboratories, University of Toronto, Canada, in an article contributed to *The Lancet*, of 12th February, 1938, give additional support to the growing volume of medical evidence as to the value of active immunization in the prevention of diphtheria. The following is an extract from this article :—

> " Records show striking declines in diphtheria morbidity and mortality and in the incidence of carriers in various cities and provinces in Canada following the wide use of ' toxoid.' The abruptness of this decline in diphtheria morbidity and mortality and in the incidence of diphtheria-carriers in Canada following the extensive use of toxoid, the absence of any comparable diminution of the number of cases or of deaths from diphtheria before the use of toxoid, and the demonstrated efficiency of toxoid in preventing diphtheria in those vaccinated, leave no doubt that the decline is due to immunization. The extent of the decline in several of the large cities and certain of the provinces of Canada shows indubitably that diphtheria is a preventable disease."

Dr. Maclean, Medical Officer of Health, Wellington, in reporting on an outbreak of diphtheria at the Wellington Hospital, writes :—

"A number of cases occurred among child patients and nurses in the Wellington Hospital. Over a period of four months there were twenty-six cases among patients and nine cases among nurses. In addition, a masseuse working at the hospital and a female employee in the laundry contracted the disease. Wholesale swabbing was carried out from time to time, and five carriers among the patients and six among nurses were found at different times. The occurrence of cases continued over the whole period of four months, and no one source of infection could be discovered. No patients other than inmates of one or other of the children's wards were infected, and all the nurses concerned, with one exception, were nursing either in the fever hospital or in the children's wards. The masseuse who contracted the disease was treating children in the poliomyelitis ward, and the laundress had handled soiled linen from the infected children's wards.

"There can be little doubt that the spread of infection was assisted by the grossly overcrowded condition of the wards, combined with under staffing and a general lack of facilities for a high standard of nursing technique. Once infection had gained an entrance the conditions of overcrowding would make its eradication difficult."

Dr. Turbott, Medical Officer of Health, Hamilton, writes :—

"Diphtheria shows a rise from a rate of 4·78 in 1936 to 6·47 per 10,000 in 1937. There were 88 cases, 6 only being in Maoris. There were 3 deaths—2 in Maoris, one European—death-rates respectively 1·19 and 0·08 per 10,000.

"The Maori seems to have a lower resistance than the pakeha to many diseases, and this shows up once again in this disease usually regarded as a pakeha disease. As last year, there is again in 1937 a marked difference in incidence in South Auckland and East Cape districts where immunization was carried out some years ago. Compare the South Auckland 6·47 with the East Cape 2·81 for the current year, the former district not having had a mass immunization campaign. The position is now being rectified, as, commencing in May, a mass immunization campaign was inaugurated in South Auckland using anatoxin as the prophylactic. Approximately 10,000 children have been approached by the end of the year and of these, 5,392 were dealt with by parental consent, the others having to be passed by, the immunization offer being unfulfilled by the parents."

A preliminary report of this work by Dr. Helen Deem and Dr. H. B. Turbott appears as an appendix to this report.

Enteric Fever.—Fifty-five cases were notified with a death-rate of 0·06 per 10,000, as compared with 61 cases and a death-rate of 0·05 in 1936. The wide installation of public water-supplies and of modern systems of sewage disposal have been the factors chiefly responsible for the remarkable decline of this group of diseases in the European section of the community, while in the case of the Maoris anti-typhoid inoculation has played a substantial part. The future solution of the problem lies mainly in the provision of safer water-supplies and of a higher standard of sanitation in Maori communities. At present the dangers of epidemics are always imminent in this section of our population, as illustrated in the following account by Dr. Hughes, Medical Officer of Health, Auckland, of an outbreak at the Great Barrier Island :—

"The outbreak of typhoid at the Great Barrier first occurred at Kawau Bay on March 22nd in a Maori school child who was brought to Auckland and nursed by his own mother. On April 20th two of his relations took ill at the Barrier. On May 5th a brother of the first child was absent from school for three weeks, while on May 10th another brother aged 10 took ill, and then the father took ill about May 30th. About May 20th five other cases occurred at Kawau Bay and Catherine Bay among the Maoris, and three took ill at Motairehe Bay in one family.

"In July three further cases occurred. The cases had been treated by the Hospital Board nurse as being influenza cases, and it was not till late in June that the Department was advised of any illness, and the nurse visited the Department and the symptoms stated by her went to confirm her diagnosis of influenza with complication of pneumonia in one or two cases. In July, from information from Maoris who had visited Auckland, it was decided that a visit be made to the Island, and Dr. Gilberd visited by aeroplane. Visits were paid to all Natives, and specimens were obtained of blood from ten patients who had been ill and recovered. Eighty-seven Maoris were inoculated at the different bays, and four others in Auckland who had been contacts were also inoculated. Specimens of urine and four fæces specimens also were obtained from Maoris who had been ill. Steps were taken in the settlements to have improvements carried out concerning the sanitation.

"A second visit to the Island was made in August and T.A.B. inoculations continued, also medical and sanitary surveys made. Second inoculations were carried out where necessary. Six more Maoris were inoculated and seventy-three were given the second injection. No further cases occurred. On August 28th another visit was paid by aeroplane to see the only patient that had not recovered, and a trained nurse was taken to the Island to nurse the patient and relieve the district nurse."

Influenza.—The death-rate for influenza (all forms) declined from 0·94 per 10,000 in 1936 to 0·73 in 1937.

Poliomyelitis.—The number of cases of poliomyelitis reported for the year was 765; of these, 557 were paralytic and 208 non-paralytic. Forty-three deaths occurred—39 Europeans and 4 Maoris. A full account of the epidemic which began in December, 1936, at Dunedin appears as an appendix to this report.

The measures taken by the Department to deal with the outbreak were outlined in last year's report.

Lethargic Encephalitis and Cerebro-spinal Meningitis.—Three cases of the former disease (7 in 1936) and 13 of the latter (12 in 1936) were reported.

Puerperal Sepsis.—Sepsis following childbirth was responsible for 6 deaths in 1937, as compared with 9 in 1936. Sepsis following abortion, on the other hand, accounted for 23 deaths in 1937, as against 14 in 1936.

Whooping-cough and Measles.—The total deaths from whooping-cough numbered 13 (47 in 1936), while 4 deaths were recorded for measles. The continued low level of measles for several years means an ever-increasing number of susceptibles with the risk of a wide-spread epidemic. It occasioned no surprise then that measles reported first in North Auckland towards the end of 1937 has since spread to other parts of New Zealand in epidemic form. An account of this outbreak will be given in next year's report. At present it need only be said that the disease was relatively severe with numerous fatalities (47 in North Auckland Health District with a total population of 66,000) and with encephalitis as an occasional complication. The disease, as usual, proved more fatal among Maoris than among Europeans.

Tuberculosis.—There were 589 deaths from tuberculosis (all forms), as compared with 680 in 1936. The death-rate per 10,000 for the past five years is shown in the following table—

Year.	Respiratory Tuberculosis.	Non-respiratory Tuberculosis.	Tuberculosis, all Forms.
1933	3·25	0·92	4·17
1934	3·33	0·88	4·21
1935	3·18	0·71	3·89
1936	3·62	0·94	4·56
1937	3·28	0·63	3·91

The figures for respiratory tuberculosis are the third lowest recorded in New Zealand; for non-respiratory, the lowest; and for all forms the second lowest. It is satisfactory to note the decline in the rate for all forms in 1937. In last year's report an account was given of measures being taken against this disease.

Silicosis.—The Department was represented on the Inter-Departmental Committee which investigated the question of silicosis in New Zealand. The report of the Committee has been issued by the Department of Scientific and Industrial Research as Bulletin No. 57.

The Tuberculosis Research Committee of the newly constituted Medical Research Council has been asked to investigate the question of silicosis in its association with tuberculosis.

Hydatid Disease.—During the year the Dogs Registration Act, 1908, was amended to make it compulsory for all dog-owners to purchase an approved remedy for tapeworm in dogs before registration is granted. The amendment comes into force on the 1st January, 1939. Under this legislation local authorities which deal with the registration of dogs are charged with the duty of keeping supplies of the approved remedy. Printed instructions regarding the administration of the remedy and the methods of prevention of hydatid disease will also be issued along with the approved remedy.

These increased powers will be most helpful, but their full effect can only be achieved with the intelligent co-operation of the farming community.

Cancer.—The New Zealand Branch of the British Empire Cancer Campaign Society continues to afford the Department willing co-operation and expert guidance.

The Commonwealth Government of Australia has accepted an invitation to hold its annual Cancer Conference in New Zealand in 1939, and has suggested that in future the conference should be known as the Australian and New Zealand Cancer Conference. This further evidence of co-operation between the Commonwealth of Australia and New Zealand in this connection is most gratifying.

Venereal Diseases.—As pointed out in last year's report, these diseases show no signs of increasing. This is brought out by the tables summarizing the returns of treatment of venereal diseases in the four main centres and appearing later in this report.

Reports of Divisional Directors.

Public Hygiene.—Dr. Ritchie, in his report, gives fuller statistical information for the year. The usual action was taken for safeguarding water-supplies and for promoting modern methods of sewage disposal and treatment. Many other matters, such as the supervision of swimming-baths, camping-grounds, and milk schemes, control over industrial and trade wastes, also received attention. The measures to deal with the epidemic of poliomyelitis, of course, entailed much additional administrative work.

School Hygiene.—During the year Dr. Elizabeth Gunn was appointed Director of this Division. School Medical Officers continued to carry out examinations of pre-school children and children attending kindergarten and convent schools, the service being much appreciated. Other important matters coming under the attention of this Division were the Milk-in-schools Scheme and health camps. Health educational addresses on such subjects as diet, general health, &c., were given to parents, teachers, and school-children. Children in contact with pulmonary tuberculosis have been kept under close observation.

Hospitals.—Hospital Boards generally have shown considerable activity in building programmes to provide the necessary accommodation for patients and nurses. In this connection it is interesting to note that the estimated capital expenditure, excluding loan expenditure during the year, amounted to some £248,864, of which £97,719 was required to be met by current levy and a similar amount by subsidy. This represented an increase of £21,262 on each of these sources of revenue compared with the estimates for the previous year.

The estimates continue to show increase in maintenance-costs, but it is gratifying to note that the estimated receipts from patients' fees and charitable-aid recoveries provided for the substantial increase of £84,923.

A reduction of £51,497 was estimated in charitable-aid expenditure to recipients of outdoor relief due to the falling off in applications for assistance. The improved positions with patients' fees, charitable-aid recoveries, and outdoor relief is accounted for largely by the Government's pension legislation as well as by improved economic conditions.

During the year the amalgamation was effected, under the provisions of the Hospitals and Charitable Institutions Amendment Act, 1932, of the Thames and Waihi and Coromandel Boards, to be known as "the Thames Hospital Board," and of the Wallace and Fiord and the Southland Boards, to be known as "the Southland Hospital Board."

A Royal Commission was appointed to inquire into and report upon certain matters relative to the management and administration of the Napier Hospital. The personnel of the Commission was E. D. Mosley, Esq., Principal Stipendiary Magistrate (Chairman), Sir James S. Elliott, Kt., and Miss Cecilia McKenny, R.N. As a result of the Commission the administration of the hospital has been placed on a more satisfactory basis.

Full statistical and financial information in regard to hospitals is published in a special appendix to this report.

Nursing Division.—At the beginning of 1937 the Rockefeller Foundation granted Miss Lambie a travelling fellowship which enabled her to visit North America, Great Britain, and the Continent of Europe. In her report Miss Lambie deals with various matters for improving the nursing services in New Zealand and submits suggestions arising from her study of nursing administration in other countries. Among other matters to which attention is drawn are factors bearing on the shortage of nurses, improvement of the obstetrical nursing service, health of nurses, and the post-graduate course for nurses.

Maternal Welfare.—Measures for the promotion of maternal welfare are reviewed by Dr. Paget. The Queen Mary Maternity Hospital, Dunedin, which was opened during the year, will afford better facilities for the training of medical students in obstetrics. The Committee appointed to inquire into maternity services continued to take evidence throughout New Zealand, and their report can be expected to give a comprehensive review of the existing position and of necessary improvements.

The encouraging progress that has been made over the last eleven years in maternal welfare in New Zealand has been achieved by the combined effort of and close co-operation between general practitioners, medical officers of maternity hospitals and clinics, medical practitioners practising obstetrics, and the officers of the Department.

Dental Hygiene.—The Director reports that during the year 1,568 schools were under systematic treatment, 89,483 children received treatment, and 759,873 operations were performed. The programme for extending the School Dental Service to all primary schools within the next three years is proceeding according to plan. The new building in Wellington, which is in course of erection, will, when completed, provide adequate facilities for a modern clinic and training-school. The appointment of seventy-six student dental nurses and provision for twenty-two new clinics was authorized. Additional staff is to be appointed to extend the scope of fourteen of the existing clinics. An account is given of an emergency scheme of dental treatment of North Auckland Maoris carried out through the co-operation of the School of Dentistry, Otago University. In ten days 2,881 patients received attention, while 16,270 teeth were extracted.

Maori Hygiene.—The following table shows a comparison between Maori and European vital statistics :—

	Maori.	European.
Birth-rate per 1,000 of population..	46·64	17·29
Infantile death-rate per 1,000 live births	92·17	31·21
Crude death-rate per 1,000 of population	18·29	9·08
Natural increase, per cent.	2·45	0·82
Crude death-rates per 10,000 of population—		
Tuberculosis, all forms	35·70	3·91
Pulmonary tuberculosis	27·72	3·28
Other forms of tuberculosis	7·99	0·63
Influenza	3·99	0·73
Typhoid fever	2·35	0·06

It will be noted that the Maori rates generally compare unfavourably with the European. The position is realized by the leaders of the Maori people, and the following account by Dr. Turbott of the formation of a rural Maori health unit at Tokaanu shows what can be done by the Maoris to help themselves :—

"At Tokaanu, in the Taupo County, in 1937, a reasonably complete rural Maori health unit was put into effective practice with the co-operation of the Tuwharetoa Trust Board. At their annual meeting the Board followed the advice of Dr. Turbott, Medical Officer of Health, and budgeted about one-third of their income for health purposes as follows :—

"Base hospital provision, £200. Securing free hospital treatment at Rotorua or Taumarunui Hospital for area members.

"District nursing provision, £300. £150 towards existing nurse at Tokaanu; £150 towards providing a second nurse at Taupo.

"Dental clinic provision, £200. The capital required to further an application for establishment of a clinic in the area.

"Urgent dental work (children), £100.

"With this financial co-operation went the good will of the Board and its secretary. As a consequence the following results have accrued in this area :—

"Hospital treatment provision is limited to those approved as necessary by the district nurse, who calls in the local Taupo medical practitioner for advice in difficulties in diagnosis.

"Home treatment of sickness is supervised by the district nurse, with the doctor's assistance as required.

"Infant-welfare is thoroughly provided for. Every baby in the area is under the district nurse's care, either on breast feeding or artificial feeding. Baby is weighed regularly and records kept and the artificially fed ones have the special additional supervision of the School Medical Officer who gives the district nurse regular advisory help.

"School welfare has been given thorough attention through medical examinations and regular district nurse visits to schools. In addition, dried milk with cod-liver oil or artificial vitamin has been given school-children daily in an attempt to overcome home dietary deficiencies. Anti-typhoid inoculation of scholars was effected.

"Dental work, urgent, in children was contracted for through the co-operation of a Napier dentist. The work was limited to extractions. The operations were performed at the respective schools under considerable working difficulties, 288 children had 698 extractions performed. The total fees charged were £83 10s., slightly under 2s. 6d. per extraction. Transport of the dentist between the schools was provided by the district nurse.

"Ante-natal work was organized. All expectant mothers of the area come under the district nurse's care. The local man sees every mother once before delivery, and advises which cases may be left for home delivery and which hospitalized. The district nurse has a bi-monthly doctor's ante-natal clinic, thus minimizing travelling for the doctor. In between she attends to routine ante-natal care.

"Sanitation work has been kept before the people, through co-operation of the local Health Inspector. Septic-tank installation was provided at the school. Water-supply proposals for Tokaanu are having investigation. Trust Board are pushing new housing for their people as fast as possible.

"Health education work has been intensified by the nurse giving personal home instruction in the home itself. Having a limited district (population approximately 1,000 Maoris), the nurse is able to visit every home; the need for formal lectures is reduced, therefore, though these have been supplied on several occasions by the School Medical Officer on infant welfare to gatherings of adults of both sexes. The district nurse gives formal lectures to school-children, and these are to be turned in 1938 to practical issues—the practice of baby welfare for bigger girls, cooking for invalids, baby sewing and clothes, &c."

A scheme for the better treatment and control of Maori cases of pulmonary tuberculosis in the Waiapu County was initiated by Dr. Turbott, Medical Officer of Health. The objective of the scheme is to facilitate the partial segregation and, therefore, the convenient nursing and oversight of these cases and their education in hygienic precautions and at the same time to facilitate measures to improve the economic and industrial position of the bread-winners.

Approval was received for a supply of suitable hutments, and these are being constructed by the Public Works Department. The cases segregated in these hutments will be under the supervision of the Medical Officer of Health and his nurses. This step represents an advance toward combating the spreading of tuberculosis among the Maori people of this district. If this scheme is successful in the Waiapu County, then it will readily allow of adoption for other Maoris all over New Zealand.

General.

Milk-in-schools Scheme.—The Milk-in-schools Scheme came into active operation in March, 1937. It progressed to the point where one year after its inception milk was available to approximately 157,000 children, or 55 per cent. of the total school population of the Dominion. Contracts are now in train which should result in the milk being made available to an additional 18,000 children.

The scheme provides for the supply, free of cost, of high-grade pasteurized milk in half-pint bottles to children attending all schools—public, private, or denominational. Where pasteurized milk is not available two alternatives are offered—

(1) Dried malted milk; and
(2) Milk for cocoa-making.

It is estimated that some 8,000 Maori children will receive malted milk in the near future. Within sixteen months of the inception of the scheme, then, milk should be available to approximately 183,000 children, or 64 per cent. of the total school population.

Medical Officers testify to the good effect of the milk upon children. Two typical statements are the following:—

"The school milk ration is proving popular amongst the children, and according to the reports of the School Medical Officer is of distinct benefit to the pupils, improving their physical condition and their general state of alertness."—*Dr. Telford, Christchurch.*

"Many school-teachers report favourably upon the beneficial effect of the extra milk ration, and there is little doubt that much good will result from it."—*Dr. Maclean, Wellington.*

Health Camps.—Last year the health-camp movement was placed on a firmer basis by the formation of a National Health Camp Federation. The four Central Councils of the Federation have been entrusted with the task of preliminary selection of suitable sites for the permanent health camps which are to be erected from the proceeds of the King George V Memorial appeal (approximately £176,000). Considerable progress has been made, and it is hoped that the matter will now have reached a stage when the Dominion Advisory Board can place its recommendations before the Hon. the Minister of Health and the trustees of the fund.

Health camps in the past have relied in great part for funds for maintenance upon moneys collected from the sale of health stamps. The annual campaign for this object last Christmas season realized only some £3,700. No doubt the result was affected by the outstanding success of the King George V Memorial appeal launched earlier in the year. The Government made an allocation of art-union moneys towards the funds for maintenance of the camps.

The health-camp movement has continued to show vigorous progress during the past year, and a number of successful camps were held throughout the summer.

Medical Research.—One of the functions of the Department is "to promote or carry out researches and investigations in relation to matters concerning the public health and the prevention or treatment of disease" (section 12 (*d*), Health Act, 1920).

Heretofore, however, medical research undertaken in New Zealand has been of a limited nature and has consisted of a few field studies carried out by departmental officers, of laboratory investigations carried out at the Otago Medical School, and of researches prosecuted by the New Zealand Branch of the British Empire Cancer Campaign Society.

There is growing appreciation of the fact that the time has arrived when we should take more active steps to investigate medical problems in which we are particularly interested or to contribute towards knowledge of problems not necessarily peculiar to ourselves. As a first step the Medical Research Council was set up early this year. This body is composed of the medical members of the Board of Health, to whom have been added two other medical practitioners—one nominated by the New Zealand Branch of the British Medical Association, the other by the Minister—and one lay member in the person of the Secretary of the Department of Scientific and Industrial Research. The full personnel is as follows:—

Sir James Elliott, Kt., M.D., Member of Board of Health, Government representative.
R. R. D. Milligan, M.B., Government representative.
Professor C. E. Hercus, O.B.E., D.S.O., M.D., representative of the Faculty of Medicine, University of Otago.
Muriel E. Bell, M.D., Member of Board of Health, Member of Staff Medical School, University of Otago.
Sir Donald McGavin, Kt., C.M.G., D.S.O., M.R.C.S., M.D., Member of Board of Health, representative of the New Zealand Branch of the British Medical Association.
P. P. Lynch, M.D., representative of the New Zealand Branch of the British Medical Association.
E. Marsden, C.B.E., M.C., D.Sc., F.R.S.N.Z., Secretary of the Department of Scientific and Industrial Research.
The Director-General of Health, Member of Board of Health, Chairman (*ex officio*).

The functions of the Council have been set out in the following terms:—

(1) To correlate as far as may be practicable medical research work in New Zealand.
(2) To recommend what researches and investigations should be undertaken.
(3) To appoint separate *ad hoc* committees to take charge of each investigation.
(4) To recommend what amount of money should be allocated for Medical research each year and to suggest an apportionment of the amount to separate investigations.

There is a large field for research in New Zealand. For the time being, however, the Council has decided to devote its attention mainly to nutrition, goitre, dental diseases, tuberculosis, and hydatid disease. Special Committees have already been appointed to deal with some of these matters, while others are in process of formation.

The Medical Research Council has a great task and great opportunities. It might be stressed, however, that brilliant "discoveries" are not to be expected, and a statement from the annual report of the Medical Research Council (Great Britain) bearing on this aspect may well be quoted here:—

"The lesson to be learnt is that before the practical fruit of research work in the shape of new powers of control of health and disease can be expected the tree providing it, which is the growing body of knowledge, must have been planted and tended and must have reached proper development. When and at what point the fruit is to be gathered can rarely, if ever, be foretold, and if it is to be obtained it can only be through steady cultivation of the growth from which it springs."

And again, from the same report:—

> "There is a real danger here lest the insistent calls given by disease and suffering for immediate relief should actually delay progress by attracting scientific effort along the wrong paths. While many problems offered in the medical field, as the experience of war has shown, can be and have been solved by direct and organized attack, others may not yield now to a frontal attack, nor until the general level of knowledge and preparation has been raised a stage higher. Power to prevent or cure a disease must not be expected to come by sudden discovery, nor often as the result of a special campaign, however vigorously prosecuted. Rapid gains, often unforeseen and in unexpected directions, may be confidently expected, however, so long as the area of accurate knowledge is maintained in its growth: we cannot foretell the flow of water here and there in the irrigating channels along a shore, but we know the flow must certainly follow whenever the tide rises the general level of the waters."

New Health District.—It has long been recognized that the area administered by the Medical Officer of Health, Wellington, was too extensive. Consequently a separate health district, known as "the Wellington-Hawke's Bay Health District," was constituted during the year. It consists of the counties of Patea, Waitotara, Waimarino, Wanganui, Rangitikei, Kiwitea, Pohangina, Oroua, Manawatu, Kairanga, Horowhenua, Woodville, Weber, Dannevirke, Waipukurau, Patangata, Waipawa, and Hawke's Bay and all boroughs and town districts geographically contained in or contiguous to the said counties. Dr. D. Cook, formerly Medical Officer of Health, Whangarei, was appointed to take charge of the district with his office at Palmerston North. The district will be administered on the same system as North Auckland, South Auckland, East Cape, and Taranaki—*i.e.*, the Medical Officer of Health will also be the School Medical Officer and will closely supervise and co-ordinate the school work with the public-health work throughout the district. The opening of the new district will also ensure that closer supervision will be given to the health of the Maori people in this area.

Health Education.—Health education was continued along the same lines as in previous years. The Department is again indebted to the press and the broadcasting authorities for their readiness to assist in raising the standard of knowledge of the public in health matters. A series of health articles of interest to the farming community are being published in the *Journal of Agriculture*, while other articles have also appeared in the *Journal of the New Zealand Branch of the Royal Sanitary Institute*, the *New Zealand Nursing Journal*, and the *Journal of the Hospital Boards Association of New Zealand*. Courses of lectures have been given to training-college students, post-graduate sisters, and dental nurses. At all times much individual instruction is given to parents during medical examination of school-children.

Approval has been received for the purchase of projectors and health films for educational work among the Maoris and other sections of the community, and at an early date these will be available for the use of Medical Officers in the field.

Boards Associated with the Department.—The Boards associated with the Department are the Board of Health, Medical Council, Medical Research Council, Dental Council, Nurses, and Midwives Registration Board, Opticians Board, Masseurs Board, and Plumbers Board. Two of these bodies were brought into existence during the year under review—namely, the Medical Research Council and the Dental Council.

Reference has already been made to the programme of the Medical Research Council. The Dental Council was established pursuant to the Dentists Act, 1936. The powers of the Dental Council in relation to the dental profession are very much the same as the powers of the Medical Council in relation to the medical profession. Both bodies are entrusted with the custody of the appropriate register and are vested with the powers of granting or withholding registration. In addition, both Councils have been given a measure of disciplinary control.

The other Boards referred to continued their work during the year much along the lines of previous years.

Health Administration in New Zealand.—An outline of the existing system of health administration in New Zealand has been prepared and is published in the appendix of this report. It may be of interest to readers overseas.

Staff.—It is with profound regret that I record the death of Dr. Ada Paterson, Director of School Hygiene since 1923. Dr. Paterson's reports bear witness to her wide sympathies, balanced judgment, and wise foresight in all matters relating to the health of children. Her premature death was a severe blow to the Department and to the Service with which she has been so intimately associated and which she controlled so ably for many years. Dr. Paterson was associated with many organizations working in the interest of women and children. The health-camp movement, particularly, was one in which she took a deep interest.

In the death of Mr. W. T. Findlay, Accountant, the Department lost an officer who had rendered many years of loyal and excellent service.

In conclusion, I wish to express my thanks for support rendered me by officers during the year.

M. H. Watt, Director-General of Health.

PART II.—PUBLIC HYGIENE.

I have the honour to submit my report for the year ended 31st March, 1938.

SECTION 1: VITAL STATISTICS.

(Exclusive of Maori unless otherwise stated.)

POPULATION.

The mean population of the Dominion for 1937 was estimated to be 1,504,826, an increase of 12,482 over the corresponding figure for the previous year.

BIRTHS.

The births of 26,014 living children were registered during 1937, as against 24,837 in 1936 and 23,965 in 1935. The birth-rate per 1,000 of mean population was 17·29. The general course of the rate during the past five years is shown in the following table:—

Births (Number and Rate) in New Zealand, 1933–37.

Year.	Total Number of Births registered.	Birth-rate per 1,000 of Mean Population.
1933	24,334	16·63
1934	24,322	16·51
1935	23,965	16·17
1936	24,837	16·64
1937	26,014	17·29

From 1920 the birth-rate declined year by year until it reached its lowest level in 1935 (16·17). For 1936 the rate showed an increase to 16·64, and in 1937 a further increase to 17·29 per 1,000 of mean population. It is not to be expected that the rate will ever again approach that obtaining in the last quarter of the nineteenth century, as the percentage of women of child-bearing age in the population is to-day much less than it was at that time. The decline in the birth-rate is, however, not due solely to the altered age-distribution of the population, but also to a decline in the fertility rate, a decline the extent of which can only be viewed with disquietude. It is to be hoped that the rising tendency of the past two years will continue.

DEATHS.

The deaths registered during 1937 numbered 13,658, an increase of 602 over the figure for 1936 (13,056).

Crude Death-rate.

Year.	Crude Death-rate per 1,000 of Mean Population.	Year.	Crude Death-rate per 1,000 of Mean Population.
1932	8·04	1935	8·25
1933	7·99	1936	8·75
1934	8·50	1937	9·08

It will be seen that the crude death-rate reached its lowest level in 1933, and that it now shows a definite rising tendency. This is to be expected with an ageing population. Causes of death chiefly associated with the later decades of life (heart-disease, cancer, cerebral hæmorrhage and apoplexy, senility, and diseases of the kidneys and of the arteries) account for more than two-thirds of the increase in the number of deaths during the year.

Still-births.

A still-born child is defined as one "which has issued from its mother after the expiration of the twenty-eighth week of pregnancy, and which was not alive at the time of such issue." Still-births have been compulsorily registrable in New Zealand since March, 1913. In 1937 still-births numbering 761 were registered, an increase of 29 over the figure for the previous year.

Still-births (Number and Rate) in New Zealand, 1933–37.

Year.	Total Number of Still-births registered.	Rate of Still-births per 1,000 Live Births.
1933	722	29·7
1934	687	28·3
1935	738	30·8
1936	732	29·5
1937	761	29·3

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

The Principal Causes of Death.

The following table gives the main causes of death during the year, the actual number of deaths therefrom, and the death-rates per 10,000 of mean population for each of the last five years :—

Cause.	1937.		1936.	1935.	1934.	1933.
	Number.	Rate.	Rate.	Rate.	Rate.	Rate.
Heart-disease (all forms)	3,948	26·24	24·43	23·34	22·72	21·17
Cancer	1,777	11·81	11·81	11·18	11·53	11·10
Violence	901	5·99	5·79	5·25	5·76	5·62
Chest-disease (total)	975	6·48	5·88	4·81	5·06	4·43
Pneumonia	505	3·36	2·69	1·62	1·74	1·65
Pneumonia (secondary to influenza), whooping-cough, and measles	71	0·47	0·68	0·22	0·38	0·34
Bronchitis	172	1·14	1·35	1·34	1·47	1·21
Broncho-pneumonia	259	1·72	1·61	1·63	1·47	1·23
Tuberculosis (all forms)	589	3·91	4·56	3·89	4·21	4·17
Kidney or Bright's disease	586	3·89	3·96	3·56	3·80	3·83
Apoplexy or cerebral hæmorrhage	808	5·37	5·09	4·87	4·95	4·63
Diseases of the arteries	545	3·62	2·99	2·96	2·57	2·81
Senility	356	2·37	2·55	2·39	3·10	2·30
Diabetes	275	1·83	1·59	1·53	1·70	1·56
Hernia and intestinal obstruction	122	0·81	0·66	0·67	0·64	0·76
Diseases and accidents of childbirth (maternal mortality)	95	0·63	0·62	0·68	0·80	0·74
Appendicitis	117	0·77	0·80	0·72	0·79	0·74
Diarrhœa and enteritis	49	0·33	0·40	0·55	0·39	0·41
Epilepsy	56	0·37	0·33	0·29	0·35	0·22
Common Infectious Diseases.						
Influenza (all forms, including pneumonia)	110	0·73	0·94	0·74	1·26	0·69
Diphtheria	24	0·16	0·13	0·22	0·18	0·18
Whooping-cough	13	0·08	0·32	0·28	0·27	0·12
Scarlet fever	6	0·04	0·05	0·05	0·05	0·03
Typhoid and paratyphoid	9	0·06	0·05	0·07	0·01	0·04
Measles	4	0·02	0·02	0·01	0·31	0·12

Heart-diseases (all Forms).—In the case of males, deaths from all forms of heart-disease increased by 109, from 2,082 in 1936 to 2,191 in 1937. There was a decrease of 3 deaths under forty years of age, an increase of 8 between forty and sixty years, and an increase of 104 above the age of sixty years.

In 1936 the rise in the number of deaths of females from heart-disease was 45, a small increase compared with that for males (142) in that year. For 1937, however, the female increase (192) considerably exceeded that for males (109).

Cancer.—Deaths attributed to cancer numbered 1,777, an increase of only fifteen on the number for the previous year, whilst the crude death-rate per 10,000 of mean population remained the same (11·81). When the sexes are considered separately it is found that there was an increase of 46 deaths of males (901 in 1937, 855 in 1936), as compared with a small decrease in the previous year (855 in 1936, 866 in 1935), and a decrease of 31 deaths of females in 1937 (876 in 1937, 907 in 1936), as compared with an increase in the previous year (907 in 1936, 790 in 1935).

Tuberculosis (all Forms).

Year.	Number of Deaths from Tuberculosis.	Death-rate from Tuberculosis per 10,000 of Mean Population.	Year.	Number of Deaths from Tuberculosis.	Death-rate from Tuberculosis per 10,000 of Mean Population.
1932	615	4·23	1935	576	3·89
1933	611	4·17	1936	680	4·56
1934	621	4·21	1937	589	3·91

Of the 589 deaths from tuberculosis last year, 494 (or 3·28 per 10,000 of mean population) were assigned to tuberculosis of the respiratory system, and 95 (0·63 per 10,000) to other forms of the disease.

Tuberculosis other than of the Respiratory System.—The 95 deaths last year so assigned were distributed as follows (the figures for 1936 being given in parentheses) :—

Tuberculosis of the meninges and central nervous system	34	(51)
Tuberculosis of intestines and peritoneum	17	(21)
Tuberculosis of vertebral column	13	(10)
Tuberculosis of bones and joints	1	(6)
Tuberculosis of lymphatic system	1	(2)
Tuberculosis of genito-urinary system	7	(18)
Tuberculosis of other organs	2	(1)
Disseminated tuberculosis	17	(31)
Tuberculosis of skin	3	(..)
	95	(140)

Tuberculosis of the Respiratory System.—In the previous year (1936) there was a setback regarding this form of tuberculosis, the number of deaths (540) being 69 more than in 1935, and the question was raised in the annual report as to whether this might not be a result of the recent depression experienced, or only a more marked annual fluctuation than usual. The figures for 1937 show a definite decrease over those of the previous year, and the rate per 10,000 of mean population (3·28) is the third lowest recorded, the years showing better rates being 1935 (3·17) and 1933 (3·24).

The crude death-rate from this form of tuberculosis during the period 1901–5 averaged 7·02 per 10,000 of mean population. For the period 1933–37 the average crude rate was 3·33 per 10,000, a decrease of over 50 per cent.

Tuberculosis other than of the Respiratory System.—The number of deaths assigned to this heading (95) was the lowest experienced, and for the first time since 1874 was under 100. For 1936 the number of deaths was 140, 35 more than in 1935.

For the period 1901–5 the average annual crude death-rate per 10,000 of mean population was 2·30 ; for 1933–37 it was 0·82.

For all forms of tuberculosis the tribute we pay to the tubercle bacillus in the form of deaths is to-day (1933–37) 4·15 per 10,000 of mean population, whereas at the beginning of the century (1901–5) it was 9·32.

Infant Mortality.

Deaths of infants numbered 812 and the infant-mortality rate was 31·21 per 1,000 live births, compared with 30·96 in 1936, the lowest rate on record.

Infant Mortality in New Zealand, 1930–37 (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.
1930 ..	24·03	10·45	34·48	1934 ..	22·86	9·25	32·11
1931 ..	22·69	9·46	32·15	1935 ..	22·03	10·23	32·26
1932 ..	21·30	9·92	31·22	1936 ..	22·31	8·65	30·96
1933 ..	22·81	8·79	31·64	1937 ..	22·22	8·99	31·21

Analysis of Deaths of Infants under one Month of Age, 1937.

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.
Diphtheria	..	..	..	..	..	..
Whooping-cough	..	..	..	..	..	..
Influenza	..	..	1	1	..	2
Syphilis	..	..	..	..	..	..
Convulsions	..	4	..	..	..	4
Broncho-pneumonia	..	2	3	..	..	5
Pneumonia	..	1	..	..	..	1
Diarrhœa and enteritis	..	..	..	1	..	1
Congenital malformations	24	37	16	4	4	85
Congenital debility	10	5	..	3	..	18
Injury at birth	16	33	5	3	..	57
Premature birth	174	94	19	8	3	298
Other diseases of early infancy	17	55	5	2	2	81
Accidental mechanical suffocation	..	..	..	..	..	..
Other causes	3	8	10	4	1	26
Totals, 1937	244	239	59	26	10	578
Totals, 1936	**227**	**219**	**65**	**26**	**17**	**554**

SECTION 2.—NOTIFIABLE DISEASES.

Attached are tables showing the notifications of infectious and other notifiable diseases in the Dominion for the year 1937. Tables A, B, and C and, unless otherwise stated, the comments and tables in this section deal with Europeans only.

General.

The year under review was marked by a severe epidemic of acute anterior poliomyelitis (infantile paralysis). This epidemic is the subject of a separate report in the appendix. The total notifications of infectious and other notifiable diseases during 1937 were 4,203, including 765 of infantile paralysis, compared with 3,652 in 1936, of which 87 were of infantile paralysis.

Increases occurred in the following infectious diseases, the increase in each case being shown in parentheses: Diphtheria (86), paratyphoid fever (7), poliomyelitis (678), erysipelas (38), puerperal fever (82), indulant fever (11), ophthalmia neonatorum (12).

The most marked decreases were scarlet fever (228), bacillary dysentery (43), typhoid fever (13), and eclampsia (22).

Tables and comments regarding certain of the more common infectious diseases are given below:—

(a) Scarlet Fever.

Year.	Number of Notifications.	Deaths.		
		Number.	Rates per 10,000 of Mean Population.	Case-fatality Rate per Cent.
1932	829	6	0·04	0·72
1933	783	4	0·03	0·51
1934	762	8	0·05	1·05
1935	863	8	0·05	0·93
1936	1,152	8	0·05	0·69
1937	924	6	0·04	0·65

During the past six years notifications of scarlet fever have on only one occasion (in 1936) exceeded 1,000. The rising tendency shown in 1935 and 1936 did not continue into 1937.

(b) Diphtheria.

Year.	Number of Notifications.	Deaths.		
		Number.	Rates per 10,000 of Mean Population.	Case-fatality Rate per Cent.
1932	802	40	0·27	4·99
1933	963	27	0·18	2·80
1934	436	26	0·18	5·96
1935	747	33	0·22	4·42
1936	513	20	0·13	3·90
1937	599	24	0·16	4·01

The incidence of diphtheria remains low, the notifications during the past six years, as shown above, contrasting markedly with the figures for the last epidemic experienced (5,458 notifications in 1917 and 5,539 in 1918).

Another interesting feature is the remarkably low incidence in the South Island. During the year only 37 of the 599 cases notified occurred in the South Island, and for the six years shown in the table of the total of 4,060 cases, only 365 or 9 per cent., were in that Island. In the southern portion of the South Island, in the provinces of Otago and Southland, no cases were notified during 1937, and only 41 for the past six years. Thus an area containing 14 per cent. of the population of the Dominion contributed only 1 per cent. of the cases of diphtheria. This result is not due to preventive immunization, as no work of that nature has been carried out in that area since 1927, and only a minor amount in the seven years prior to that.

(c) Poliomyelitis.

In December, 1936, poliomyelitis became epidemic in the Otago Health District, and 85 cases were notified by the end of that month. During 1937, 765 cases were notified, of which 208, or 27 per cent., were aparalytic. The epidemic is the subject of a separate report.

(d) Pulmonary Tuberculosis.

Year.	Number of Notifications.	Deaths.	
		Number.	Rates per 10,000 of Mean Population.
1933	890	476	3·24
1934	824	491	3·32
1935	808	471	3·17
1936	934	540	3·62
1937	915	494	3·28

Infectious Diseases amongst Maoris.

Table D attached gives the numbers of notifications of infectious disease received for members of the Maori race. The figures are not included in the European figures, as a large number of cases amongst Maoris are missed, due to the fact that a large proportion of Maoris fail to obtain medical assistance when they become ill. The position is rapidly improving with the development of the district nursing service.

Of the 497 notifications received, 212, or 43 per cent. of the total, were of pulmonary tuberculosis, a disease to which the Maori is very susceptible. The next disease in order of importance of the number notified is typhoid fever, of which there were 132 cases. Poliomyelitis cases numbered 51, only 5 of which were aparalytic. The only other diseases reaching double figures were diphtheria (19), puerperal fever (14), influenza (13), and bacillary dysentery (11).

Sale of Food and Drugs Act.

It had been hoped to revise and consolidate the regulations under this Act during the year, but, unfortunately, insufficient time could be found in which to undertake this work, which will need attention in the near future. The administration of the Act, the inspection and taking of samples and prosecution of offenders proceeded as in previous years, and the attached tables give some idea of the amount of work performed. Milk, of course, from the very nature of the source of supply alone, requires more consistent sampling than any other food, and of the 9,361 samples of milk taken for analysis during the year ended 31st December, 1937, 4·8 per cent. failed to comply with the regulations. Many of these were border-line cases, but in about half (or 2·3 per cent. of the total samples) warnings of non-compliance were sent to the vendors. One hundred and eleven samples (1·2 per cent. of total taken) were found to be so much below standard as to cause a prosecution of the vendor to be recommended by the Medical Officer of Health concerned. A careful check is maintained by means of sampling on the quality of the milk supplied for the milk-in-schools scheme. Apart from milk, the usual wide variety of foodstuffs and drugs was examined during the year, and of 891 samples taken 6·4 per cent. did not conform to the standards prescribed in the regulations. In the great majority of these cases the departure from the standard was only slight, with a result that in respect of 5·2 per cent. of the samples warnings of non-compliance were issued; in only three cases was a prosecution recommended.

During the year a survey was made into the process of manufacture and retailing of ice-cream and similar frozen products, and as a result it can be said that a considerable advance has been made towards securing the hygienic conditions in which such products should be manufactured and offered for sale.

The arrangement with the Customs Department whereby this Department is notified of the importation of goods not complying with the regulations in regard to labelling or other particulars continues to be of assistance to all concerned, including the importer or owner, who may be saved the cost of distribution of articles which might otherwise later be found unsaleable.

The only new regulation issued during the year concerned the adoption for the purposes of the Act of the additional standard for drugs set out in the Addendum, 1936, to the British Pharmacopœia. Practically all the drugs which are subjects of monographs in the British Pharmacopœia, 1932, and the British Pharmaceutical Codex, 1934, must comply with these specifications in New Zealand.

Poisons Act, 1934.

The Poisons (General) Regulations 1937, under this Act, were enacted in July, 1937, and came into force on the following 1st September. The issue early in 1936 of the draft regulations drew forth considerable comment from interested members of the public, and much thought was involved before the regulations were cast in their final form. These are the main regulations under the Act and are very comprehensive in their scope, amplifying a number of provisions of the Act and dealing generally with the labelling, packing and storage of poisons, the restriction and recording of sales, and importation and transport of poisons in New Zealand.

As a guide to these provisions two circulars were freely distributed by the Department. The first was for the use of the licensed sellers of Third Schedule (" farm ") poisons such as arsenical sheep-dips, orchard sprays, weed-killers, and many farm-animal medicines, and also for storekeepers generally who sell the less potent (" household ") poisonous substances of the Fourth Schedule, as, for example, carbolic disinfectants, caustic soda, strong ammonia solution, arsenical fly-papers, and certain permitted rat and mouse poisons. These must all be properly labelled and packed, while for liquid substances the words of the Act specifying a container " readily identifiable by sight and by touch " have been given a precise meaning. A record of all sales of Third Schedule poisons must be kept by licensees, and approximately eight hundred storekeepers' licenses, three hundred wholesalers' licenses, and thirty storekeepers' extended licenses have been in force for the current year. The second circular explained the provisions affecting medical practitioners, dentists, and veterinary surgeons, while special measures were taken to acquaint pharmacists of their obligations. With few exceptions the retail sale of First and Second Schedule poisons is confined to the chemists, and a record of the sale appropriate to the Schedule must be made.

As a result of the distribution of the circulars and instruction given by Inspectors it may be said that there is now a fair understanding by those most concerned of a set of regulations which cannot help but be somewhat involved. At the outset some misunderstanding existed in regard to Second Schedule poisons packed as proprietary lines, these including official preparations such as vegetable laxative tablets and also patent medicines of undisclosed formula. The regulations require the manufacturer to state the percentage of any poison on the labels in such cases, this leaving no doubt as to whether or not any particular preparation is a poison.

An important feature of the regulations is the classification of certain drugs as poisons which, in addition to being handled only by pharmacists, may only be dispensed to the public on the prescription of a medical practitioner, dentist, or veterinary surgeon. These "prescription poisons" include barbituric acid and its various derivatives (*e.g.*, veronal), amidopyrine, sulphonal, and that type of substance commonly known as " chlorodyne " which contains between 0·2 per cent. and 0·1 per cent. of morphine. The form in which prescriptions are to be issued and their dispensing are specially prescribed in a manner similar to that required for those narcotic drugs (*e.g.*, opium, cocaine, morphine) controlled by the Dangerous Drugs Act, 1927. Prior to the advent of the Poisons Act, 1934, and the present regulations there had been no legal restraint on the sale of the class of drugs now covered, and this legislation should do much to prevent cases of their misuse arising.

In the administration of the Act up to the present leniency has been shown to all classes of distributors of poison in meeting difficulties found in individual cases. While it is realized that a number of adjustments to the regulations may be necessary, it is now proposed to institute a more thorough system of inspection and strict enforcement of the law is to be expected.

TABLE A.—NOTIFIABLE DISEASES IN NEW ZEALAND FOR YEAR ENDED 31ST DECEMBER, 1937, SHOWING DISTRIBUTION BY MONTHS.

Month.	Scarlet Fever.	Diphtheria.	Enteric Fever.		Tuberculosis.	Cerebro-spinal Meningitis.	Poliomyelitis.		Influenza.	Erysipelas.	Puerperal Fever.		Eclampsia.	Tetanus.	Hydatids.	Trachoma.	Ophthalmia Neonatorum.	Lethargic Encephalitis.	Food Poisoning.	Bacillary Dysentery.	Undulant Fever.	Actinomycosis.	Chronic Lead Poisoning.	Anthrax.	Totals, 1937.	Totals, 1936.	Totals, 1935.
			Typhoid.	Para-typhoid.			Paralytic.	Non-paralytic.			Following Childbirth.	Following Abortion or Miscarriage.															
January	66	29	2	..	66	..	44	25	3	24	7	15	9	1	4	..	3	..	2	1	1	..	..	..	302	266	275
February	40	26	3	1	76	1	40	13	1	18	11	20	7	2	5	..	4	..	2	8	3	..	1	..	282	221	208
March	66	46	5	1	59	2	68	31	2	24	10	17	10	..	2	2	1	1	8	..	6	..	..	..	361	292	317
April	77	34	2	1	73	1	158	64	1	26	13	21	2	1	8	..	1	1	12	3	1	..	..	..	500	288	330
May	90	44	9	..	61	2	117	37	3	44	8	14	7	1	3	1	1	..	..	1	1	..	..	..	444	317	287
June	86	66	2	1	87	..	67	23	6	28	14	14	2	1	1	3	5	..	..	..	1	1	1	..	409	322	291
July	64	82	5	..	60	1	24	5	4	37	9	22	7	..	8	..	1	1	..	4	1	..	..	..	335	328	318
August	101	76	3	..	86	1	11	1	7	31	8	15	13	..	3	..	3	..	1	1	4	..	1	..	366	394	273
September	90	49	7	1	89	2	11	1	4	27	9	9	3	1	3	1	7	..	1	1	2	..	..	..	318	313	273
October	108	47	4	1	92	..	8	2	6	27	13	13	4	..	2	2	2	..	..	..	1	..	1	..	333	281	306
November	80	58	2	3	93	3	6	4	2	23	5	15	4	2	2	..	2	..	1	..	2	..	..	..	307	266	224
December	56	42	1	1	73	..	3	2	3	20	6	10	7	3	3	..	2	..	10	..	3	1	..	..	246	364	247
Totals, 1937 ..	924	599	45	10	915	13	557	208	42	329	113	185	75	12	44	9	32	3	37	19	26	2	4	..	4,203	..	..
Totals, 1936 ..	1,152	513	58	3	934	12	87		77	291	95	121	97	15	49	6	20	7	32	62	15	1	4	1	..	3,652	..
Totals, 1935 ..	863	747	84	3	808	10	8		60	252	81	176	72	14	33	6	24	4	58	18	17	6	5	..	..	..	3,349

Table B.—Notifications of Cases of Notifiable Diseases by Health Districts for Year ended 31st December, 1937.

Name of Disease.	North Auckland.	Central Auckland.	South Auckland.	Thames-Tauranga.	Taranaki.	East Cape.	Wanganui-Horowhenua.	Wairarapa-Hawke's Bay.	Central Wellington.	Nelson-Marlborough.	Canterbury.	West Coast.	Otago.	Southland.	Totals.
Scarlet fever	10	35	28	3	32	3	37	62	150	85	338	48	65	28	924
Diphtheria	59	66	90	11	93	19	72	67	85	3	33	1	..	..	599
Enteric fever—															
(*a*) Typhoid	..	6	15	1	2	3	2	1	11	2	2	..	..	..	45
(*b*) Paratyphoid	..	3	..	..	..	1	1	4	1	..	..	..	..	..	10
Tuberculosis	11	149	31	6	38	11	55	56	215	28	112	19	100	84	915
Cerebro-spinal meningitis	..	..	1	..	..	..	1	1	1	..	5	2	1	1	13
Poliomyelitis—															
(*a*) Paralytic	12	54	48	20	40	18	46	35	53	16	92	20	73	30	557
(*b*) Non-paralytic	1	13	15	13	3	11	16	8	19	..	53	..	44	12	208
Influenza	3	..	8	1	..	..	5	9	2	..	11	1	2	..	42
Erysipelas	12	83	25	2	14	6	21	16	67	2	52	2	20	7	329
Puerperal fever—															
(*a*) Following childbirth	4	8	12	3	6	5	3	9	8	2	28	1	15	9	113
(*b*) Following abortion or miscarriage	4	83	..	..	2	1	3	6	23	..	50	1	6	6	185
Eclampsia	2	14	9	1	1	..	10	6	9	7	6	1	4	5	75
Tetanus	..	1	1	..	2	1	..	1	..	2	4	..	..	..	12
Hydatids	..	4	..	1	3	1	7	7	2	..	16	1	1	1	44
Trachoma	1	4	1	..	..	1	..	..	2	..	..	..	..	..	9
Ophthalmia neonatorum	3	9	..	..	5	..	1	4	4	..	..	..	3	3	32
Lethargic encephalitis	..	2	..	..	..	..	..	1	..	..	..	..	..	..	3
Food poisoning	2	14	..	3	15	..	..	1	..	..	2	..	..	..	37
Bacillary dysentery	..	11	..	..	5	1	2	..	..	..	..	..	..	..	19
Undulant fever	..	5	..	..	2	3	5	3	2	..	3	..	1	2	26
Actinomycosis	..	1	1	..	..	..	..	..	..	..	..	..	..	..	2
Chronic Lead poisoning	..	..	..	..	..	1	1	..	2	..	..	..	..	..	4
Totals	124	565	285	65	263	86	288	297	656	147	807	97	335	188	4,203

Table C.—Notifiable Diseases in New Zealand for Year ended 31st December, 1937, showing Distribution by Age and Sex.

Disease.	Under 1 Year.		1 to 5 Years.		5 to 10 Years.		10 to 15 Years.		15 to 20 Years.		20 to 25 Years.		25 to 30 Years.		30 to 35 Years.		35 to 40 Years.		40 to 45 Years.		45 to 50 Years.		50 to 55 Years.		55 to 60 Years.		60 to 65 Years.		65 to 70 Years.		70 to 75 Years.		75 to 80 Years.		80 Years and over.		Total Cases at all Ages.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Scarlet fever	5	9	97	102	154	261	62	86	12	39	9	22	4	15	6	10	8	9	1	3	1	2	..	4	..	2	..	1	..	..	..	..	..	..	..	..	359	565
Diphtheria	4	4	82	61	132	112	39	47	10	21	6	27	3	18	5	4	2	9	2	4	..	2	1	2	..	..	..	2	..	..	..	..	..	..	..	..	286	313
Enteric fever—																																						
(*a*) Typhoid	..	..	1	2	4	3	1	2	6	2	2	2	2	2	..	..	1	.	..	4	2	3	1	1	3	..	1	..	..	..	..	..	..	..	..	..	..	24	21
(*b*) Paratyphoid ..	..	..	1	1	..	2	..	..	..	1	..	..	..	1	1	..	..	1	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	2	8
Tuberculosis	..	..	8	..	4	8	13	7	46	45	62	92	67	71	46	60	41	27	41	30	50	15	39	15	23	10	31	18	22	7	6	5	3	1	1	..	504	411
Cerebro-spinal meningitis	1	2	1	2	1	1	1	..	1	..	1	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	5
Poliomyelitis—																																						
(*a*) Paralytic	3	3	99	74	79	86	61	44	31	21	21	11	9	7	3	4	3	1	2	1	2	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	365	252
(*b*) Non-paralytic ..	2	1	21	11	37	32	29	23	10	7	7	5	5	2	1	..	1	1	2	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	125	83
Influenza ..	..	..	1	1	..	1	1	1	2	..	4	..	1	3	3	2	2	2	2	3	1	1	1	1	2	..	2	1	1	1	..	..	..	..	1	1	24	18
Erysipelas	8	3	4	4	5	3	5	2	7	5	6	5	8	14	10	21	8	18	13	11	15	26	12	25	13	12	12	10	9	5	6	10	5	4	2	3	148	181
Puerperal fever—																																						
(*a*) Following childbirth ..	..	..	..	.	..	..	..	1	..	12	..	29	..	35	..	24	..	10	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	113
(*b*) Following abortion or miscarriage ..	..	..	..	..	..	..	..	..	..	10	..	41	..	53	..	43	..	29	..	10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	185
Eclampsia	..	..	..	..	..	..	..	..	..	5	..	26	..	21	..	11	..	8	..	2	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	75
Tetanus	..	..	1	1	3	..	..	1	2	..	1	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	8	4
Hydatids	..	..	1	..	1	2	4	1	1	2	2	2	5	2	..	1	2	..	2	..	3	1	2	1	3	1	3	..	1	1	..	..	..	..	..	..	30	14
Trachoma	..	..	..	..	..	..	..	..	..	..	..	..	2	1	..	..	1	1	1	..	1	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	7	2
Ophthalmia neonatorum ..	15	16	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	15	17
Lethargic encephalitis ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	2	1
Food poisoning	..	1	..	..	2	2	..	..	1	4	1	2	1	3	1	2	1	1	1	1	..	2	..	3	..	1	1	1	1	..	1	..	1	..	1	1	13	24
Dysentery, bacillary ..	1	..	..	2	1	5	..	2	..	..	..		2	3	..	..	..	..	..	..	2	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	6	13
Undulant fever	..	..	..	..	..	..	..	..	6	..	2	..	2	2	1	..	3	..	..	..	4	1	1	1	1	1	..	1	..	..	..	..	..	..	..	..	29	6
Actinomycosis	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..
Chronic lead poisoning ..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	..
Totals	39	39	308	262	433	518	216	217	135	174	124	264	117	253	78	182	73	117	69	72	81	58	50	53	55	28	52	35	35	14	13	15	9	5	5	5	1,892	2,311

TABLE D.—MAORIS: NOTIFICATIONS OF CASES OF NOTIFIABLE DISEASES FOR YEAR ENDED 31ST DECEMBER, 1937.

Name of Disease.	North Auckland.	Central Auckland.	South Auckland.	Thames-Tauranga.	Taranaki.	East Cape.	Wanganui-Horowhenua.	Wairarapa-Hawke's Bay.	Central Wellington.	Nelson-Marlborough.	Canterbury.	West Coast.	Otago.	Southland.	Totals.
Scarlet fever	1	..	..	..	1	1	1	1	..	..	..	..	..	..	5
Diphtheria	2	1	6	..	3	1	3	2	1	..	..	..	..	..	19
Enteric fever—															
(*a*) Typhoid	1	13	38	33	2	38	..	5	2	..	..	..	..	..	132
(*b*) Paratyphoid	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1
Tuberculosis	22	17	32	5	18	20	34	41	7	5	4	1	3	3	212
Cerebro-spinal meningitis	1	..	1	..	..	..	3	..	..	..	..	..	..	..	5
Poliomyelitis—															
(*a*) Paralytic	9	1	6	5	4	10	4	4	..	3	..	..	..	..	46
(*b*) Non-paralytic	..	1	1	..	..	2	..	..	1	..	..	..	..	..	5
Influenza	8	..	..	..	..	..	5	..	..	..	..	..	..	..	13
Erysipelas	..	1	1	..	..	1	..	1	..	..	..	..	..	..	4
Puerperal fever—															
(*a*) Following childbirth	1	2	3	..	..	4	2	1	..	..	..	..	..	1	14
(*b*) Following abortion or miscarriage	4	..	..	..	..	..	..	..	..	..	..	..	1	..	5
Eclampsia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tetanus	..	..	1	..	..	1	..	..	..	..	..	..	..	..	2
Hydatids	..	..	1	..	..	3	..	3	..	..	..	..	..	..	7
Trachoma	1	2	2	..	..	1	..	..	..	..	..	..	..	..	7
Ophthalmia neonatorum	1	1	1	..	2	..	..	..	..	..	..	..	..	..	5
Lethargic encephaltitis	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Food poisoning	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1
Bacillary dysentery	..	1	..	..	..	1	2	3	4	..	..	..	..	..	11
Undulant fever	..	..	..	..	..	1	..	1	..	..	..	..	..	..	2
Actinomycosis	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1
Totals	51	40	93	43	30	85	55	63	16	8	4	1	4	4	497

TABLE E.—VENEREAL-DISEASE CLINICS: CASES TREATED DURING THE YEAR ENDED 31ST DECEMBER, 1937.

	Auckland.		Wellington.		Christchurch.		Dunedin.		Totals.	
Number of persons dealt with for first time and found to be suffering from—	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Syphilis	91	43	8	19	17	14	12	3	128	79
Soft sore	..	..	..	..	9	..	2	..	11	..
Gonorrhœa	553	170	301	72	339	89	107	86	1,300	417
No venereal disease	171	48	71	115	34	15	13	2	289	180
Total attendance of persons suffering from—										
Syphilis	1,663	1,947	1,676	1,283	1,539	495	285	391	5,163	4,116
Soft sore	..	..	..	..	80	..	2	..	82	..
Gonorrhœa	17,637	1,883	24,483	7,087	12,861	3,585	6,707	11,344	61,688	23,899
Number of persons suffering from—										
Syphilis	732	744	574	716	2,144	740	97	114	3,547	2,314
Gonorrhœa	1,634	719	1,569	754	435	159	897	766	4,535	2,398

SECTION 3.—PORT HEALTH INSPECTION.

TABLE I.—NUMBER OF VESSELS INSPECTED DURING THE YEAR ENDED 31ST DECEMBER, 1937.

Port.	Number of Vessels inspected.	Prohibited Immigrants.			
		Infectious-disease Cases.	V.D. Cases.	Infirm Cases.	Mental Cases.
North Auckland Health District—					
Russell	4	..	..	..	..
Combined Auckland Health District—					
Auckland	382	10	42	148	4
Taranaki Health District—					
New Plymouth	13	16	2	1	..
Combined Wellington Health District—					
Wanganui	2	..	..	..	..
Napier	4	..	..	..	..
Wellington	130	5	12	16	2
Picton	3	..	..	..	..
Combined Canterbury Health District—					
Lyttelton	45	1	9	..	1
Timaru	3	..	..	..	..
Westport	3	..	..	..	..
Combined Otago Health District—					
Oamaru	2	..	..	..	..
Port Chalmers	8	..	..	..	..
Bluff	32	..	..	..	..
Totals	631	32	65	165	7

SECTION 4.—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, 1937.

Health District.	Number of Samples taken.		Number of Vendors.		Samples not complying.					
					Number of Samples.		Number of Warnings issued.		Number of Prosecutions recommended.	
	Milk.	Other.	Milk.	Other.	Milk.	Other.	Milk	Other.	Milk.	Other.
North Auckland ..	108	29	97	29	11	1	1	1	9	..
Central Auckland ..	2,894	292	2,866	270	68	21	43	20	21	1
South Auckland ..	248	34	289	33	11	1	2	..	8	1
Thames-Tauranga ..	75	1	75	1	8	..	2	..	6	..
Taranaki	58	1	58	1	1	..	..	..	1	..
East Cape	150	86	121	24	2	11	..	11	2	..
Wanganui-Horowhenua	210	3	207	3	4	..	1	..	3	..
Wairarapa - Hawke's Bay	161	1	139	1	6	..	4	..	2	..
Central Wellington ..	1,719	26	1,676	26	31	..	18	..	15	..
Nelson-Marlborough ..	128	8	124	8	5	..	3	..	2	..
Canterbury	1,867	182	1,813	178	105	11	74	11	24	..
West Coast	300	50	292	50	20	1	10	..	5	1
Otago	1,150	207	614	61	134	11	36	3	10	..
Southland	193	61	141	26	11	..	28	..	3	..
Totals	9,361	891	8,512	711	450	57	222	46	111	3

TABLE 2.—SHOWING INSPECTION OF PREMISES ENGAGED IN SELLING OR MANUFACTURING FOODSTUFFS DURING THE YEAR ENDED 31ST DECEMBER, 1937.

Health District.	Inspections.		
	Number of Premises inspected engaged in Manufacturing Foodstuffs.	Number of such Premises where Defects occurred.	Number of Instances Goods were "seized" or "destroyed."
North Auckland	603	149	4
Central Auckland	1,479	106	89
South Auckland	1,410	201	6
Thames-Tauranga	224	42	2
Taranaki	279	31	38
East Cape	614	157	..
Wanganui-Horowhenua	201	47	12
Wairarapa - Hawke's Bay	242	24	..
Central Wellington	286	20	17
Nelson-Marlborough	305	32	5
Canterbury	1,025	16	4
West Coast	603	91	4
Otago	1,681	232	24
Southland	507	66	11
Totals	9,469	1,214	216

T. R. RITCHIE,
Director, Division of Public Hygiene.

PART III.—SCHOOL HYGIENE.

I have the honour to report on the work of the Division of School Hygiene for the year ended 31st March, 1938.

Obituary.

It is with deep regret that we record the death of Dr. Ada Paterson. Dr. Paterson was Director of the School Hygiene Division from 1923 until her death on the 26th August, 1937. She was born in Otago, and after a distinguished school and university career she graduated M.B. Ch.B. at the University of Otago in 1906. Subsequently she went to Great Britain for post-graduate study, taking additional qualifications at the Dublin University. On her return to the Dominion she practised her profession for some years at Picton. When the medical inspection of schools was undertaken in New Zealand in 1912 Dr. Paterson was one of the two Medical Inspectors appointed at that time, her headquarters being at Dunedin. In 1916 she was transferred to Wellington, and in 1923 was appointed Director of this Division, a position which she filled with distinction up to the time of her death. Her death at a comparatively early age is a great loss to the Department and this Division in particular.

Staff.

The permanent staff consists of a Director, eleven School Medical Officers, and five Medical Officers of Health, who also act as School Medical Officers in their districts. There are twenty-five school nurses and forty-nine district health nurses who undertake school wook in their areas. It is proposed to extend the scope of the work of school nurses to include district nursing as well as school work, and this will take place as opportunity is afforded school nurses of undergoing refresher courses.

Dr. Kathleen Abbott, for some years School Medical Officer at Invercargill, resigned during the year, her place being filled by the transfer of Dr. E. Irwin from Nelson.

Miss Wallace, school nurse, Wellington, retired on superannuation on the 16th May.

Owing to inability to fill the vacancies at Wanganui and Nelson, it was found necessary to ask Drs. Moir and Platts Mills to undertake itinerant duties in these districts. Although much good work was carried out by these officers, it is recognized that to secure good results and close co-operation of parents and teachers the presence of the School Medical Officer residing permanently in the district is an important factor in school medical inspection. She then knows the children, the teachers, and the parents, and takes a keen interest in the life of the community.

Figures relating to Work accomplished in 1937.

The following summary serves to indicate the extent of work accomplished during the school period, February to December, 1937:—

Schools inspected—		
Of roll under 100	754	
Or roll 100 to 500	327	
Of roll over 500	106	
	—	1,187
Children examined—		
Complete examinations	67,197	
Partial examinations	29,878	
	———	97,075
Number of children notified as defective		35,649
Number of addresses to school-children		428
Number of parents interviewed		14,984
Number of lectures or addresses to parents		24
The figures for the work of the school nurses are as follows:—		
Number of days assisted Medical Officer in schools		1,699
Number of children examined for medical schedule (H. Sch. 14)		101,555
Number of days engaged wholly in clerical work		700½
Number of children re-examined after Medical Officer's inspection		25,361
Number of children examined by special request		7,966
Number of visits to homes in—		
Large towns	7,358	
Small country towns	1,650	
Scattered districts	1,826	
	———	10,834
Number of children taken personally to hospital, &c.		292
Number of children taken personally to dental clinic		119
Number of health talks given		1,324

SUMMARY OF COMPLETE EXAMINATIONS.

	European.	Maori.
Number of children examined	58,035	3,730
Percentage found to have defects	66·47	83·48
Percentage with defects other than dental	48·17	56·70
Percentage of children showing evidence of—		
Subnormal nutrition	3·52	5·17
Pediculosis	0·48	7·02
Uncleanliness	0·74	1·77
Skin—		
Impetigo	0·78	3·99
Scabies	0·50	17·34
Ringworm	0·23	0·16
Other skin-diseases	1·05	0·91
Heart—		
Organic disease	0·54	0·43
Functional disturbance	0·67	0·40
Respiratory disease	1·00	2·60
Total physical deformities	11·00	8·97
Mouth—		
Deformities of jaw or palate, including irregularity	2·70	3·16
Dental caries	32·29	53·91
Extractions of permanent teeth	5·06	3·27
Fillings	55·51	20·56
Perfect sets of teeth	4·98	14·21
Nose and throat—		
Nasal obstruction	3·53	1·39
Enlarged tonsils	15·23	15·74
Enlarged glands	5·08	7·72
Goitre—		
All degrees	15·12	4·49
Incipient	10·30	2·81
Small	4·36	1·39
Medium	0·39	0·21
Large	0·07	0·08
Eye—		
External eye disease	1·56	1·10
Total defective vision	3·99	1·88
Corrected	2·18	0·27
Uncorrected	1·81	1·61
Ear—		
Otorrhœa	0·17	0·67
Defective hearing	0·46	1·18
Defective speech	0·53	0·16
Mental—		
Feeble-mindedness	0·34	0·05
Epilepsy	0·03	..
Other nervous defects	0·19	0·27
Tuberculosis—		
Total	0·04	0·27
Pulmonary	0·02	0·19
Other tissues	0·02	0·08

The number of parents interviewed by School Medical Officers has increased, 14,984 being seen this year, as against 14,512 in 1936, and this in a year when two to three months was lost owing to the poliomyelitis epidemic. Dr Heycock writes: "Parents appear more anxious for the opinion of the School Medical Service on their children's health, and more willing to follow out the line of treatment suggested." Dr. Boyd states: "Parents are coming along in increasing numbers. My practice, during medical examination of the children when parents are present, is to give numerous 'lecturettes,' the condition of the individual child being the text on which my remarks are based."

Co-operation with the Crippled Children Society still continues in regard to arrangements made for the welfare of individual children

Personal Hygiene.—All School Medical Officers remark on the improvement in the clothing, cleanliness, and appearance of the children. This is borne out by the decreased percentage of children suffering from uncleanliness and skin diseases.

Medical Examination of Teachers.

During the year 1,147 applicants for entrance into the teaching profession were examined by School Medical Officers, and the following summary gives details of the examination :—

Summary of Examination of Entrants to Teaching Profession.

Number examined	1,147
Number with any defect of vision	186
Number wearing glasses	135
Number with defective hearing	9
Number with any past or present aural disease	10
Number with nose defect	28
Number with throat defects	75
Number with any enlarged thyroid	146
Teeth—	
Number with any caries when seen	141
Number with one artificial plate	87
Number with upper and lower plates	30
Number with malocclusion	16
Number with any heart or lung condition	10
Number deferred for immediate treatment	140
Number considered as excellent	192
Numbered considered as average	809
Number considered as fair	131
Number accepted	1,122
Number deferred for further examination	10
Number rejected	15

Dr. Dawson reports : " Thirty-eight candidates were examined and they were a good average type, physically, mentally, and socially ; they had taken trouble to appear at their best. The examination of candidates in Hawera, Stratford, and Opunake early in the year was very useful, and enabled the candidates to correct minor disabilities."

Although the examination of prospective applicants for entrance into the teaching profession during their last year of school life was again carried out and it is realized that all candidates cannot be reached in this manner, nevertheless it is regrettable to find 140 candidates presenting themselves at the end of the year requiring immediate treatment ; this number must certainly have included some who had the advantages of the preliminary examination. It is apparent that candidates and their parents fail to recognize that this preliminary medical examination, as well as determining whether the candidates are physically fit for the teaching profession, should serve as an indication that physical well-being is of the utmost importance, and the question arises as to whether candidates should be entitled to the final medical examination unless they have evidence that the defects previously notified have been attended to.

Kindergartens and Pre-school Children.

The routine medical examination of kindergartens was carried out in Wellington, Christchurch, and Dunedin, the result of 335 kindergarten children being as follows :—

Number of children examined	335
Percentage found to have defects	80·30
Percentage with defects other than dental	61·49
Percentage of children showing evidence of—	
Subnormal nutrition	1·79
Pediculosis	0·60
Uncleanliness	0·30
Skin—	
Impetigo	0·30
Scabies	1·49
Ringworm	0·60
Other skin-diseases	2·98
Heart—	
Organic disease	0·30
Respiratory disease	2·69
Total deformities of trunk and chest	5·38
Mouth—	
Deformity of jaw or palate, including irregularity	0·30
Dental caries	35·22
Fillings	8·06
Perfect sets of teeth	33·13
Nasal obstruction	7·16
Enlarged tonsils	22·09
Enlarged glands	23·28
Goitre, all degrees	3·58
Ear, otorrhœa	0·30
Defective speech	0·89

School Medical Officers express appreciation of the unsparing efforts of kindergarten teachers in their care of these small pupils.

Secondary Schools.

Although it has not been possible to undertake the systematic inspection of secondary schools, in one or two instances secondary-school pupils were examined, and the following particulars from a summary of 277 technical-school pupils examined by Dr. Irwin in Southland will no doubt be of interest :—

Number of children examined	277
Percentage found to have defects	71·84
Percentage with defects other than dental	12·96
Percentage of children showing evidence of—	
Subnormal nutrition	3·25
Skin—	
Scabies	0·72
Other skin-diseases	0·72
Heart: Functional disturbance	0·72
Total deformities of trunk and chest	4·32
Mouth—	
Deformity of jaw or palate, including irregularity	3·61
Dental caries	58·84
Extractions of permanent teeth	56·32
Fillings	61·73
Perfect sets of teeth	2·52
Nose and throat—	
Nasal obstruction	1·44
Enlarged tonsils	5·77
Enlarged glands	Nil
Goitre—	
All degrees	20·57
Incipient	7·58
Small	9·75
Medium	1·44
Large	1·80
Eye—	
External eye disease	0·36
Total defective vision	12·27
Corrected	6·50
Uncorrected	5·77
Ear: Defective hearing	0·72

Dr. Anderson reports :—

"At the request of the respective Principals, medical inspection was carried out at the Dannevirke High School, Masterton Technical Girls' School, and Napier Girls' High School. In addition, selected pupils from other secondary schools in the area were examined.

"It would appear that the state of nutrition of the scholars is of interest to the teachers and their controlling boards, and for that reason we weighed and measured the pupils at the schools examined. While realizing that weight is of little practical value when considered alone, nevertheless it was of interest to note that, allowing for unavoidable technical errors, the percentage above and below weight in the respective groups were practically similar. The following table illustrates this statement :—

	Masterton Girls.		Napier Girls.		Dannevirke Girls.		Dannevirke Boys.	
	Number.	Percentage.	Number.	Percentage.	Number.	Percentage.	Number.	Percentage.
Total number examined	75	..	224	..	135	..	188	..
Number about standard weight	10	13·3	21	9·5	14	10·3	26	13·8
Number above standard weight	32	42·6	111	50·2	78	57·7	78	41·4
Number 1 lb. to 7 lb. below standard weight	10	13·3	32	14·4	18	13·2	48	25·5
Number 7 lb. to 14 lb. below standard weight	16	21·3	38	17·1	13	9·6	24	12·7
Number 14 lb. and over standard weight	7	9·3	19	8·5	12	8·8	12	6·3

"One secondary girls' school has been under my observation for several years, and being also familiar with the existing home conditions it would appear that the worst cases of subnormal nutrition are always found in the homes where the mother is continually occupied and a restful atmosphere is non-existent—that is, where the mother is forced to earn a living for the family, occupied with nursing a patient in the home, or exhausting her nerve centres at bridge; and the latter type usually have worse specimens. Some time ago the Principal of one girls' high school issued a questionnaire for my benefit to enable us to judge how much unoccupied time the girls had out of school hours. Practically every girl had some social activity apart from school affairs."

Native Schools.

The figures for medical inspection of Native schools show an improvement in the percentage of subnormal nutrition and skin-diseases over those for last year. The following extracts from reports are of interest:—

Dr. Cook.—"Subnormal nutrition is still prevalent in certain localities, but there is no doubt that the evidence has decreased in Native children. Most Native children have better clothes, and there is an increasing tendency to a school uniform. Washing facilities, also cooking facilities, are being provided at some Native schools. The former should do much to cure skin-conditions, while new habits in food-consumption should follow the latter."

Dr. Heycock.—"There has been much building activity during the last twelve months, and the overcrowding in Native schools largely relieved. Whereas in 1936 there was only one open-air school in this district, there are this year five open-air schools and seven other schools which have an open-air class-room. In every instance these open-air rooms are replacing very old, unhygienic class-rooms. The teachers are all enthusiastic about the healthy conditions they now teach under, and it is no exaggeration to say that the children look happier and more alert in these open-air rooms. This is a great practical step forward in teaching the Maoris the value of airy rooms open to the sunlight."

Dr. Deem.—"The skin-condition and general cleanliness of the Maoris has greatly improved following the regular monthly visit of the district nurse to the schools. Many of the teachers in the Native schools insist on a certain standard of cleanliness and tidyness, and they deserve great credit for their efforts and results."

Medical Inspection.

It is found necessary to again stress the value of the routine medical examination of children, as the view has been expressed that some of the time spent in routine examination might be profitably employed in carrying out special investigations. While admitting the advisability of widening the scope of work undertaken by School Medical Officers, the whole foundation of school medical work rests on the routine inspection. In this respect the following extract from the annual report of the London County Council, 1936, is of moment:—

> "The foundation of the medical work in the schools continues to be the periodical examination of the children in certain age-groups prescribed by the Board of Education . . . Over and over again it has been shown that it is unsafe to rely upon the teachers for bringing before the school doctors children who appear to them to need medical examination as a basis upon which to found the medical work in the schools. It is strange that, while some Medical Officers are deploring the time spent in routine inspections, others with strong public support are advocating regular 'vetting' of all classes of the population at periodical intervals, and there is at present a vigorous campaign being prosecuted by social workers with the object of securing more frequent examinations of all children in the schools, particularly at the younger ages, and of providing routine inspection for those who have left school.
>
> "If the routine inspections were abolished, or had they never been prescribed by the Board of Education, it is highly probable that public opinion would demand and secure their resumption or introduction.
>
> "Upon the routine inspection of the children as one of the foundations is built a complete system of care in which reference of children is made to special modifications of education, to convalescence, to supervisory centres for rheumatism, or for nutritional observation, or to treatment centres or hospitals for defects of all kinds. Many children detected at primary examinations to have defects are kept under continuous observation by systematic reinspection until the school doctor is satisfied with their condition, and, apart from routine inspections, increasing numbers of children not falling within the age-groups are examined by the school doctors as special cases at the instance of teacher, care worker, parent, or attendance officer."

To the above nothing further need be added.

The presence of teachers at the medical examination of their pupils is of the utmost value to the examining officer, and appreciation has been expressed of the assistance received from them. It was, however, thought advisable to repeat in the *Education Gazette* the following:—

> "The Department is of opinion that, in order that the maximum benefit of medical inspection may be obtained in every case, it is necessary that the School Medical Officers should have the fullest co-operation of those most concerned with the welfare of the child—the parent and the teachers. It is therefore desirable that wherever possible the class-teacher should be in the room during such inspection to supply those details of class-room observations that are of such unquestionable value, and also to gain first-hand knowledge of the child's physical condition.
>
> "It is not possible for a School Medical Officer to show on the card the full description of any child. A teacher can render valuable assistance by giving to the School Medical Officer additional details of personal history, reports of defects, such as slightly impaired hearing, restlessness, inattention, and many other conditions met with during the ordinary class routine. The physical condition of the child and the nature of its defects, remediable or otherwise, are of the utmost importance to the teacher, and a knowledge of these can be accurately obtained only when the teacher is present at the medical examination.
>
> "Health and physical well-being are of paramount importance, and teachers will no doubt be quick to realize the opportunity afforded by the medical examination of their pupils."

Tuberculosis Contacts.

Much work continues to be carried out in the supervision of tuberculosis contacts.

From Gisborne Dr. Heycock reports: "The clinic inaugurated at the various public hospitals last year has continued to function this year . . . The nurses are compiling index-cards of all the cases in their districts. School contacts are being gradually listed and brought under constant supervision. Follow-up work of this nature among the Maori is more difficult and tedious owing to the family habits of the race and the tendency of individuals to wander from pa to pa, and to follow seasonal occupation in different districts."

Dr. Stevenson reports upon the supervision of 297 contacts in Dunedin City and surrounding district. "Of these, 112 were city children, of whom 105 had a complete medical examination during the year; 110 children were weighed monthly throughout the year, 88 being of average weight and 22 were underweight. Of the 185 country children, 81 had a complete medical examination: 147 were weighed monthly, 114 being of average weight and 33 underweight. Headmasters continue to give their support to this work and to them many thanks are due."

In Southland Dr. Irwin states: "In regard to these contacts, the number is approximating to four hundred, and their supervision is important and becoming a very extensive work there."

Summary of Tuberculosis Contacts in the Wellington District for Year ending December, 1937.

Total number of children on list	555
Number of children—	
Reporting—	
Six-monthly	7
Four-monthly	3
Three-monthly	5
Referred to—	
Nose and Throat Department	33
X-ray	58
Orthopædic specialist	1
Mantoux test	39
B.M.R.	1
Dental Department	9
Ultra violet therapy	2
Out-patient, diet, remedial exercises	3
Hospital for observation	6
Recommended for health camp	20

In addition, 31 children attended the clinic at Upper Hutt.

Nutrition.

The standard of nutrition as assessed in New Zealand has been discussed on many occasions, but the following extract from the annual report of the Chief Medical Officer of the Board of Education for 1936 will no doubt be of interest:—

> "Dr. T. C. Lonie points out that there is no agreed mathematical standard of nutrition, and that although physiologists are constantly seeking for some method of uniform measurement of the state of well-being, of health and of fitness, some of which attain a high accuracy of measurement of certain physiological factors, yet it must be remembered that from the point of view of the School Medical Service nutrition must be capable of broad assessment in a very short space of time:—
>
> > "'Not more than ten minutes at most,' he says, 'can be spent on the complete routine examination and, of course, this completely rules out any elaborate tests. We have, however, in weight and height two standards of measurement which are not subject to the objection that they vary according to the examiner, and which, taken in conjunction with each other and with age, do measure a certain nutritional standard. One does not pretend that this is an accurate measure of nutrition, but it would at least give us a uniform and comparable measure of two of the main related factors concerned. The great variation of any child from these related standards would then be *prima facie* reason for a much more searching assessment of his nutrition state, while if a whole group of children varied from the standard in a like manner it would be evident that some common factor, either racial or environmental, was at work. The suggestion of a weight-height-age standard has been urged by many competent authorities. Such standards could be easily worked out, both regionally and nationally. They are quite impersonal, and while one recognises their limitations, they are, to my mind, much better than the present system of assessing the general state of well-being of the child.'
>
> "Desirable as such regional standards may be, it is generally accepted that for assessment of nutrition at routine examinations clinical examination is more reliable than any such application of "mean" standards . . .
>
> "The value of *periodic* weighing and measuring is, however, very great, for it is the best method of estimating the rate of growth, one of the most important indices of the function of nutrition. A loss of weight, or even failure to make sufficient increase, is, of course, a most valuable sign of subnormal nutrition in a child."

I am in full agreement with the views expressed by the Chief Medical Officer, and regular height-weight-chest measurements have been undertaken by School Medical Officers in the different districts in an endeavour to ascertain how much the milk ration is improving the nutrition of children. Although results from some districts show a satisfactory increase in both height and weight, it is not considered that sufficient numbers have been measured or sufficient time allowed to report more fully upon this at the present time. Some schools have undertaken special work in this direction, a detailed report being received from the Owairaka School.

From a survey of reports received and the fact that the incidence of subnormal nutrition again shows a decrease over last year's figure, it is apparent that the state of nutrition of the school child has improved considerably in recent years. That the improvement is general is indicated by the following extracts from several districts:—

Dr. McLaglan (Christchurch).—"The health of the children on the whole was very good."

Dr. Wilson (Auckland).—"I consider that the average nutrition of the school child has definitely improved during the last few years. Teachers and parents are now more interested in proper diet, fresh air, and health education generally."

Dr. Stevenson (Dunedin).—"The ration orders issued to the needy families upon sustenance have been decreasing each year owing to the many more operating employment schemes and better conditions."

Physical Education.

A National Council of Physical Welfare and Recreation has been formed in an endeavour to make provision for facilities for physical training and games not only for school-children, but for those over school age.

It must be recognized that every child is not suited for vigorous physical exercises and many suffer nervous strain through being forced into such activities. Optimum nutrition must be considered an essential to physical fitness, and every effort must be made to bring children up to this standard before commencing the physical-training programme. Medical inspection and supervision must be carried out, and the decision of the Medical Officer must be the deciding factor in assessing the amount of physical exercise or training to be undertaken by any child.

Every child should take part in the games suited to his physical condition. The question has been raised as to whether the schools are not spending too much time in training their teams—cricket, hockey, basketball, football—and leaving the remainder, the "barrackers," on the side-lines because they have not had the opportunity of taking part in or been taught the recreational pursuits most suitable for them. The 100-per-cent. children (I am pleased to state that there are Medical Officers who can find such) should be left to play their games, while care and attention should be centred on the remainder who are the problems; these require more specialized supervision—games and exercises carefully chosen, sufficient rest, and proper diet.

Evidence as to what can be done by a headmaster who is keen and interested in the physical well-being of his pupils is furnished by a report from the Headmaster of the Remuera School, who commenced an investigation, after the medical examination by Dr. M. Wilson of all children, in March. His report details the physical grouping of the children, the corrective exercise given for certain defects, the games and drill undertaken, and the indoor lessons given, and contains the following summary:—

> "Since the inception of the special physical training and play activities a great improvement in physique and deportment is noticeable. The posture which previously was poor is now good, and all the children are definitely 'posture conscious.' However, I feel certain that good posture could be considerably assisted by having adjustable desks or a greater range in the existing type.
>
> "There is also a greater mental alertness which is reflected in improved school-work. Besides the former improvements, the children show greater application, more initiative, greater trustworthiness, and reliability.
>
> "The health of the children is much better and is reflected in less sickness, with consequent more regular attendance.
>
> "Members of the staff are generally very well pleased with the improvement shown in the children and are of the opinion that the training should continue.
>
> "My thanks are due to Dr. M. Wilson for her interest and thorough medical examinations of the children, to my staff for their excellent co-operation and assistance, and also to Miss M. B. Maxwell, physical training specialist, whose ability and enthusiasm have paved the way to success."

Very few schools are fortunate enough to possess a central hall or gymnasium where drill can be taken on wet or boisterous days. School Medical Officers note that they are unable to report upon any indoor class-room exercises; unfavourable weather in most schools would seem to mean "no drill."

Dr. Deem, in the course of her report states: "No primary school I have ever visited has a gymnasium, so the drill classes are conducted out of doors in fine weather, and not at all when the weather is wet. Many of the school grounds are excellent for drill and folk dancing, but for remedial work I consider that ground exercises are essential."

Dr. Mulholland writes: "Unless the periods for physical education result in better physical development, better posture, and development they are of little value. In general, the posture is poor. I do not think that one period of drill a day will do much for improving posture, but I do think that better results would be obtained if the exercise had some interest for the child."

With the formation of the Council above mentioned, we can look ahead to a forward movement in this subject.

Infantile Paralysis.

The school period was interrupted last year by the epidemic of poliomyelitis which, starting in Dunedin in December, 1936, gradually spread throughout the Dominion with varying intensity. In Otago, where the disease was most virulent, from 1st December, 1936, to 30th November, 1937, some 192 cases occurred, 110 of which were between the ages of five and fifteen. In all, during the twelve months mentioned, 845 cases were notified throughout New Zealand, 452 being between the ages of five and fifteen. In addition, 16 cases were notified among the Maori population between these ages.

This necessitated the closing of schools in the different districts as cases were reported, and School Medical Officers are to be congratulated upon the fact that so much school-work was carried out in the time at their disposal.

Health Camps.

The King George V Memorial Fund Appeal for health camps was an undoubted success. The public realized the value of health-camp treatment, and the appeal met with ready response. Provision for the disposal of the fund will be made when Parliament assembles, and in the meantime the Associations in the various districts are carrying out their usual programmes. Reports received all record the valuable work done by these Associations and the benefits gained by the children in the ordered regime of the camps.

The task of examining and arranging for the admission of children to health camps is no light one, and School Medical Officers and nurses perform an increasing volume of this work each year in an efficient manner.

Milk-in-schools Scheme.

Development of the Milk-in-schools Scheme has taken place, and the half-pint ration is now available to some 157,000 children. School Medical Officers and teachers comment favourably on the increased vitality and alertness displayed by the children. The distribution of the ration throughout the class-rooms entails a certain amount of extra work on the part of the teachers, and they are to be commended on the satisfactory arrangements they are making in this connection. There are a small number of children who say they cannot take milk, but the percentage is not great, while on the other hand many children who have never drunk milk before now take it at school with marked benefit.

The following are extracts from some reports on the scheme:—

Dr. Platts Mills.—"The supply of milk free to the schools was instituted in Palmerston North and in Wanganui during the year, and the results have undoubtedly been very good . . . Good results have been apparent in quite unexpected quarters. In one case a child who had suffered all his life from infantile eczema of a severe type was, after six months of extra milk, better than he had been in his life. This opinion was expressed very definitely by the boy, his teacher, and his parents."

Dr. Boyd.—"The beneficial effects of the milk ration in the schools are beyond question. Apart from confirmatory evidence of weights and heights, the increased alertness and vitality of the children is particularly noticeable in some of the schools in the poorer areas. In some other schools where the children have been more fortunate in domestic nourishment the improvement is not so plainly apparent."

Dr. Deem.—"The year has seen the introduction of the Milk-in-schools Scheme to the schools in the Hamilton Borough and to the Te Aroha School, and a Dried-milk Scheme has been introduced into four schools in the Taupo District."

Dr. Moir.—"The standardized ration of milk is supplied to the town schools of Nelson and for a short distance around. Nearly all the children take the milk, though the consumption varies at times and falls during the winter months, when some children refuse the cold milk."

Convent Schools.

With an increase in staff it is hoped to include these schools in the annual medical inspection. It has been the practice in Hawke's Bay and Nelson districts to carry out medical inspection of convent schools. In Hawke's Bay, owing to a shorter working-year, this work was subject to some modification. Dr. Champtaloup, in reporting on the examination of convent schools, states: "In Wellington during the year an assessment was made of the convent schools; some were inspected, and it is noteworthy that this service was welcomed. Treatment of defects notified was in the majority of cases remarkably prompt."

Diphtheria Immunization.

Immunization against diphtheria was carried out in several districts. In the South Auckland district an intensive campaign was carried out by Drs. Turbott and Deem, 3,652 children being inoculated. From Whangarei Dr. Cook reports that Whatatiri and Maungatapere Schools were immunized. In Gisborne 394 school-children and 72 pre-school children were inoculated. In Auckland also immunization was carried out by Dr. M. Wilson.

Dental Caries.

This is a defect over which School Medical Officers are still showing concern. Although the dental clinics are still doing excellent remedial work, the incidence of caries remains disappointingly high. Some parents make a splendid effort to preserve their children's teeth, but in other cases they fail to take advantage of the dental-clinic treatment, although the clinics are easily accessible. When the importance of correct and adequate diet is appreciated by parents, and when the conservative treatment undertaken by the Dental Division is available throughout the Dominion, our figures for the incidence of caries will show great improvement.

Dr. Champtaloup writes: "It is common to find neglected secondary caries (arising after the clinic age). The provision for this is inadequate, and conservative treatment is usually impossible to obtain . . . It is sometimes difficult to arrange for treatment, but available services are frequently inadequately utilized. There is need for stimulation to secure treatment in post-clinic cases."

Sanitation and School Buildings.

All School Medical Officers remark on the improvement in school buildings, sanitation, and equipment. Nevertheless, while appreciating the difficulties which School Committees and Education Boards have to contend with, the cleanliness of some class-rooms still leaves much to be desired. It is difficult for children to be taught the fundamentals of hygiene if the condition of the class-room is not up to the required standard.

Acknowledgment.

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

Elizabeth Gunn,
Director, Division of School Hygiene.

PART IV.—HOSPITALS.

I have to submit the annual report of the Division of Hospitals for the year ended 31st March, 1938.

Hospital Building Activities.

As in previous years, the Division has been much occupied with building proposals for the various Hospital Boards.

Southland Hospital Board.—The laundry at this hospital still awaits the machinery, but this will be installed during the forthcoming year. Some discussion has taken place regarding the renovation of the tuberculosis annexe, but no decision has yet been made by the Board.

At Gore Hospital a report has been provided on the matter of erecting a Children's Ward.

South Otago Hospital Board.—A report on the shortage of accommodation both for patients and nurses has been submitted to the Board.

Plans and specifications for the new tuberculosis annexe were completed and a contract has been let.

Vincent Hospital Board.—Considerable discussion of the building proposals at Dunstan and Cromwell Hospital has taken place. The architect has now in hand the preparation of final plans and specifications. At Cromwell it is proposed to build a new hospital and use the present hospital as a Nurses' Home.

Maniototo Hospital Board.—Plans and specifications in connection with the extension to the laundry and the addition of a sun-porch were completed, and the work is now in hand.

Waitaki Hospital Board.—A report on the necessary ward and Nurses' Home additions was furnished to the Board, and a tentative "lay-out" is almost ready for submission to the Board.

A scheme of laundry extension has to be prepared, and various matters relative to the heating service have received attention.

South Canterbury Hospital Board. Good progress is being made with the erection of the new ward block, and the plans and specifications for the laundry and boiler-house were completed.

At Waimate the erection of the new theatre block is proceeding.

North Canterbury Hospital Board.—The Board has acquired a site at the foot of the Cashmere Hills for the new hospital to replace the Chalmers Wards at the main hospital. It is anticipated that the Board will develop further next year the proposals for the alterations at Christchurch Hospital.

For Kaikoura Hospital a report containing recommendations for future development was submitted to the Board. These were adopted by the Board and the plans in connection with the addition to the main building are being prepared by the architects.

Westland Hospital Board.—Contracts for the erection of a children's ward and a new theatre block have been arranged. The work also includes improvements to two of the existing wards. The work should be completed during the next year.

Grey Hospital Board.—The additions to the Nurses' Home and new ward block are being done.

The Board also has proposals for the erection of a tuberculosis annexe. The "Rewa" Maternity Hospital was damaged by a slip and had to be vacated. Temporary accommodation for maternity patients is provided by using the Hannan Ward at the main hospital.

Buller Hospital Board.—The preliminary plans for the new out-patient block and the new theatre have been discussed with the Board's architect, who is now proceeding with final plans and specifications.

Nelson Hospital Board.—During the year several discussions were held with the Board's architects concerning the proposed extensions to the Nelson Hospital.

The general lay-out was agreed upon, and this was adopted by the Board. Subsequent decisions, however, make it necessary to reconsider the whole question.

Marlborough Hospital Board.—Sketch plans for additional accommodation for both nursing and domestic staff have been under review. The Board also proposes some minor alterations to the Blenheim Hospital.

Wellington Hospital Board.—Revised estimates for the proposed work were submitted by the Board's architects. This necessitated the Board making application to raise a supplementary loan.

Owing, however, to the objections raised by the local contributory authorities, the whole question of the provision of hospital accommodation in the Board's area has been referred to a Royal Commission. In the meantime all discussions are suspended pending the receipt of the Commission's report.

Wairarapa Hospital Board.—Masterton Hospital: The new Nurses' Home and the new theatre block have been completed.

It was decided to add another story to the new home. Plans for the administration block and house surgeons' quarters are at present under consideration.

Greytown Hospital: The additions to the accommodation for old people have been completed and are in use, thus enabling the general hospital wards to be reopened.

Dannevirke Hospital Board.—The plans and specifications for the additions at this hospital were completed, and a contract for the work has been let.

Waipawa Hospital Board.—Waipukurau Hospital: A report on the requirements for the accommodation of nurses and domestics was submitted to the Board, and preliminary plans have been discussed.

Hawke's Bay Hospital Board.—Napier Hospital: The isolation block is nearing completion and will be in use next year. The following building proposals are under discussion:—

(*a*) Additional accommodation for nurses.
(*b*) New X-ray Department.
(*c*) New children's ward.

Hastings Hospital: The new theatre block and out-patient department were completed.

The building proposals under discussion for the Hospital include :—

(1) Additional accommodation for nurses.

(2) Special ward for children.

During the year a new swimming-bath was built for the use of the nursing staff. Public donations provided nearly all the money required for the work.

Wairoa Hospital Board.—The additions to the Nurses' Home and cottage for domestics were completed. The hospital is still seriously overcrowded, and further additions to the women's ward are contemplated.

As these when completed will be the last practical addition to the present buildings, and as certain essential services such as kitchen and laundry are not now equal to requirements, it will be necessary to plan the lay-out for a new hospital so that when replacements of the above services are done they will form part of the new Institution.

Cook Hospital Board.—Tenders for the erection of the additions to the Nurses' Home and the new boiler-house and laundry have been accepted. The preliminary plans for a new tuberculosis annexe are at present being discussed.

Waiapu Hospital Board.—During the year the Board was presented with a large residence at Waipiro Bay. This has been converted into a maternity annexe, and the old one at Tokomaru Bay has been closed.

Bay of Plenty Hospital Board.—The new laundry building has been completed, and the machinery installed. The Board is now considering essential additions to the hospital, and also further additions to the Nurses' Home.

Tauranga Hospital Board.—The additions to Tauranga Hospital and the Nurses' Home have been completed. The new cottage for nurses at Te Puke is also completed.

Waikato Hospital Board.—Waikato Hospital: The new office block has been completed, and the administration and out-patient block at the Waikato Hospital are nearing completion.

Rotorua Hospital: This hospital continues to be fully occupied, and it is proposed to use the isolation ward for general cases.

To provide accommodation for cases of infectious disease plans for alterations and additions to one of the hutments have been prepared.

Auckland Hospital Board.—Apart from the preparation of plans and detailed drawings for the additions to the Nurses' Home, very little progress has been made with the proposals to provide additional accommodation at the main hospital.

During the year a special hospital for the treatment of crippled children was opened at North Shore. The house and grounds were donated by Mr. Wilson.

Whangarei Hospital Board.—Tenders for the proposed additions to the hospital have been let, and the work is in progress.

Bay of Islands Hospital Board.—A report on the further development of this hospital was prepared, and during the incoming year part of the work will be proceeded with.

Whangaroa Hospital Board.—No substantial progress has been made in respect to the suggested additions to the hospital. Slight modifications to the proposed plan have been made.

Mangonui Hospital Board.—Plans for the new laundry and boiler-house are in course of preparation.

Kaipara Hospital Board.—The existing hospital continues to be grossly overcrowded. A new site has been secured, and it is anticipated that the preparation of plans for a new hospital will be proceeded with next year.

Taumarunui Hospital Board.—It is anticipated the additions to the Nurses' Home will be completed in 1938.

Taranaki Hospital Board.—The erection of the tuberculosis annexe is proceeding and should be completed during 1938.

Patea Hospital Board.—A report on the method of providing the necessary additional accommodation at Patea Hospital for nurses and domestic staff was submitted to the Board, and preliminary sketches have been prepared by the Board's architect.

Wanganui Hospital Board.—Wanganui Hospital: The new isolation block is at present being built.

Raetihi Hospital: A report dealing with the problem of accommodation and extensions to this hospital was furnished to the Board. When additional land is acquired it is proposed to erect a new maternity ward.

Palmerston North Hospital Board.—Further discussions *re* the building proposals of the Board have taken place, but a final decision has not yet been reached. The alterations to the children's ward are proceeding.

Otaki Sanatorium: Additional accommodation for patients has been provided.

Queen Mary Hospital, Hanmer.—Contract was let for provision of a forty-two bed male pavilion with theatre, recreation-rooms, storage facilities, and for an administration block for the whole of the hospital at a total cost of £72,441.

Amalgamation.

Following the findings of Commissions, the Wallace and Fiord Hospital District has been amalgamated with the Southland Hospital District, and the Coromandel, Thames, and Waihi Hospital Districts have been combined under one Board.

Hospital Commissions: Napier Hospital.

Owing to the receipt of several complaints regarding the hospital, a Royal Commission of Inquiry was set up, and presented its report on 12th July, 1937.

The findings of the Commission concerning the administration, the conduct of the children's ward, and the treatment to which certain children were subjected, and other matters, was trenchant, and indicated a lack of co-operation between the various administrative officers. Following the receipt of the Commission's report various recommendations were made to and discussed with the Board.

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

PART V.—NURSING.

I have the honour to submit my annual report for the year ended 31st March, 1938.

During the year I had the privilege of being granted study leave to take advantage of a travelling fellowship granted to me by the Rockefeller Foundation. While I was absent from New Zealand Miss J. Moore acted as Director of the Division of Nursing, and I have to acknowledge the efficient manner in which she carried out these duties, particularly as the notice of my leave was very short and the necessary adjustments of staff had to take place suddenly. Miss E. R. Bridges, who returned from abroad in January, 1937, relieved Miss Moore from some of her duties in connection with the post-graduate course, and with the help of Miss H. Comrie, Nurse Inspector in the Wellington District Office, the usual course was covered. I am very grateful to these officers for the additional duties they carried out so well.

Staff Changes.

Various changes have been made during the year amongst the senior officers. Owing to the opening of the Palmerston North District Office, Miss H. Comrie was transferred from Wellington to this new district as Nurse Inspector, leaving the Wellington District Office with one Nurse Inspector instead of two. With the extension of the district nursing services which is taking place in the near future consideration will have to be given to appointing additional supervising nursing officers in each of the main centres whose work will be perhaps concentrated on the public-health aspect.

On 28th December, 1937, the tragic death occurred in London of Miss N. Arnold, who was at that time on special leave having just completed a study tour of obstetrical hospitals in Scandinavia and Holland. Miss Arnold was a particularly able officer of the Department with a very pleasing personality who had won much affection and admiration. It is to be deeply regretted that her career ended while still a comparatively young woman.

Owing to Mis Arnold's death changes in the matronships of St. Helens Hospital have taken place. Miss M. Boyce has been transferred to Wellington; Miss E. Sparkes to Christchurch; Miss R. Paterson to Invercargill; and, as Miss Oppenheim is having extended leave as from 1st March, Miss A. Joyce—who relieved as Matron at St. Helens Hospital, Wellington, during Miss Arnold's absence—is now relieving at St. Helens Hospital, Auckland.

Miss Mirams, Miss Jewiss, Miss Small, and Miss Williams have resumed duty after special leave to visit abroad, during which they took advantage of the opportunity to observe public-health nursing developments in Great Britain and, in the case of Miss Jewiss, on the Continent, and, Miss Small in Canada. Miss Jewiss has been stationed in Auckland to assist with the co-ordination of the district nursing duties and Miss Small in Wellington to develop a more intensive programme in a special area.

Ten additional district nurses have been appointed in the North Island during the year, and an agreement has been reached with the Wellington Hospital Board by which the district nurses in the rural areas controlled by the Board undertake departmental duties. During the coming year it is planned to extend the work being carried out in the South Island.

Training of Nurses.

During my prolonged absence from New Zealand the Nurses and Midwives Registration Board only met twice—in November and again in March.

The term of appointment of Miss Tennent and Miss Morgan, representatives of the nurses and midwives on the Registration Board ceased in October. It was with great regret to the Board, and to the midwives whom she represented, that Miss Morgan's decision that she could not stand for renomination was learned; but it was with pleasure that Miss Tennent's intimation that she was prepared to stand again was received.

The Hon. the Minister of Health, therefore, on the nomination of the New Zealand Registered Nurses' Association reappointed Miss Tennent for a further term of three years, and appointed Miss Trotter in place of Miss Morgan.

The business of the Board has fallen into two distinct categories:—

(*a*) *New Business*—

(1) With the permission of the Hon. the Minister of Health, the regulations governing the institution of the proposed Preliminary State Examination have been passed, and this examination will take place in November, 1938, for the first time.

(2) The syllabus for the teaching of nutrition and dietetics has been revised to include more of the preventive aspect of this subject.

(3) Consideration has been given to a scheme which might be submitted to the Government for training a "Nursing Aid" with the double object of bridging the gap for those girls who leave school early and who must earn until they enter hospital and of preparing a woman who would undertake the care of a home and the nursing of the chronic sick in the home.

The training which is proposed would be of two years' duration and would include a thorough training in domestic work and the daily hygiene of a patient.

A scheme of this nature will necessitate fresh legislation to enable proper control during training, the establishment of a register for these women so as to give them a proper professional status, and to ensure protection for the registered nurse in the future.

In view of the fact that there is general concern over the shortage of competent housekeepers and that the last census showed there were no less than 740 untrained women carrying out private nursing duties in the Dominion, it would appear that there is a definite need for a scheme of this kind.

(4) In view of the necessity for keeping the registers up to date, as a Practising Certificate has not been feasible so far, it has been decided to clear the active register again during the coming year. It is essential to know how many nurses are available and, owing to the constant changes which take place and the failure of nurses to notify this Office, it is difficult to keep the registers up to date.

(*b*) *Business Arising from Reports*—

(1) Forty-four reports covering the inspection of general, maternity, and midwifery training schools were received by the Board and appropriate action taken. This has resulted in three additional maternity hospitals being approved as training-schools for maternity nurses, the approval of Rotorua Hospital as a part-time training-school, and the cancellation of Waimate Hospital as a part of the training-school of Timaru Hospital; also the application of one small hospital to be approved as a training-school being refused.

(2) Reciprocal agreements with South Africa, Ontario, Victoria, and the Central Midwives Board of England were considered.

(3) The reports submitted by experienced nurse examiners concerning the Practical Nursing Examination show that this has met with general approval and has certainly assisted in emphasizing the importance of detailed nursing technique.

(4) Registration by virtue of terms of reciprocity was granted to thirty-four overseas nurses, of whom twenty-five were Australians.

(5) Following on reports submitted to the Board, disciplinary action was taken in regard to two nurses.

A conference of the Matrons of training-schools was held in Wellington in November, the agenda for which covered matters pertaining to the teaching, health, and general welfare of their nursing staffs. This meeting, which has been held annually for the past three years, has proved most useful, as it has given the Matrons an opportunity of hearing of experiments being tried and of voicing their own difficulties.

Two very important developments during the year have been—

(*a*) The introduction at Waikato Hospital of the system of "block teaching." By this system nurses are withdrawn from the wards at the termination of each year of training for a period of six weeks. During this time all the medical lectures for the ensuing year are given and for the remainder of the year the nurses only have clinical nursing instruction accompanied by nursing revision by the Tutor Sister.

To enable this to be done an additional preliminary class was taken at the commencement to supplement the staff.

The system has only been in operation a little over a year, but already the Waikato Hospital authorities consider that it has definite advantages. The nurses are fresher, as they are freed from their ward duties while they are having their heavy course of medical lectures, and in consequence it has been possible to develop different forms of teaching with much freer discussion.

It will be most interesting to watch this experiment in New Zealand. The system has been commonly followed in Scandinavian countries for some years. There is only one hospital—University College Hospital in England which has introduced this system, and that was only one year ago.

(*b*) During the year the New Zealand Registered Nurses' Association, partly on the advice of the Hon. the Minister of Health, has introduced a Student Nurses' Association as an associate group to the main organization.

The organization of these student groups is yet in its infancy, but if properly organized and advised student nurses will have an opportunity to study their own problems and help in the control of their own group. Student government in some degree has become a feature of the life of all residential University colleges the world over and forms the school in which responsiblity is acquired. For this reason any means which will help in the development of initiative and a sense of responsibility in the young nurse is to be encouraged.

In many Canadian and American hospitals a very large measure of control lies in the Students' Council, and the Matrons in charge of these hospitals feel this movement has been most beneficial. One or two English hospitals have also developed a slightly modified scheme and have found it of great assistance. The girl leaving school is accustomed to the prefect system, and this is just a continuation of that system on broader lines.

Hospital Inspection.

Visits of inspection paid to hospitals emphasize the fact that the standard of nursing technique being demanded in turn requires equipment and staff. The majority of hospitals are crowded, largely due to the fact that so little building has been done for some years, plus the increased use of the hospitals

by a wider section of the public and, in the North Island, by the Maoris. In one country hospital the number of Maori patients in comparison to non-Maori patients has increased from one sixteenth to one third in four years. This is no doubt due to the Maoris' increasing knowledge and respect for the health services of the country.

General Hospitals.

Hospital authorities have been most concerned by firstly, an apparent shortage of applicants and, secondly, a shortage of registered nurses. It is therefore necessary to focus attention on these two factors -

(*a*) *Shortage of Applicants.*—The following table shows that there are 929·54 more occupied hospital beds used for training-school purposes and 592 more pupil nurses in training than in 1932. There has been approximately an increase of 200 entrants a year. It might be pointed out that these returns cover a period of a falling birth-rate after the Great War, when fewer girls of the particular age-group which enter hospital for training were available and when there has been experienced in the last three years a great demand for female labour in every avenue of work arising from the Government's expansion policy:—

A. Daily Average Occupied Beds for all Training-Schools.

31st December, 1932	3,981·72
31st December, 1933	4,059·30
31st March, 1935*	4,220·05
31st March, 1936	4,467·41
31st March, 1937	4,734·85
31st March, 1938	4,911·26

B. Total Nursing Staff for all Training-Schools.

	1932.	1933.	1934.	1935.	1936.	1937.
Total nursing staff	1,769	1,967	2,116	2,264	2,442	2,534
Total pupil nurses on staff	1,257	1,412	1,502	1,640	1,803	1,849
Total registered nurses on staff	512	555	614	624	639	685

C. Total Number of Nurses Sitting and Passing State Examinations.

	1932.	1933.	1934.	1935.	1936.	1937.
Number sitting	385	448	403	354	380	478
Number passed	272	338	280	262	315	366

* Statistics changed from calendar to financial year.

While it is essential to have a well-organized and sufficient nursing service for the country's needs it should be obvious that the rapidly expanding hospital occupancy cannot depend on increased student labour for staffing purposes without considerably lowering the very excellent standard maintained by the majority of hospitals and without ultimately repeating the condition when the country was faced with a large supply of nurses it could not absorb.

All the suitable hospitals have already been approved as training-schools. It is probable that the proportion of nurses to patients (1 to 2 occupied beds) as at present will be increased slightly to carry out the work efficiently and to give shorter hours, but this increase should be largely with registered nursing staff, as the proportion of 685 registered staff to 1,849 pupil staff, or approximately 1 to 3, is too low.

(*b*) *Shortage of Registered Nurses.*—An analysis of the present position shows that, eliminating certain wastage throughout the year, there are 4,306 nurses on the active registers to date. As far as is known, the following figures give some idea as to how they are employed:—

Public hospitals which are training-schools	685	
Public hospitals which are not training-schools	300	(approx.)
Obstetrical hospitals (public)	100	(approx.)
Private hospitals (general)	748	
Public health nursing (Health Department, Child-welfare Division, Plunket Society, Hospital Boards, Voluntary Organizations)	325	
Tropical nursing service	28	
Private nursing		
Nurses attached to bureaux	420	
Nurses not attached to bureaux	300	(approx.)
Overseas	300	(approx.)
Unaccounted for	1,100	
Total	4,306	

During the year this Office has known officially of 101 nurses leaving New Zealand for overseas, and only 12 have returned. Marriages, death, &c., have caused officially a wastage of 46, but this is by no means correct, and it would seem that there is a wastage of at least two hundred nurses a year.

No country has yet determined how many nurses per population it requires—this must be a varying figure according to the standards of living of the community. New Zealand has 5·5 hospital beds per 1,000 population, which is more or less comparable with the same allowance in England. In the same way if all the nurses appearing on the active register were counted New Zealand has one nurse per 400 of the population, which is much as the position in England where there were 86,000 nurses on the active register at the end of 1936. But if the actual number of known nurses employed in New Zealand is assessed it allows one nurse to 500 population.

Once the proposed regulations reducing the hours of work in private hospitals to forty-eight per week come into force, at least sixty more registered nurses will be required, and it is possible in the near future that another one hundred will be required for the expanding public-health services. The annual increase by means of examination in future will be in the neighbourhood of four hundred to four hundred and twenty. Should the annual wastage of approximately 50 per cent. continue, as is likely, it would probably be difficult to provide a complete bedside nursing service for all sections of the community as was proposed under the National Health Insurance Scheme without developing a subsidiary nursing scheme.

Obstetrical Nursing Service.

In the same way there has been a general demand for nurses in obstetrical hospitals. The position at present is that there are 1,500 maternity nurses on the Active Register and 1,755 midwives on the Active Register, making a total of 3,255. This allows for one obstetrical nurse per 500 population. Many of the maternity nurses will be registered nurses who are not regularly actively engaged in maternity nursing. This will be true of the older midwives, but owing to lack of an annual practising certificate the exact position is not known.

It has often been contended in New Zealand that those nurses trained as midwives do not practise obstetrics.

The present Act came into force in 1926, but owing to the many difficulties encountered in putting the Act into effect it was really not until 1932 that the new system of training became stabilized. The following table shows the position over the last five years :—

Number of midwives who passed examinations during last five years	295
Number who have practised or are practising obstetrics	222
Number who have joined Plunket Society staff	21
Number who returned to public hospitals	32
Unknown	20

The following table shows the annual increase :—

MATERNITY NURSES.

Registered Nurses.

	1932.	1933.	1934.	1935.	1936.	1937.
Number sitting	152	158	170	190	195	201
Number passed	143	148	108	180	189	193

Unregistered Nurses.

	1932.	1933.	1934.	1935.	1936.	1937.
Number sitting	35	43	33	34	43	36
Number passed	30	35	30	33	37	30

MIDWIVES.

Registered Maternity Nurses who are also Registered Nurses.

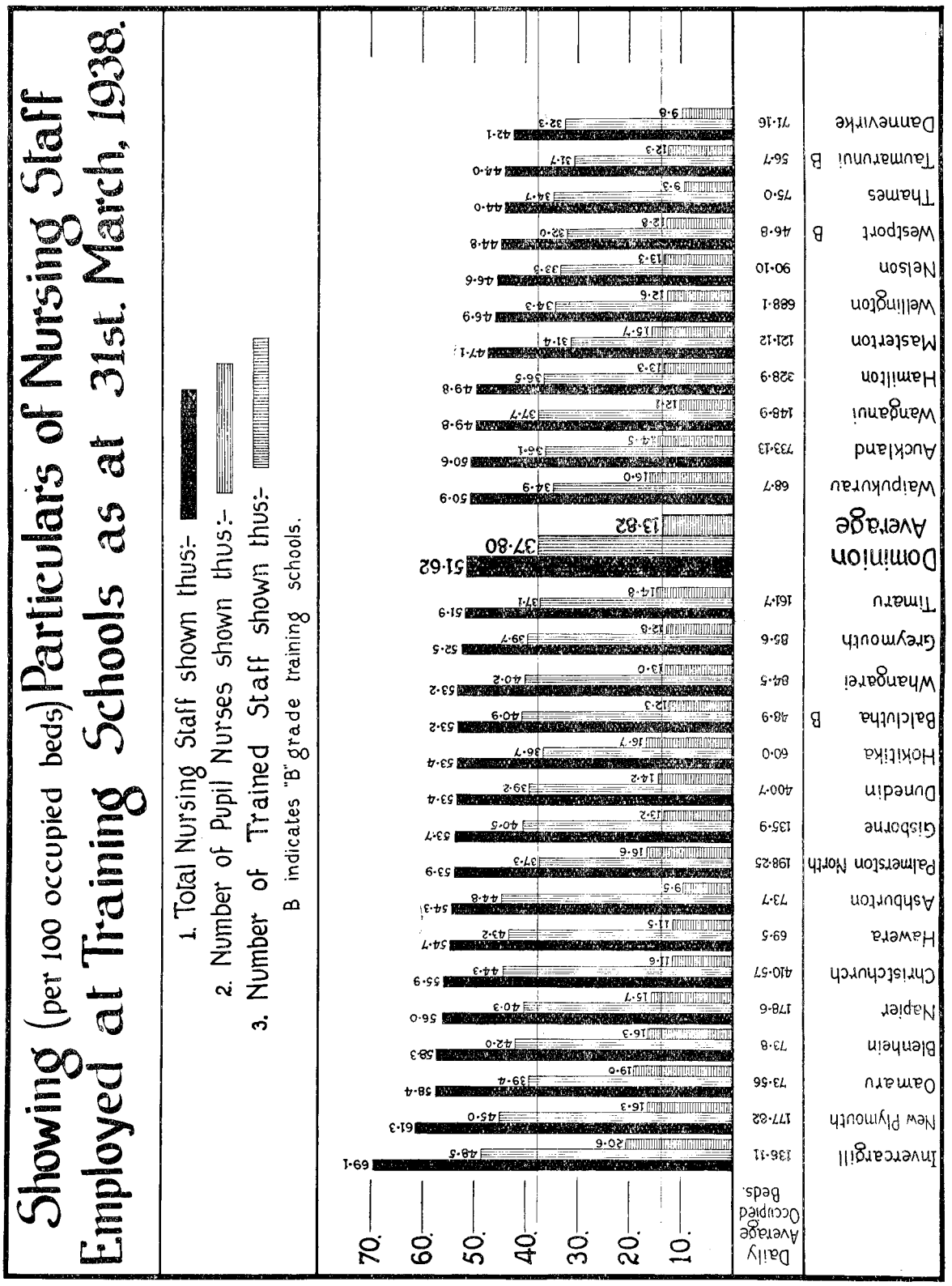
	1932.	1933.	1934.	1935.	1936.	1937.
Number sitting	45	48	53	57	58	55
Number passed	39	44	47	53	56	54

Registered Maternity Nurses who are not Registered Nurses.

	1932.	1933.	1934.	1935.	1936.	1937.
Number sitting	14	14	18	14	9	19
Number passed	11	12	13	13	7	17

It is true that many registered nurses who are registered maternity nurses do not practise obstetrical nursing; therefore the real annual increase is much less. This fault can only be overcome by, firstly, the training-schools adopting a more inspiring method of teaching, and, secondly, conditions in obstetrical hospitals for the nursing staff will need to be improved, as 80 per cent. of the total births take place in hospitals.

In Scandinavia and Holland the midwife has for many years been practically in the employ of the State. The 1936 Midwives Act of England and the Maternity Services Act of Scotland brings the same conditions into being in Great Britain, and it is very questionable if in this country it will not be necessary to introduce a similar system to ensure that conditions of employment are such as to attract the best type of nurse to this type of service.



Health of Nurses.

The continuation of this study has, there is no doubt, resulted in increased interest in this important subject. When the study originated it was pointed out that this should be considered from various angles :—

(*a*) The more careful examination and supervision of the nurse's health.

(*b*) Measures to protect the nurse, such as a generous and varied diet, hours of duty, living-conditions, and an arrangement whereby uniforms worn in the wards did not leave the wards even when the nurse went for meals.

(*c*) The improvement and standardization of nursing technique.

From the attached table it will be seen that sickness among staffs is still a problem and that there is much yet to be done, particularly along preventive lines.

While in London I was asked to become a member of the International Committee which is responsible for this study, and to be responsible for collecting the annual material from Australia. This should be of mutual help, as our conditions in some ways will be comparable. In the final report New Zealand is to be responsible for a thesis on the "Prevention of Common Ailments."

Nursing Staff.			Number of Staff sick.		
Pupil Staff.	Trained Staff.	Total.	Pupil Staff.	Trained Staff.	Total.
1,757	664	2,421	1,069	181	1,250

The above total includes such conditions as bronchitis (8), boils, septic fingers, &c. (171), colds, influenza, chills (318), diphtheria and diphtheria carriers (35), septic and sore throats (43), *Erythema Nodosum* (12), pleurisy (28), pneumonia (3), tonsillitis (155), tuberculosis (13).

Post-graduate Course.

This course originally began in 1928 and is continuing its very useful purpose. There were sixteen students in 1937, and seventeen students commenced in February, 1938. Of these, eight students have bursaries from Hospital Boards and four have bursaries from the Department. Recently the buildings have been renovated and additional book-cases have been added to house the expanding Grace Neill Library. Old students would be very pleased with the improvements.

Nursing Education Committee.

Early in 1938 this Committee met and has issued a very detailed questionnaire to all training-schools covering the nursing of children. It has also organized an essay competition among the training-schools—the subject of the essay is to bear on preventive medicine each year.

Tropical Nursing Service.

Changes have taken place in several of the Island positions. Miss Roberts decided that for health reasons she would not return again to Apia, Western Samoa. Her decision was received with the greatest regret, as she had done excellent work while there. She was replaced by Miss Agnes Becker, from Greymouth.

Miss Tanner's term of service at Niue Island having expired, she was replaced by Miss L. Hawkes, who had returned from Norfolk Island.

In the same way Miss Paora's term having expired at Rarotonga, she was replaced by Miss V. McPhail.

In addition, several Sisters have been seconded from New Zealand for service in Samoa and Fiji. The system continues to prove a useful and popular one as it gives experience in the handling of Native staffs to New-Zealanders and ensures a carefully chosen staff for the Islands.

Interesting letters have been received from the New Zealand nurses serving on the staff of the Municipal Council in Shanghai. They had a very trying time during the bombardment in August, but they were all impressed by the excellent organization and the provision made for their care. Later they had most interesting experiences when seconded to the emergency infectious-diseases hospitals which were created to cope with the problems which were caused by the conditions of war.

Observations from Abroad, with some Deductions for New Zealand Nursing Conditions.

During my leave the Rockefeller Foundation arranged that I paid visits of observation to hospitals and public-health organizations in the following countries: United States of America, Canada, Great Britain, Poland, Finland, and Sweden.

In comparing New Zealand conditions with those existing in any of the States of the United States of America or the Provinces of Canada there is no doubt that New Zealand has a much more adequate organization on a population basis both in regard to public health and hospital provision as the whole country is affected. On the other hand, there is much to be learned from the various experiments being carried out in schools of nursing and in public-health organizations.

Great Britain, with its highly industrialized population and its many old voluntary organizations which are subsidized to carry out functions which in this country are the responsibility of the State, has problems and conditions which do not pertain to this country.

In my opinion it is rather in Scandinavia, with its smaller and largely rural population, where the State has had to assume the responsibilities which in Great Britain and the United States of America are carried by local authorities and voluntary organizations, that a similarity of problems have developed a service more akin to our own.

There is no doubt that too much emphasis cannot be placed on the introduction of a preventive and social outlook in regard to disease in the training of a nurse. It is only in this way that a perfection of nursing technique and a humane understanding of the needs of the patient can be obtained. Efforts have been made along these lines for some years in New Zealand, and there is no doubt that our system has lead to a uniformity of conditions that does not exist in any other country. One of our great difficulties has been adequate preliminary training, partly because many of our training-schools are so small and the intake of student nurses so limited that economically a properly equipped and staffed school is impossible.

Scientific medicine demands that the nurse of the future should have an intelligent understanding of the treatment and nursing care she is expected to give, and this is impossible unless she is carefully prepared.

Few people realize that nurses pay for their education by their labours on the old apprentice system, and that very often the controlling authorities, not appreciating that they are educational bodies, fail to provide adequate facilities.

To enable a careful preliminary training to be given there is no doubt that a few central schools to which the applicants from the various training-schools could be sent to be trained would have great advantages—it would mean that a well-qualified staff could be obtained, the teaching of the necessary scientific subjects and the elementary nursing technique would become standardized, a careful investigation could be made of the prospective nurses' health, and a preventive bias introduced.

Whether these schools should be developed in association with secondary girls' schools or whether in conjunction with a general hospital has yet to be determined, though there are very definite advantages about the latter. In either case the cost will be a consideration, and the assistance of the State will be needed either in the form of bursaries, subsidies to local authorities, or the conduct of actual schools by the State. This system is in force in Finland and has proved most satisfactory.

On the completion of the preliminary training the student nurse would then return to her own hospital for the period for which the Registration Board had approved that particular hospital.

Some of the existing difficulties in regard to the training of nurses are—

(1) The correlation of theoretical and practical instruction—*i.e.*, surgical nursing being taught during surgical experience, &c.

(2) The isolation of the Tutor Sister from clinical nursing in the wards.

(3) The lack of proper organization of the out-patients' department and district nursing for teaching purposes.

(4) The giving of adequate theoretical instruction without upsetting the wards or unduly prolonging the nurses' hours.

Various methods have been adopted for overcoming these conditions, which are very common.

The student's experience will include medical, surgical, children's, infectious-disease, and tuberculosis departments, together with the operating theatre and out-patients.

It is most important that every nurse should have at least three months' experience in the out-patients' department. In some of the schools of nursing I have visited this experience has been arranged in such a way that it is interspersed between each different type of duty—*i.e.*, medical clinic after medical ward, &c. This system, while having definite benefits, is not easy to arrange.

I consider, therefore, that as a beginning every nurse should have at least three months in the out-patients' department during her last six months and that, in view of the fact that in New Zealand so many of our public-health clinics are held in these departments, the nurses in charge, who would be responsible for the teaching of the student nurses, should be nurses with public-health experience.

In this way the nurse would complete her training with the preventive and social aspect being emphasized and some experience in home visiting from these clinics.

The majority of countries now consider it necessary for every nurse to understand something of the mental aspect of disease and are giving this experience by arranging an affiliation of three months for every student nurse in a nearby mental hospital. This would not be feasible in New Zealand at present in my opinion, but if the work in the observation wards of our general hospitals extends it should be possible to use this experience. Further, there is a great deal of clinical material in the out-patient clinics, which, if better appreciated, could be used for teaching mental hygiene.

There is no doubt that every registered nurse should have a knowledge of obstetrics. In New Zealand, if our course of training was extended to four years, our present maternity training could be included, which would certainly give a much better all-round course, and should be the ultimate aim of the Registration Board.

Further, I consider the Tutor Sister should not be isolated in a class-room, but should have definite supervisory duties in the wards as well to keep her in touch with the clinical instruction of the nurses. This will entail a revision of duties among the administrative staff, but would be very well worth while.

Post-graduate Training.

In comparing the development of the post-graduate training of nurses abroad I think New Zealand may be congratulated on the work done in this country. This is very largely due to Miss Moore and to the interest Professor Hunter and Professor Gould have given. There is no doubt that Miss Moore's close association with the work of the Department as a whole has been of enormous value to the course, and I hope that in the future the instructors of this course will maintain this contact.

This does not mean that improvements cannot be introduced in the future. For instance, subjects such as anatomy, physiology, bacteriology, and nutrition have all been introduced because of the weaknesses in the basic course. As this improved it should be possible to modify the curriculum so as to give more emphasis to the socialized aspect of preventive medicine.

(*a*) *Course for Institutional Sisters.*

In comparison with what is given elsewhere, the course at present arranged for Tutor Sisters, provided they are experienced Ward Sisters, needs little altering. The teaching experience at present arranged is good, but could be further extended if it was possible for each student to give a lesson in clinical nursing in a ward situation.

On the other hand, there is a necessity for post-graduate experience for Ward Sisters, particularly from our smaller hospitals, and I would like to recommend the inclusion of such a course.

At Western Reserve University Hospital in Cleveland a post-graduate course covering a period of six months is offered either in medical or surgical nursing. The student does four hours' duty a day in the department in which she is specializing, and is paid for this duty. The theoretical course consists of lectures in psychology and methods of teaching and in advanced medicine or surgery, with coaching from an experienced Ward Sister. The clinical experience includes ward and clinic experience in the various sections of the particular department, together with actual classes for pupil nurses in the wards.

In Wellington Hospital, where there are now organized departments, a course of this type could well be given in conjunction with our post-graduate course and would assist many nurses.

A similar course in psychiatric nursing might well be given at Queen Mary Hospital, Hanmer Springs, and should be considered directly the new hospital is opened.

(*b*) *The Course for Public-health Nurses.*

Innovations which need to be considered in regard to this course are—

(*a*) The provision of bursaries for prospective public-health nurses. In Great Britain and the various States of the United States of America this is being extensively carried out by means of grants from the Central Government.

(*b*) The extension of field experience whereby the student is able to be responsible for a certain amount of work independently though under supervision. This year a beginning along these lines is being made.

Obstetrical Nursing.

I was impressed by the provision which is made in Europe for regular refresher courses for all midwives, such courses being compulsory. A similar scheme is about to be adopted in Great Britain, and it is certainly something which New Zealand should prepare for; but if nurses are to be enabled to take such a course it will be necessary for them to receive a fee so that they can arrange for relief from their duties while attending the course.

Public Health Nursing.

While appreciating deeply the work being done in New Zealand, there is great need for better co-ordination between the existing public-health nursing services. Nowhere in New Zealand has there yet been developed a family record system. This might be considered with a general review of our record system.

Staff education programmes are part of every well-organized public-health organization. Something has already been attempted by means of group meetings, circulars, &c., and it is proposed to extend this by means of refresher courses.

Lay committees of various women's organizations have already been used for propaganda, but probably in connection with the Council for Adult Education more definite plans could be developed. Health films and plays for broadcasting—if they were produced around local situations—would create fresh interest. This form of propaganda is used extensively in some parts of the United States of America.

International Meeting of Nurses.

As one of the five New Zealand official delegates, I attended the quadrennial meeting of the International Council of Nurses held in London in July, 1937. The personal contact made with so many illustrious nurses from every part of the world was invaluable and most inspiring. The British nurses were wonderful hostesses and entertained their visitors most lavishly, the most interesting gathering being an afternoon tea at Buckingham Palace when the Grand Council (the official delegates) of the International Council of Nurses were entertained by Their Majesties Queen Elizabeth and Queen Mary.

The actual business of the Conference covered a very wide field and might be grouped as follows: -

Nursing Education: The preparation of the nurse and the introduction of preventive medicine into the basic curriculum.

Nursing Administration: Correlation of problems of administration and education.

Public-health Nursing: Better preparation of staffs and the correlation of health and bedside nursing aspects of public-health nursing.

Modern problems such as the nursing of the chronic sick, the training of dietitians, the development of a Red Cross Nursing Service.

Five sub-committees—Mental Hygiene; Public Health; Education; History of Nursing; and Health of Nursing Staffs—met in conference, but the time was exceedingly limited.

I would like to pay a tribute to the excellent nursing care I consider the patients in our New Zealand hospitals receive and to the general reputation the New Zealand nurse has gained abroad. This I feel is largely due to the unfailing efforts of the Matrons of our training-schools and to the senior members of the nursing profession in this country. In comparison with many other places our New Zealand matrons do not have the same assistance in the form of supervisory officers, which makes their task the more arduous.

In conclusion, I must again thank the members of our own staff, the Hospital Board authorities, the voluntary organizations, and the New Zealand Registered Nurses Association for the ready help and assistance rendered to me during the past year, for which I am most grateful.

M. I. Lambie,
Director, Division of Nursing.

PART VI.—PRIVATE HOSPITALS AND MATERNAL WELFARE.

I have the honour to submit my report for the year 1937.

PRIVATE MEDICAL AND SURGICAL HOSPITALS.

The number of private medical and surgical hospitals has increased from 95 in 1936 to 104 in 1937 and the number of beds from 1,375 to 1,556. This increase is mainly due to the licensing of more hospitals restricted to medical and convalescent patients and not having facilities or being licensed for surgical treatment. This class of hospital is an essential part of any national organization for the care of the sick and injured. In all cases these convalescent hospitals are converted residences, usually fairly large houses, which under present conditions the owners find unduly costly for private purposes, and consequently can be bought or leased on favourable terms.

Of the 104 medical and surgical hospitals, 4 only provide from fifty to a little over one hundred beds. All of these are the property of and are conducted by religious bodies.

Of the remaining 100 hospitals, 14 provide twenty to thirty-three beds each, 42 ten to nineteen beds each, and the remaining 43 under ten beds.

The larger hospitals compare favourably with the average public hospital in their building, equipment, and special departments, such as X-ray and pathological.

The smaller hospitals have no special departments, though a considerable number of them are now equipped with X-ray plants.

The main difficulty in keeping these private hospitals up to a requisite standard has been in having the nursing staff kept up to a standard necessary to provide sufficient nursing and attention to the patients, together with reasonable hours of work and days off for the staff. The conditions with regard to hours are being improved, and when more nurses are available it should be possible to bring the hours down to an average of forty-eight per week.

Most of the licensees have endeavoured to provide for this, though, owing to comparative shortage of trained nurses, there has been difficulty up to the present in obtaining the extra staff and difficulty also in providing living-quarters for the extra staff required. In those cases where there is continued failure to obtain or retain the necessary staff, it has been necessary to reduce the number of licensed beds and bring them down to a number in accordance with the nursing staff kept.

The situation is a somewhat difficult one, as in some of the larger towns the demand on the beds in the medical and surgical hospitals is as great in proportion to their beds as it is in the public hospitals.

I am pleased to be able to state that more medical practitioners are now recognizing the fact that, if they require private hospitals in which to treat their patients, they must be prepared to meet some of the capital cost themselves, since it is quite beyond the resources of most nurses to do so.

Mixed Hospitals.

There are now sixty-seven of these, providing 127 beds for medical or surgical cases. Nearly all are restricted to non-septic surgical cases. Owing to this fact and to the awareness of the licensees of the dangers if such cases are admitted, these hospitals are no longer a menace to maternity patients.

Inspection of Private Hospitals.

Routine and special inspections of all the above-mentioned hospitals have been made by the Medical Officers of Health and Nurse Inspectors during the past year. The only difficulties in keeping these hospitals up to the standard have been in obtaining nursing staff and preventing overcrowding.

MATERNITY HOSPITALS AND SERVICES.

The hospital maternity services provided in New Zealand by public and private enterprise in the year 1937 consisted of 5 State (St. Helens) hospitals (100 beds), 85 public hospitals (507 beds), 197 private hospitals (1,020 beds)—in all 1,627 maternity beds, or approximately one bed to every 1,000 of the population.

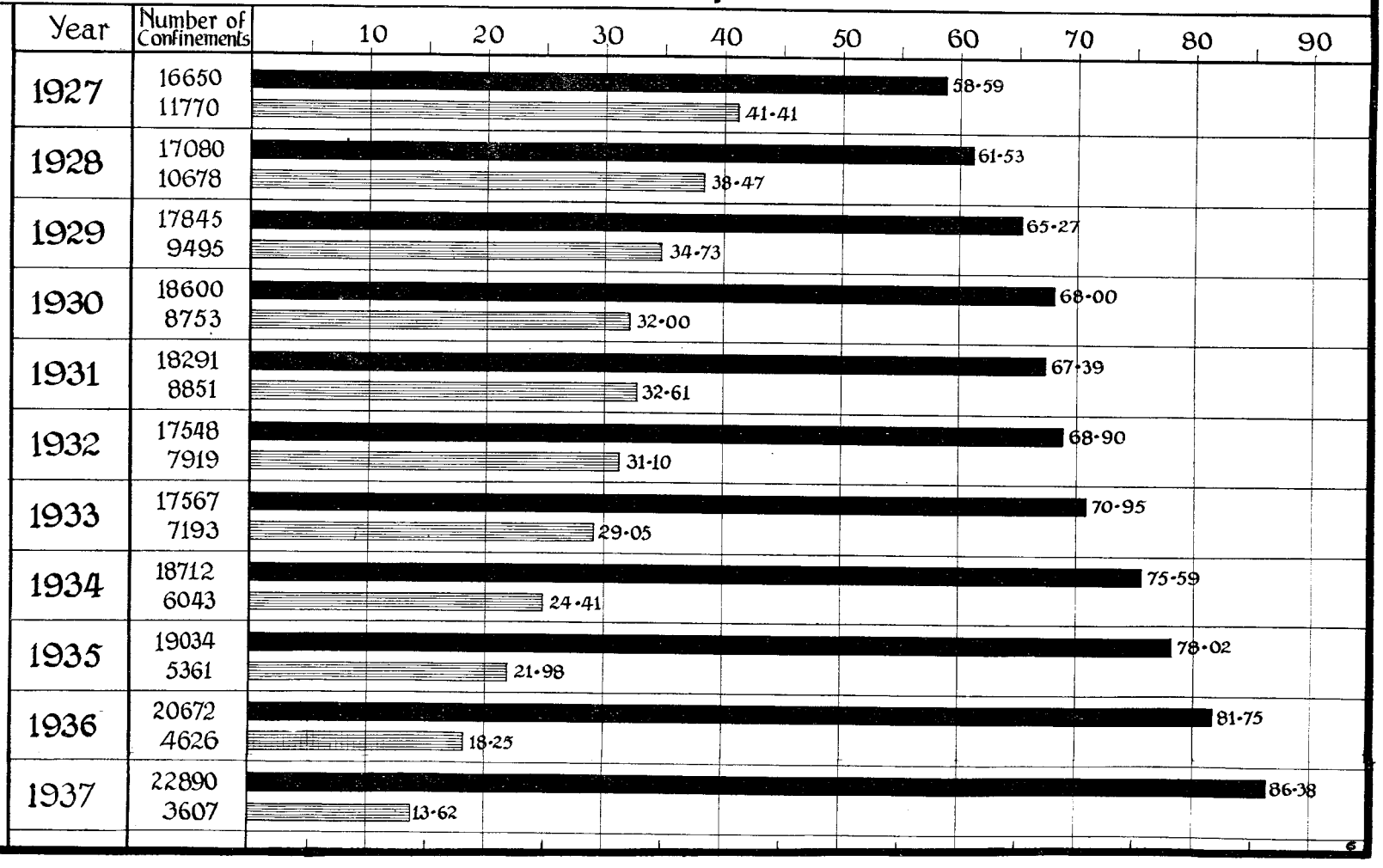
A calculation of the proportion of beds available to the number of European confinements—namely, 26,497, plus the number of Maori live births, 3,971 (still-births among the Maoris are not registered)—gives a total number of confinements for both races as over 30,000. If all these were delivered in hospitals it would give an occupied bed-rate of approximately 94 per cent. of the available beds. The actual number of patients who made use of these beds was 23,033 for delivery and 966 admitted during pregnancy for ante-natal care. This shows that the available beds are actually occupied to 71 per cent. of their estimated full capacity, allowing twenty patients per annum to each bed, each patient being fourteen days in the hospital.

Graph No. 1 shows that since 1927 the proportion of patients choosing to be delivered in hospital has increased from 58·59 per cent. to 86·38 per cent.

Showing the Proportion of Confinements Conducted in Maternity Hospitals and in other places. 1927 to 1937.

Confinements Conducted in Maternity Hospitals shown thus:—

Confinements Conducted in other Places, that is in Private Houses and Medical and Surgical Wards of Public and Licensed Hospitals, etc. shown thus:—



Taking the above facts into consideration it is obvious that our maternity hospitals are rapidly approaching the saturation point and that if the European births continue to increase by approximately one thousand a year, as has been the case in the past two years, and the percentage rates of those confined in hospitals also increases, a considerable increase in the maternity hospital accommodation will be required in the near future. Furthermore, the Maori women are now showing their appreciation of the advantages of hospital attendance, and as the number of deliveries was considerably over four thousand last year and has been increasing for the last four years at 250 a year, allowance will also have to be made for these women.

Inspection of Maternity Hospitals.

Routine and special inspection of all maternity hospitals have been made during the past year by the Medical Officers of Health and Nurse Inspectors, and their reports and my own inspections, together with the results to the patients, show that a good average standard is maintained. The main difficulty, as has been the case in general hospitals, has been keeping sufficient nurses to give mothers and infants the requisite attention and at the same time give the nurses reasonable hours and reasonable days off. Both these, together with adequate payment, are necessary, otherwise the position will deteriorate.

There is no more trying work to nurses than maternity work, with its necessarily irregular hours and disturbed nights. This particularly applies to small maternity hospitals in which it is economically impossible to keep a night nurse on duty. Unless these somewhat trying conditions are compensated for by reasonable payment, comfortable living-conditions, and economic security on retirement, there will certainly be increasing difficulty in attracting sufficient numbers of suitable girls to be trained as maternity nurses and midwives.

Reference to the report of the Director of the Nursing Division shows that no effort is being spared to overcome this difficulty, and particular attention has been given to these points when inspecting hospitals.

Every hospital, particularly maternity hospitals, depends for its efficiency upon its nursing staff, which must not only be well trained, but sufficient in numbers. With such a staff a hospital can be kept up to the requisite standard, even if its building is inconvenient or unattractive. The staff is of more importance than elaborate equipment, which must, however, provide for efficient sterilization of dressings and utensils and other essentials.

I am satisfied that practically all the maternity hospitals are conducted efficiently, and the results to the mothers of New Zealand, 86 per cent. of whom are confined in maternity hospitals, is convincing proof that, in spite of the many unattractive features of these hospitals and their many inconveniences, they supply all that is required for an efficient maternity service. Eleven licenses were surrendered, one license was revoked for inefficiency, and eleven new licenses were granted.

Table I shows in detail the results obtained in the maternity hospitals referred to above. They are satisfactory and reflect credit on the management.

The deaths from puerperal causes total 33, giving a rate of 1·44 per 1,000 confinements. The deaths from associated causes total 15, rate 0·66. Details of the causes of deaths are given at the foot of the table.

As has been pointed out previously, this rate is not comparable with New Zealand's puerperal-mortality rate of 2·69 for the reasons that the hospital rate is taken at per 1,000 confinements, and does not include ectopic gestations or abortions which are not normally admitted to maternity hospitals.

Maternity Patients in General Hospitals (Medical and Surgical).

Public and private medical and surgical hospitals play an important part in the organized maternity services of New Zealand. In the general wards of these hospitals practically all cases of puerperal sepsis and many cases of puerperal pyrexia are transferred from the maternity hospitals or from their own homes. This practice ensures the isolation of patients suffering from sepsis from other maternity patients to whom they are a danger. Its adoption has been effective in preventing the spread of sepsis in maternity hospitals, no outbreaks of this nature having occurred for many years.

In addition to the cases taken into these hospitals for isolation, a number of emergencies occurring in district cases, many of which are suffering from severe complications, are sent to the general wards of the public hospitals, special obstetrical wards being lacking.

In the year under review the general hospitals received 647 maternity cases. Most of these were of extreme gravity, details being shown in Table II.

Table I.—Statistics of Maternity Hospitals, 1937.

—	Number of Hospitals.		Number of Beds in		Patients admitted.	Confinements.			Number of Abortions—*i.e.*, Delivery before the Seventh Month.	Number of Operations.									Hæmorrhages.			Eclampsia.	Number of Deaths of Mothers.	Number of Deaths of Infants who were born alive.	Number of Infants born Dead.		Adult Patients transferred to other Hospitals.		Deaths of Transferred Maternity Patients only.	Maternal Deaths.	
	Private.	Public.	Private Hospitals.	Public Hospitals.		At Full Term.	Between 7th Month and Full Term.	Total.		Instrumental Delivery.	Versions.			Dilation of Cervix.	Manual Removal of Placenta.	Cæsarean Sections.		Other Operations.	Accidental Hæmorrhage.	Unavoidable Hæmorrhage (Placenta prævia).	Post-partum Hæmorrhage.				Probably before Labour.	Probably during Labour.	Before Delivery.	After Delivery.		Puerperal Causes.	Non-puerperal Causes.
											External.	Internal.	Combined.			Primary.	Secondary.															
Maternity Hospitals—*i.e.*, admitting maternity cases and urgent miscarriage cases only—																															
Group I: 1–100 cases per annum—																															
Totals	130	13	513	78	6,734	6,236	351	6,587	37	601	17	22	12	26	41	..	1	207	24	24	83	15	6	118	113	71	34	36	7	9	4
Percentages to total confinements	..	..	..	..	..	..	..	..	..	9·12	0·26	0·33	0·18	0·39	0·62	..	0·02	3·14	0·36	0·36	1·26	0·23	0·091	1·79	1·75	1·08	0·52	0·55	0·106	0·137	0·061
Group II: Over 100 cases per annum—																															
Totals	43	29	413	305	12,602	11,414	581	11,995	55	1,215	41	28	25	48	88	14	3	361	49	43	147	46	8	176	202	157	41	196	19	19	8
Percentages to total confinements	..	..	..	..	..	..	..	..	..	10·13	0·34	0·23	0·21	0·40	0·73	0·12	0·03	3·01	0·41	0·36	1·23	0·38	0·067	1·47	1·68	1·31	0·34	1·63	0·158	0·158	0·066
Group III: St. Helens Hospitals—																															
Totals	..	5	..	100	2,124	1,901	82	1,983	5	92	14	6	3	7	12	11	1	23	10	16	24	9	1	41	25	26	2	21	2	1	2
Percentages to total confinements	..	..	..	..	..	..	..	..	..	4·64	0·71	0·30	0·15	0·35	0·61	0·55	0·05	0·66	0·50	0·81	1·21	0·45	0·050	2·07	1·26	1·31	0·10	1·06	0·101	0·050	0·101
Totals, Groups I, II, and III—																															
Totals	173	47	926	482	21,460	19,551	1,014	20,565	97	1,908	72	56	40	81	141	25	5	591	83	83	254	70	15	335	340	254	77	253	28	29	14
Percentages to total confinements	..	..	..	..	..	..	..	..	..	9·28	0·35	0·27	0·19	0·39	0·69	0·12	0·24	2·87	0·40	0·40	1·23	0·34	0·073	1·63	1·65	1·24	0·37	1·23	0·136	0·141	0·068
Mixed Hospitals—*i.e.*, admitting maternity and medical and surgical cases—																															
Group IV: Mixed Hospitals—																															
Totals	24	43	94	125	2,439	2,219	106	1,325	46	254	..	10	2	5	11	7	2	53	13	10	36	8	3	27	38	24	16	29	2	4	1
Percentages to total confinements	..	..	..	..	..	..	..	..	..	10·92	..	0·43	0·09	0·22	0·47	0·30	0·09	2·28	0·56	0·43	1·55	0·34	0·129	1·16	1·63	1·03	0·69	1·25	0·086	0·172	0·043
All Hospitals—Groups I, II, III and IV—																															
Totals	197	90	1,020	607	23,899	21,770	1,120	22,890	143	2,162	72	66	42	86	152	32	7	644	96	93	290	78	21	362	378	278	93	282	27	33	15
Percentage to total confinements	..	..	..	..	..	..	..	..	..	9·45	0·31	0·28	0·18	0·38	0·66	0·14	0·03	2·81	0·42	0·41	1·27	0·34	0·092	1·58	1·65	1·21	0·41	1·23	0·118	0·144	0·066

Causes of all deaths of patients admitted to maternity hospitals, including all cases transferred whether before or after delivery—

Puerperal Causes: Exclampsia and other toxæmias of pregnancy, **14**; obstetric shock, 8; puerperal septicæmia, 6; hæmorrhage, 4; embolism, 1.

Non-puerperal Causes: Tuberculosis, 6; pneumonia, 3; broncho-pneumonia, 2; heart-disease, 2; hæmiplegia, 1; erysipelas of face, 1.

For details of patients attended in general hospitals, see Table II.

Table II.—Maternity Cases admitted to General Hospitals.

	1937.		1936.	
	Cases.	Deaths.	Cases.	Deaths.
Admitted before delivery—				
For ante-natal treatment only	21	..	24	..
For ante-natal treatment and delivery	13	..	29	..
For emergency cases without complications	37	..	20	..
For obstructed labour	117	7	109	3
For accidental hæmorrhage	28	2	27	4
For placenta prævia	23	1	23	2
For eclampsia	25	2	29	3
For puerperal toxæmia without eclampsia	57	4	41	4
For other conditions	65	14	37	3
Totals	365	30	315	19
Method of delivery—				
Natural (1 death from eclampsia, 10 non-puerperal causes)	146	11	133	7
Instrumental	23	..	16	..
Version	4	1	4	..
Cæsarean Section—				
Primary	151	10	127	4
Secondary to failed forceps	3	2	1	..
Induction of labour	34	3	17	1
Other operations (laporotomy for ovarian cyst)	1	..	..	..
Undelivered	3	3	7	7
Totals	365	30	315	19
Admitted after delivery—				
For eclampsia and toxæmia	9	6	7	1
For post-partum hæmorrhage, shock, and embolism	7	7	6	..
For puerperal sepsis	112	9	72	9
For other conditions associated with parturition (Deaths: Tuberculosis, 5; pneumonia, 1; anæmia, 1)	133	7	112	5
Totals	261	29	197	15

The dangerous nature of these cases is shown by the number of deaths for the different classes of cases.

Twenty of the mothers admitted before delivery, and 22 of those admitted after delivery, died from puerperal causes, giving a death-rate from these causes for all admissions of 6·47. The still-birth and neo-natal death-rate also emphasizes the gravity of the conditions treated. It was 25·8 per cent., as compared with 2·86 per cent. for maternity hospitals.

Consideration of these facts shows the necessity of providing the very best possible obstetrical facilities both as regards building, equipment, and medical and nursing services for the patients admitted for these grave conditions.

The majority of the larger general hospitals having to admit these cases have at least made special obstetrical appointments to the staff in order that the necessary skilled attendance should be provided. They have had difficulty in providing the other desirable facilities as, apart from those hospitals having maternity annexes, there are no special wards for such patients, which is a serious drawback.

Auckland, having a population of 213,159, is specially lacking in adequate facilities for the care of poorer patients, the Board having no maternity hospital in the urban area.

More maternity hospital accommodation is urgently required, and until that is available I hope that the Auckland Hospital Board will at least appoint one or more obstetrical specialists to the staff of their hospital and, if possible, set aside a suitable ward for the accommodation of the serious complications of labour, of which 50 were admitted prior to delivery, 27 being delivered by Cæsarean Section, there being 5 deaths in the 50 cases admitted.

There are one or two smaller Hospital Boards with only general hospitals for maternity patients to which the same remarks apply to a lesser degree, but the majority of the public hospitals have either

maternity annexes or, if they have not that facility, have at least obstetrical specialists on their staffs, or have provided maternity services by subsidizing private practitioners or private hospitals to attend indigent patients. An extension of this method of providing services in country districts is desirable.

Other Maternity Services.

Accessory to the maternity hospitals in which approximately 86·38 per cent. of European mothers were delivered there are a number of midwives and maternity nurses in private practice, 39 district nurses in the employ of Hospital Boards, and 49 district nurses to Natives employed by the Department. These nurses and midwives give attention to the remaining 3,607 patients who are attended in their own homes or in the homes of the nurses, who are permitted to take in one patient at a time without being licensed. From these cases the majority of patients sent into the general wards of public hospitals are drawn, as conditions under which they are confined are unsuitable for giving attendance to patients suffering from any but minor complications.

Provision for Ante-natal Clinics.

The majority of expectant mothers are attended ante-natally by their own doctors, who are assisted by the forty ante-natal clinics established in New Zealand. Of these, 5 are in connection with St. Helens Hospitals, 24 in connection with other hospitals, and 11 are conducted by nurses employed by the Plunket Society. The hospital clinics chiefly attend their own patients. The nurses conducting the Plunket clinics work in co-operation with the patient's private medical attendant.

Table III gives the tabulated returns from the 38 clinics which sent in returns.

An attempt is being made to get, through those clinics, an accurate estimate of the number of cases of puerperal toxæmia occurring among pregnant women in New Zealand. With a view to this the Obstetrical Society and the Department have come to an agreement on the method to be adopted to define this condition. When obtained this information should be of considerable value, and it is hoped will lead to a reduction in the cases of eclampsia and other manifestations of puerperal toxæmia. Scientific research into the etiology of toxæmia is also required.

Table III.

Year.	Number of Clinics supplying Returns.	New Cases.	Return Visits.	Total Attendances.	Average Number of Attendances per Patient.
1925	16	2,289	7,816	10,105	4·41
1926	20	3,238	12,554	15,792	4·88
1927	20	3,919	15,406	19,325	4·93
1928	21	5,050	20,740	25,790	5·11
1929	24	5,177	17,555	22,732	4·39
1930	25	6,027	22,078	28,105	4·66
1931	28	6,306	22,869	29,175	4·63
1932	31	5,882	22,594	28,476	4·84
1933	33	5,978	25,794	29,772	4·98
1934	34	6,191	24,929	31,120	5·03
1935	37	6,725	26,662	33,389	4·96
1936	39	7,069	29,103	36,272	5·13
1937	38	6,746	28,769	35,515	5·28

Hospitals acting as Training-schools for Maternity Nurses and Midwives.

Four St. Helens Hospitals are training-schools for midwives and twenty-six public maternity hospitals for maternity nurses. These hospitals play such an important part in advancing obstetrical practice that they require special mention. They are not only hospitals in which women are attended by a highly trained medical and nursing staff at a low fee, or free, ante-natally, during labour and the puerperium, and post-natally, but are the only training-schools for midwives and maternity nurses.

Twenty-six of the public maternity hospitals have been approved by the Nurses and Midwives Registration Board as training-schools for maternity nurses, and in these, theoretical and practical training was given to 251 women, of whom 201 were already registered nurses and 36 untrained. Of this number, 223 passed their examinations and were placed on the register.

The four St. Helens Hospitals are the only schools for midwives, and 73 were trained last year, 71 of whom passed. In addition, 31 women, not registered nurses, were trained and placed on the register as maternity nurses.

Due to the fact that a very large majority of women in New Zealand are attended in their confinements by doctors, the question has been raised as to the necessity of training the number of midwives who are being trained each year. Of this there can be no doubt. These highly trained women with

special experience are required to fill the positions of private midwives, district nurses, district nurses to Natives, Matrons of public and private maternity hospitals, and positions in which they are responsible for training maternity nurses.

Without a sufficiency of well-trained maternity nurses it would not have been possible for New Zealand to have reduced the death-rate from puerperal sepsis to the extent that has been done, and to maintain that low rate it is essential that the practice of these nurses should be kept to a very high standard.

St. Helens Hospitals.

The tabulated results of the work of the St. Helens Hospitals are shown in Table IV, pages 47 and 48, and consideration of this shows the very excellent results obtained. I would particularly call attention to the low forceps rate, 4·64, as compared with 9·45 in the maternity hospitals listed in Table I.

There were three deaths of mothers confined in these hospitals, only one of these being due to a puerperal condition—namely, puerperal septicæmia due to infection with *B. Coli* and *Staphlococcus*—the other two were due to causes associated with pregnancy. One was an emergency case in the second stage of labour who died after transfer to a general hospital from tuberculous peritonitis. The other case was a multiparae, aged 38, 15 para., ten living children, who was suffering from myocarditis and died five hours after delivery.

The puerperal death-rate was, however, 0·50 per 1,000 confinements for puerperal conditions and for non-puerperal conditions 1·01.

Table IV.—St. Helens Hospitals Statistics.

—	Auckland.	Wellington.	Christchurch.	Dunedin.	Invercargill.	Totals.	Percentage to Total Deliveries.
A. Intern Department.							
Total deliveries	646	521	406	163	247	1,983	..
Primiparae	219	156	122	41	76	614	30·96
Multiparae	427	365	284	122	171	1,379	69·54
Presentations—							
Vertex normal rotation	586	438	373	152	230	1,779	89·71
Occipito posterior (persistent)	30	26	20	6	13	95	4·79
Face	1	5	2	..	1	9	0·45
Brow	..	..	1	..	..	1	0·05
Breech	29	17	10	8	5	70	3·53
Transverse	2	..	1	..	1	4	0·20
Twins (sets)	9	4	5	2	3	23	1·16
Complications of pregnancy—							
Hyperemesis	1	2	..	..	..	3	0·15
Hydramnios	2	2	..	3	3	10	0·50
Pre-eclamptic toxæmia	21	44	5	..	20	90	4·54
Eclampsia	4	..	2	..	3	9	0·45
Nephritic toxæmia	..	..	1	..	..	1	0·05
Hæmorrhages—							
Unavoidable (placenta prævia)	1	6	4	2	3	16	0·81
Accidental, external	1	3	1	2	2	9	0·45
Accidental, internal	1	..	..	..	..	1	0·05
Post-partum, atonic	9	2	8	1	2	22	1·11
Post-partum, traumatic	..	..	1	1	..	2	0·10
Lacerations of genital tract—							
Perinæum	56	31	59	40	25	211	10·64
Cervix	..	..	7	..	..	7	0·35
Uterus	..	..	..	..	..	..	..
Contracted pelvis, inlet	2	..	..	2	5	9	0·45
Contracted pelvis, outlet	..	..	9	..	1	10	0·50
Prolapse of cord	3	1	..	..	..	4	0·20
Complications of puerperium—							
Sepsis, local	..	6	8	..	4	18	0·91
Sepsis, general	..	..	..	2	1	3	0·15
Pulmonary embolism	..	..	..	..	..	..	..
Insanity	2	..	..	..	..	2	0·10
Crural phlegmasia, venous	1	..	..	..	..	1	0·05
Crural phlegmasia, lymphatic	..	..	..	..	..	..	..
Mastitis	..	2	2	..	1	5	0·25

Table IV.—St. Helens Hospitals Statistics—continued.

—	Auckland.	Wellington.	Christchurch.	Dunedin.	Invercargill.	Totals.	Percentage to Total Deliveries.
A. Intern Department—*continued.*							
Operations—							
Internal pelvimetry	..	..	1	..	..	1	0·05
Induction of labour	42	6	17	20	16	101	5·09
Episiotomy	5	26	6	1	2	40	2·02
Impacted shoulders	..	1	..	1	..	2	0·10
Suture of perineal lacerations—							
Complete	..	..	..	..	..	..	..
Incomplete	56	31	59	40	25	211	10·64
Forceps	14	24	30	8	16	92	4·64
Version, external	1	4	5	3	1	14	0·71
Version, internal	1	..	4	..	1	6	0·30
Version, combined	..	1	2	..	..	3	0·15
Manual removal of placenta	1	2	..	5	4	12	0·61
Cæsarean Section—							
Abdominal, conservative	7	1	4	..	..	12	0·61
Abdominal, radical	..	..	..	..	..	..	..
Pubiotomy	..	..	..	..	..	..	..
Craniotomy	..	1	..	..	..	1	0·05
Cleidotomy	..	..	..	..	..	..	..
Decapitation	..	..	..	..	..	..	..
Morbidity	16	24	20	7	8	75	3·78
Mortality	1	..	1	..	1	3	0·15
Infant statistics—							
Total births	655	535	411	165	250	2,016	101·66
Premature—							
Alive	35	18	17	1	10	81	4·08
Dead—							
Recent	4	6	2	..	1	13	0·66
Macerated	1	4	1	..	..	6	0·30
Putrid	..	..	..	..	..	..	..
Full term—							
Alive	606	495	386	159	232	1,878	94·70
Dead—							
Recent	7	3	3	4	6	23	1·16
Macerated	2	3	2	1	1	9	0·45
Putrid	..	..	..	..	..	..	..
Children born alive who died in hospital	17	9	7	1	7	41	2·07
Total born dead or died in hospital	31	25	15	6	15	92	4·64
B. Extern Department.							
Total attendances	42	23	61	..	..	126	..
Primiparae	1	..	2	..	..	3	2·38
Multiparae	41	23	59	..	..	123	97·62
Forceps application	..	..	4	..	..	4	3·17
Morbidity	1	..	..	..	..	1	0·79
Mortality	..	..	..	..	..	..	..
C. Ante-natal Clinic.							
First visits	721	640	477	164	251	2,253	..
Primiparae	256	116	123	34	76	605	..
Multiparae	465	424	354	130	175	1,648	..
Return visits	4,040	2,859	2,232	489	927	10,547	..
Outside visits	91	430	770	..	1	1,292	..
Outfits sterilized	183	36	94	57	59	429	..

Number of patients attending clinic, 2,253. Total attendances, 14,092 = 6·25.

The St. Helens Hospitals have played a most important part in advancing obstetrics generally. The staff of obstetrical specialists have carried out very valuable clinical research work, particularly into different methods of affording pain-relief to patients during labour, and three of them have participated in a research into the treatment of toxæmias of pregnancy by progestin. This *corpus luteum hormone* was supplied free by the Organon Laboratories, and the method followed was that described by Drs. Robson and Paterson, who recorded very good results.

Unfortunately, their findings have not been confirmed by the trials made in the use of this hormone by the St. Helens Hospitals.

The Medical Superintendent of the Wellington St. Helens Hospital has introduced a series of exercises in the ante-natal period, to a certain extent during confinement and post-natally, following the system called the Margaret Morris exercises. She reports that 211 patients received instruction in these exercises during the year, and that results are so far gratifying. The extension of this method of treatment is shortly to be introduced at St. Helens Hospital, Christchurch. For this purpose a masseuse trained in the method will be employed as is done in Wellington.

The further results of research work of this nature will be of benefit to the patients and a very valuable contribution to our knowledge.

The social welfare of the patients in St. Helens Hospitals receives special consideration, and great help has been given to the medical and nursing staff by various organizations in supplying the hospitals with lending libraries, providing layettes, extra clothing for mothers in poor circumstances, and, where necessary, special food prior to entering and after leaving the hospital. In this connection the thanks of the staff of the hospitals and the Department are due to many organizations, particularly to the Mayor's Relief Funds and branches of the Red Cross Society in the main centres; Rotary Clubs; St. John Ambulance Associations; Girl Guide Associations; St. Vincent de Paul Society, Christchurch and Wellington; St. Thomas's Guild, Wellington; Seatoun League of Mothers, Wellington; Welfare Circle, Lyceum Club, Auckland; Auckland Hospital Auxiliary, and various Auckland church and Old Girls' organizations, and in particular the society specially formed for this purpose in Christchurch—namely, the Friends of St. Helens Society—which has co-ordinated the work of various others and under the energetic management of its president has given most valuable assistance.

MATERNAL MORTALITY AND MORBIDITY (EUROPEAN).

It is satisfactory to be able to report a further drop in the number of deaths from puerperal causes, exclusive of those from sepsis following abortion, practically all of which are induced. The Government Statistician's returns show that there were 70 maternal deaths from puerperal causes, as compared with 78 last year, and as the total European live births were increased by 1,177, the puerperal death-rate has fallen to the lowest yet reached in New Zealand—namely, 2·69.

Graph No. II, with Tables V and Va, show the number of deaths under various causes as supplied by the Government Statistician and shows the progress in maternal welfare.

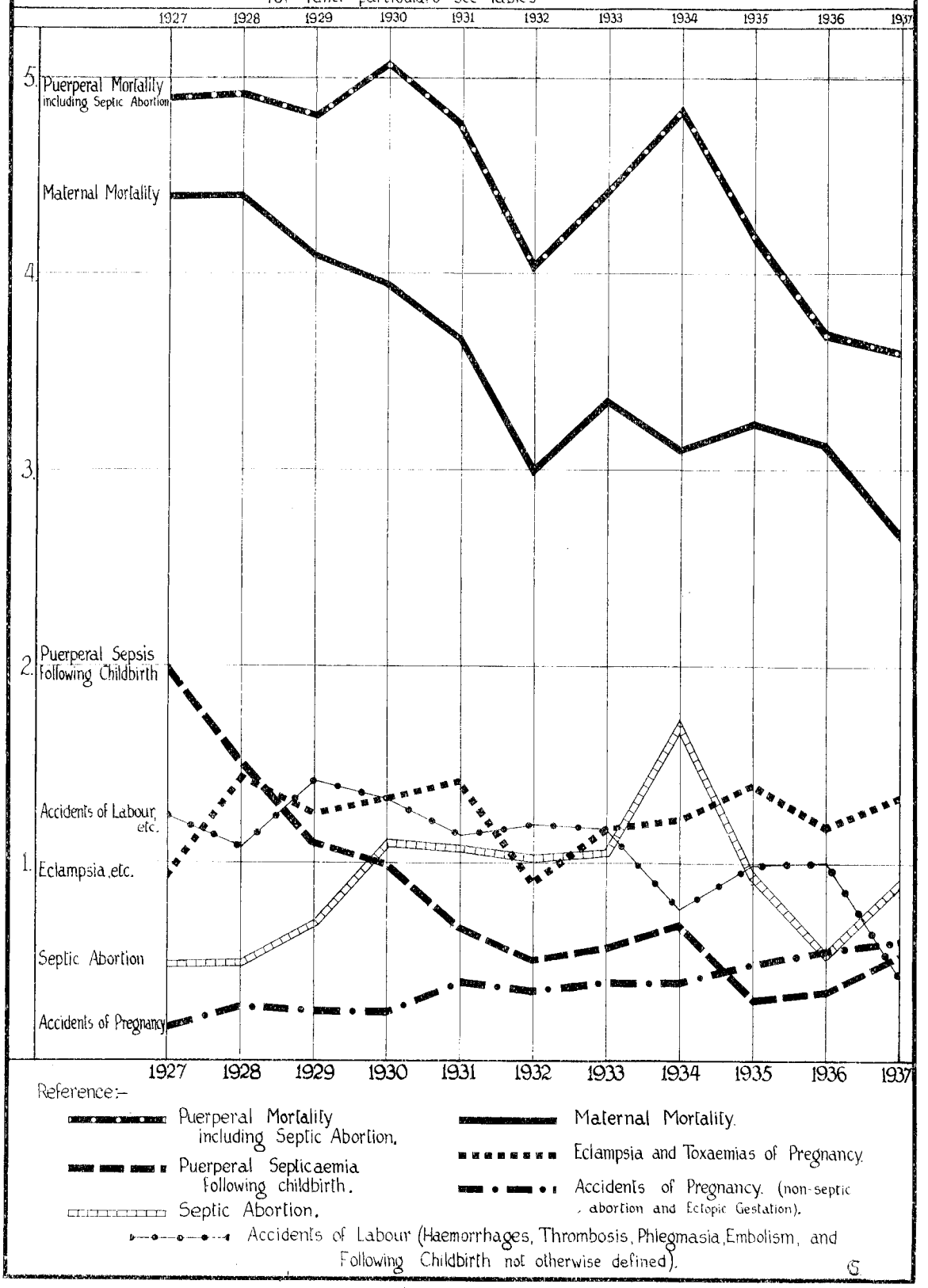
TABLE V.—Showing the Number of Puerperal Deaths and the Death-rate per 1,000 Live Births, 1927–37.

		1927.	1928.	1929.	1930.	1931.	1932.	1933.	1934.	1935.	1936.	1937.
Puerperal sepsis following childbirth	No.	56	42	30	27	18	13	14	17	8	9	14
	Rate	2·01	1·54	1·12	1·01	0·68	0·52	0·58	0·70	0·33	0·36	0·54
Accidents of labour (hæmorrhages, shock, embolism, and accidents of childbirth not otherwise defined)	No.	35	30	39	36	31	30	29	19	24	25	12
	Rate	1·26	1·10	1·46	1·34	1·16	1·21	1·19	0·78	1·00	1·01	0·46
Toxæmia and eclampsia ..	No.	27	40	34	36	38	23	29	30	34	30	35
	Rate	0·97	1·47	1·27	1·34	1·43	0·92	1·19	1·24	1·42	1·20	1·35
Accidents of pregnancy (non-septic abortion and ectopic gestation)	No.	5	8	7	7	11	9	10	10	12	14	9
	Rate	0·18	0·29	0·26	0·26	0·41	0·36	0·41	0·41	0·50	0·56	0·34
Total maternal deaths (excluding septic abortion)	No.	123	120	110	106	98	75	82	76	78	78	70
	Rate	4·41	4·42	4·11	3·96	3·68	3·02	3·37	3·12	3·25	3·14	2·69
Septic abortion—												
Married women	No.	14	14	19	26	26	24	16	29	17	13	16
Single women	No.				4	3	2	10	13	6	1	7
Totals ..		14	14	19	30	29	26	26	42	23	14	23
Rate		0·50	0·51	0·71	1·12	1·09	1·04	1·07	1·73	0·96	0·56	0·88

Puerperal Mortality.

Showing the Death-rate per 1,000 Live Births. 1927-1937.

For fuller particulars see Tables



Reference:—

- Puerperal Mortality including Septic Abortion.
- Puerperal Septicaemia following childbirth.
- Septic Abortion.
- Maternal Mortality.
- Eclampsia and Toxaemias of Pregnancy.
- Accidents of Pregnancy. (non-septic abortion and Ectopic Gestation).
- Accidents of Labour (Haemorrhages, Thrombosis, Phlegmasia, Embolism, and Following Childbirth not otherwise defined).

6

*Table V*A.—*Puerperal Mortality, 1937, showing the Number of Deaths and their relation to Live Births.*

			Number of Deaths.	Death Rate per 1,000 Live Births.
Puerperal sepsis following childbirth			14	0·54
Accidents of labour—				
(*a*) Placenta prævia	1	0·04		
(*b*) Other puerperal hæmorrhages	5	0·19		
(*c*) Puerperal embolism (non-septic)	1	0·04		
(*d*) Other accidents of childbirth—				
Contracted pelvis—Shock	1			
Inversion of uterus	1			
Cæsarean Section—Obstructed labour	1	5 0·19		
Breech presentation—Obstetrical shock	1			
Obstetrical shock—P.O.P. forceps	1			
			12	0·46
Toxæmias of pregnancy—				
(*a*) Puerperal eclampsia	16	0·62		
(*b*) Other toxæmias of pregnancy	19	0·73		
			35	1·35
Accidents of pregnancy—				
(*a*) Abortion (non-septic)	6	0·23		
(*b*) Ectopic gestation	3	0·11		
			9	0·34
Total maternal deaths (excluding septic abortion)			70	2·69
Septic abortion—				
(*a*) Married women			16	..
(*b*) Single women			7	..
			23	0·88

Accidents of Labour.

The most satisfactory feature shown in these tables is the reduction in deaths under this heading. The total deaths in this group was 12, giving a rate of 0·46, as compared with 25, a rate of 1·01 in 1936. The greatest saving was made in cases of deaths from placenta prævia, which fell from 12, rate 0·48, in 1936, to 1 in 1937, rate 0·04. The hospital returns, Tables I and II, show that 116 patients suffered from this dangerous complication, of whom 14 were delivered by Cæsarean Section without a maternal death.

Of the remaining 11 deaths classed under the heading "Accidents of labour" 7 were delivered by Cæsarean Section.

The marked fall in the rate from this group of causes must be ascribed to an improvement in the obstetrical practice of those responsible for attending New Zealand's mothers, and the Obstetrical Society particularly must feel that they have been rewarded for their efforts to make childbirth safer.

I take this opportunity of expressing my very sincere thanks to the Obstetrical Society and to the Obstetrical Branch of the Trained Nurses' Association for their helpful co-operation in the Department's endeavour to promote maternal welfare. No one is more aware than myself of the fact that without the helpful co-operation of the medical practitioners and nurses practising obstetrics the pleasing results afforded could not have been obtained. To the members of these two professions the greatest credit is due.

Toxæmia and Eclampsia.

The number of deaths from these causes rose from 30 to 35, and the rate from 1·20 to 1·35. Until research reveals the cause of this condition, there appears to be little hope of improvement, which the more extensive provision of ante-natal care and the greater interest in it by the majority of medical practitioners and nurses throughout New Zealand has failed to effect.

Sepsis following Childbirth.

The number of deaths from sepsis following childbirth rose from 9 to 14, 3 of these following Cæsarean Section.

One hundred and fifteen cases of puerperal sepsis following childbirth were inquired into by means of a questionnaire and personal investigation by Medical Officers of Health and their officers, and a few cases by myself. An analysis of the returns made shows that 100 cases occurred in Europeans and 15 in Maoris: of the former, 14 died, 3 after Cæsarean Section, and of the latter 2 deaths were recorded.

The returns again show that artificial delivery of the placenta, with or without artificial delivery of the infant, was the most constant factor in causing sepsis, and in connection with this I quote the following from Dr. Hewitt's review of the Liverpool Maternity Hospital (*Journal of Obstetrics and Gynæcology*, February, 1937, page 132):—

> "A series of cases reflecting great credit upon the staff is the group of thirteen patients in whom the placenta was removed manually. There were no maternal deaths, and only one patient developed pyrexia. It is instructive to note how long the placenta was allowed to remain in the uterus before extraction. In one instance the interval was fifty-four hours."

Another obstetrical procedure which has been repeatedly shown to be fraught with the utmost danger is delivery by Cæsarean Section of a patient in whom an attempt at delivery by forceps is made prior to the operation.

Other preventable causes of sepsis during childbirth revealed by the investigation were septic foci in the attendants or patient. In one case investigated there is strong suspicion that the nurse was suffering from onychia, though it was stated that it did not occur until after the patient's death.

In another case one of the pupil nurses in the hospital had a septic condition of her toe which she was dressing herself, and did not report, and in another the medical attendant conducted a forceps delivery and manual removal of the placenta without gloves. Two cases occurred in the same hospital within a few days of one another, and the first patient confined was herself suffering from a septic condition of the fingers.

There can be little doubt that such conditions as the above, together with inefficient asepsis due to faulty sterilization, faulty handling of sterilized articles, and the use of inefficient antiseptics, are the causes of the majority of septic cases. Unfortunately, in any particular case it is often impossible to prove this. Nevertheless, careful inquiry, though often failing to prove it, confirms the suspicions, and the inquiry itself has a very considerable influence in teaching those possibly guilty of negligence of the need of meticulous care. Where proof is obtainable suitable action is taken.

Septic Abortion.

The septic-abortion rate has again risen, and reveals the fact that the artificial termination of pregnancy is still extensively practised. It is to be hoped that the activities of religious bodies and women's organizations whose interest was aroused by the report on septic abortion by the Committee set up by the Minister of Health will, together with social legislation, effect a reduction in this practice.

Cæsarean Section.

Reports of 157 cases of Cæsarean Section are summarized in Table VI.

The reports show that 0·59 per 1,000 patients were delivered by this method, as compared with 0·64, 0·59, 0·53, and 0·44 in the years 1936, 1935, 1934, and 1933, respectively.

The case-mortality rate of mothers was 7·64 per cent., and for infants 21·65 per cent.

It is impossible to draw any conclusions as to the benefit of this method, as compared with other methods of delivery, from these figures. It is hoped, however, that the information will be of use to obstetricians, and I would again point out the fact that the use of forceps prior to Cæsarean Section creates a very great danger of sepsis, and in such cases, other methods, if possible, should be adopted.

Table VI.

Group.	Reason given for Operation and Parity.	Number of Cases.	Number of Deaths.		Cause of Deaths of Mothers, and Notes on Special Cases.
			Infants.	Mothers.	
I	Contracted pelvis—				
	1 para	19	..	2	One syncope, one paralytic Ileus.
	2 para	17	..	..	..
	3 para	8	1	..	..
	4 para	1	..	1	Acute dilatation of stomach.
	5 para	2	2	..	..
	Not stated	5	..	..	..
	Total	52	3	3	
II	Obstructed labour—				
	1 para	34	3	3	All deaths due to septicæmia—one failed forceps: one failed surgical induction; one protracted labour, three to four weeks overdue.
	2 para	1	..	..	..
	3 para	3	1	1	Ruptured uterus; failed forceps (Maori).
	4 para	2	1	..	..
	5 para	4	..	..	..
	Not stated	1	..	..	..
	Total	48	5	4	..

Table VI—continued.

Group.	Reason given for Operation and Parity.	Number of Cases.	Number of Deaths.		Cause of Deaths of Mothers, and Notes on Special Cases.
			Infants.	Mothers.	
III	Placenta prævia—				
	1 para	5	4	..	..
	2 para	3	2	..	..
	3 para	2	..	..	..
	5 para	1	..	..	..
	6 para	1	1	..	..
	13 para	1	1	..	..
	Not stated	1	1	..	..
	Total	14	9	..	
IV	Accidental hæmorrhage—				
	1 para	3	3	1	Hæmorrhage: age thirty-two, three miscarriages in four years, all due to toxæmia.
	2 para	1	..	..	..
	4 para	1	1	..	..
	6 para	1	1	..	..
	Not stated	2	2	1	Hæmorrhage.
	Total	8	7	2	
V	Eclampsia—				
	1 para	5	..	..	..
	Not stated	2	2	1	Pulmonary embolism and ante-partum hæmorrhage.
	Total	7	2	1	
VI	Toxæmia of pregnancy—				
	1 para	12	2	1	Sub-acute nephritis.
	2 para	1	1	..	..
	4 para	1	1	1	Pulmonary embolism: six-month pregnancy.
	Not stated	2	..	..	..
	Total	16	4	2	
VII	Other conditions—				
	Heart-disease—				
	1 para	1	..	..	..
	2 para	1	..	..	..
	Right lobar pneumonia—				
	1 para	1	..	..	..
	Detachment of retina, danger of blindness—				
	2 para	1	..	..	..
	Hydronephrosis—				
	1 para	1	1	..	..
	Bartholin's cyst—				
	1 para	1	1	..	..
	Secondary carcinoma of pelvis—				
	1 para	1	1	..	..
	Vasco-vaginal listula—				
	3 para	1	..	..	..
	Weak uterine: Scars due to previous operations—				
	1 para	1	..	..	Uterus weakened by previous removal of fibroids.
	2 para	2	..	..	..
	6 para	1	1	..	Uterus ruptured through old cæsarean scar.
	Total	12	4	..	
	Total cases ..	157	34	12	

Case-mortality rate, 7·64 per cent. Infant-mortality rate, 21·65 per cent.

MAORI MATERNAL MORTALITY.

Table VII.—Showing the Maori Mortality by Causes for the Eight Years 1930–37.

Cause of Death.	1930.		1931.		1932.		1933.		1934.		1935.		1936.		1937.	
	No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.
Puerperal sepsis following childbirth	5	2·35	5	2·16	5	1·82	7	2·37	3	1·01	7	2·15	6	1·65	4	1·01
Accidents of labour (hæmorrhage, thrombosis, phlegmasia, embolism, and following childbirth not otherwise defined)	12	5·65	9	3·89	14	5·10	14	4·75	8	2·68	10	3·07	12	3·31	13	3·27
Toxæmia, albuminaria, and eclampsia	..	..	..	..	1	0·36	1	0·34	..	..	1	0·30	..	..	1	0·25
Accidents of pregnancy ..	3	1·41	2	0·87	1	0·36	..	..	4	1·34	3	0·92	..	..	5	1·26
Total, maternal causes (excluding septic abortion)	20	9·42	16	6·92	21	7·65	22	7·46	15	5·03	21	6·46	18	4·96	23	5·79
Septic abortion	..	..	..	..	..	..	2	0·68	3	1·01	3	0·92	2	0·55	3	0·76

Table VII shows the Maori maternal mortality by causes for the eight years 1930–37. In 1936 the rate of 4·96 was the lowest for the seven-year period shown. In 1937 the rate rose to 5·79, but though this rate is more than double that of the European maternal mortality it is still slightly below the average for the Maori race for the past eight years.

It has been found impossible to get the same accuracy in the returns for Maoris as it is for Europeans.

The problem of reducing Maori maternal mortality is one of extreme difficulty, as the housing and general living conditions of the Maoris in the more remote districts are exceedingly deficient and the Native race has not the same appreciation of the necessities of hygiene as the European.

The Department has increased, and is still increasing, the number of district nurses to Natives, and as time goes on the educational influence exercised by these officers will no doubt have a beneficial effect.

No material drop can be expected until more of the Maoris are admitted to hospital for their confinements, the housing conditions being quite unsuitable for domiciliary attendances.

SUMMARY.

As has been indicated in this report, private medical and surgical hospitals are either providing enough beds to meet present requirements or in process of being extended. It is, however, evident that owing to the increasing number of births and the increasing demand for hospital treatment that New Zealand will shortly be faced with the necessity of providing more maternity beds and more midwives and maternity nurses to staff them. Particularly is this the case at the present time in Auckland, Wellington, Christchurch, and Invercargill, which are only partly provided for by the present St. Helens Hospitals. In the case of Christchurch, arrangements for a new hospital are already on hand. The other three St. Helens Hospitals are either overtaxed or taxed to their fullest capacity and will shortly have to be enlarged and remodelled to meet present-day requirements or be supplemented by other public maternity hospitals in those areas.

With the exception of a few outlying districts which are being served by district midwives and a few Boards in more thickly populated districts which so far have not built maternity hospitals, the maternity hospital services are adequate for the present, and if some of the existing private maternity hospitals are helped with reasonable subsidies no great expenditure on buildings should be necessary in the immediate future.

In conclusion, I wish to express my thanks for the great assistance I have received from the Health Department's staff in Head and District Offices, and particularly from the medical and nursing staffs of St. Helens Hospitals and the offices of the Division of Nursing, also to the members and staffs of Hospital Boards and the officers and members of the Obstetrical Society. Their assistance and co-operation has been necessary in achieving the results that have been recorded, and will, I am sure, be given in the future as it has been in the past in the hope of further improving New Zealand's record, which, with every one's help, and only with their help, can be achieved. I also wish to express my appreciation of the advantage to me of travelling over New Zealand as a member of the Committee set up by the Minister to inquire into the maternity services of New Zealand. The knowledge thus gained, particularly with regard to the social welfare aspect, has been invaluable.

T. L. PAGET,
Director of Maternal Welfare.

PART VII.—DENTAL HYGIENE.

I have the honour to submit the following report on the work of the Dental Division for the year ending 31st March, 1938 :

School Dental Service.

The programme for extending the School Dental Service to all primary schools within the next three years is proceeding according to plan. Reference was made in the last annual report to the increased activity in connection with the training of school dental nurses and to the preparations that were being made to train a greatly increased number. With the additional accommodation at the training-school at Government Buildings, and with the Ministerial residence at Tinakori Road in use as an annexe to the training-school, a greater number of dental nurses is now being trained than ever before. The instructional work is not without its difficulties, since, of necessity, many of the facilities are of an improvised and temporary nature. In the meantime, good progress is being made with the erection of the new training-school in Willis Street, Wellington, although it is not likely to be ready for occupation in 1938, as was originally expected.

Only one new school dental clinic was established during the year under review—namely, at Addington, Christchurch. This, however, was in the nature of a reorganization, as the pupils had previously been under treatment at another clinic. The number of treatment centres is 253, of which 145 are main centres and 108 are sub-bases. Particulars of these are given on another page. Negotiations are in progress for the establishment of a considerable number of new clinics during 1938. Twenty-two new clinics have been authorized at centres which were not served before, and fourteen existing centres will be reorganized, and their scope extended, by the appointment of additional staff. Details of these are given in another section of this report.

In order to facilitate the control of the clinics which are to be established during the next few years the existing dental districts are being reorganized, and a new one created, with headquarters at Hamilton. This district will include the South Auckland, East Cape, and Taranaki Health Districts, and the Auckland and Wellington dental districts will be reduced accordingly.

The statistical section of this report shows that the work of the School Dental Service has been well maintained during the period under review. The total number of operations shows an increase over the previous year—namely, 759,873, as against 725,069 for 1936–37. The number of patients under treatment at the end of 1937 is 320 less than at the end of 1936, 89,483 as against 89,803. This, however, is only an apparent decrease. The explanation is that through a combination of circumstances —namely, the sudden influx of five-year-old entrants in 1936, the time lost through the poliomyelitis epidemic in the early part of 1937, and shortage of staff—there has been a lag in bringing new entrants under treatment. Consequently the loss of patients through pupils passing out of Standard IV has exceeded, temporarily, the gains from the enrolment of new entrants for treatment. With the augmenting of the field staff in the near future this difficulty will be gradually overcome, and it is expected that the accumulated new entrants will have been brought under treatment by the end of 1938. An unfortunate phase of this struggle on the part of a depleted staff to keep pace with commitments is that fewer children of pre-school age are being enrolled. But this, too, is a temporary phase, which will be rectified in due course when the field staff has been sufficiently strengthened.

The number of schools under treatment shows a decrease of 61, from 1,629 last year to 1,568. This is due, in the main, to the closing of small schools and their consolidation at larger centres, a procedure that greatly facilitates the work of the School Dental Service.

During the difficult period from which the Service is now emerging the principle of six-monthly revision has been strictly observed. Indeed, it was decided that revision must take precedence over the treatment of new entrants. This decision was based on the belief that it was better to maintain for the maximum period the children who had already been made dentally sound, rather than undertake fresh commitments with no certainty of being able to maintain regular supervision. The justification for this is now to be found in the fact that by the judicious use of relieving staff the arrears of new entrants are steadily being overtaken, while the vital principle of six-monthly revision has not been sacrificed.

Staff of Dental Division.

On the 31st March, 1938, the professional staff of the Division, disposed as under, numbered 17 dental officers, 2 trained nurses (matrons), and 188 school dental nurses. In addition, 108 student dental nurses were undergoing training, and steps were being taken to appoint a further 76 :—

	Dental Officers.	School Dental Nurses.	Student Dental Nurses.
Director	1	..	..
District staffs—			
District Dental Superintendents	4*	..	..
Staff of school dental clinics—			
Auckland District	2†	55	..
Wellington District	..	60	..
Canterbury District	1	42	..
Otago District	..	24	..
Wellington dental clinic and training-school for dental nurses	9	6‡	108§
On leave	..	3	..
	17‖	190‖	108

* The Dental Superintendent of the Otago District is also in charge of the Central Clinic, Dunedin.

† Native Dental Officers working among Native schools in Bay of Plenty and East Coast districts.

‡ Includes two trained nurses—viz., the Matron of the Wellington Dental Clinic, and the Matron of the Denta Nurses' Hostel.

§ Of this number, forty-seven will shortly complete their training and will be drafted for service in the field. The appointment of seventy-six additional student dental nurses has been authorized and is being proceeded with.

‖ These numbers include one dental officer and twenty-two dental nurses employed temporarily to augment the permanent staff. The latter are mostly married ex-dental nurses who have been re-engaged in a temporary capacity.

Statistics.

Operations performed in the field and in the training-school from 1st January to 31st December, 1937 :—

Fillings—		
In permanent teeth	261,672	
In deciduous teeth	273,769	
		535,441
Extractions—		
In permanent teeth	2,212	
In deciduous teeth	66,620	
		68,832
Other operations		155,600
Total operations		759,873

The following figures illustrate the progress made during the last eight years :—

Year.	Number of Schools under Systematic Treatment.	Number of Children receiving Systematic Treatment.	Total Number of Operations.
1930	930	67,652	463,204
1931	1,118	68,995	562,759
1932	1,297	72,584	619,390
1933	1,430	78,391	623,625
1934	1,551	83,433	626,878
1935	1,590	84,738	674,374
1936	1,629	89,803	725,069
1937	1,568	89,483	759,873

Total number of operations since the inception of the service, 6,724,221.

Ratio of Extractions to Fillings.

The number of teeth extracted as unsaveable as compared with the number of fillings performed shows a further decrease. The figure for the year under review is 12·9 extractions per 100 fillings. The steady decrease since the inception of the service is shown in the following table :—

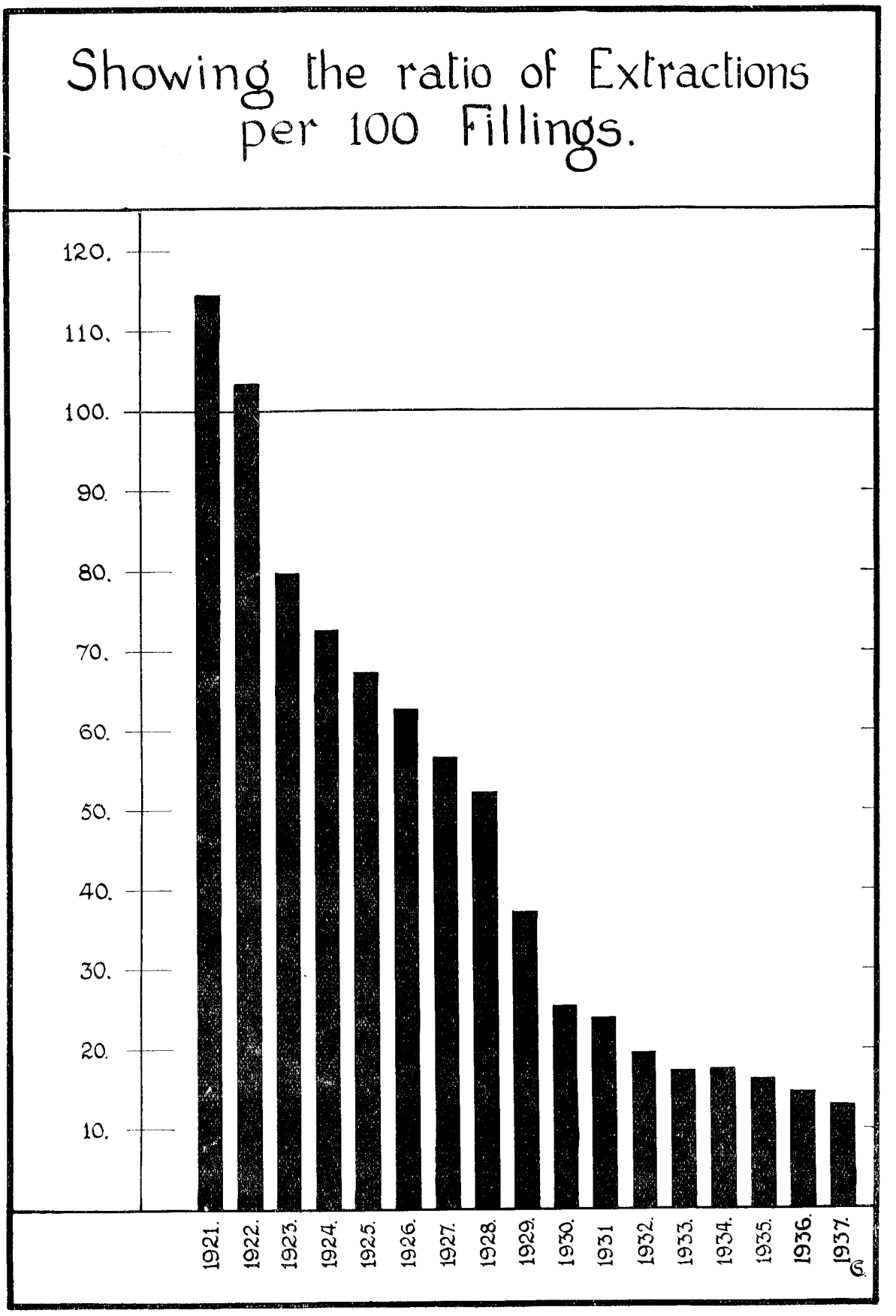
	Fillings.	Extractions.	Ratio : Extractions per Hundred Fillings.
1921–22	13,047	14,939	114·5
1922–23	24,603	25,436	103·3
1923–24	47,610	37,978	79·7
1924–25	59,322	43,181	72·6
1925–26	61,506	41,339	67·2
1926–27	84,723	53,232	62·8
1927–28	116,916	66,523	56·8
1928–29	146,354	76,555	52·3
1929–30	190,934	71,128	37·2
1930–31	258,546	75,973	25·5
1931–32	334,827	80,389	24·0
1932–33	382,289	74,633	19·5
1933–34	397,437	69,208	17·4
1934–35	399,560	70,207	17·5
1935–36	450,727	72,782	16·1
1936–37	498,121	72,088	14·6
1937–38	535,441	68,832	12·9

The above figures include both permanent and deciduous teeth. For permanent teeth alone, the ratio is 0·8 extractions per 100 fillings.

Training of Dental Nurses.

Mr. A. D. Brice, B.D.S., who, in the absence on special duty of Dr. J. B. Bibby, is acting as Superintendent of the Wellington Dental Clinic and Training-school for Dental Nurses, reports as follows :—

"*Staff.*—At the date of this report the staff of the training-school consists of seven dental surgeon instructors, the Matron, one Senior Dental Nurse, and three acting Senior Dental Nurses. The services of two of the dental surgeon instructors—Dr. R. M. S. Taylor and Mr. J. F. Fuller, B.D.S.—will shortly be lost, the former on transfer to take charge of a district, and the latter to enter private practice. In view of the increase in the number of student dental nurses it was necessary to augment the staff of dental surgeon instructors by appointing a number of trained dental nurses in the temporary capacity of Dental Nurse Instructors. These officers were appointed in groups of not more than three at any one time, and their services have been of the utmost value.


Showing the ratio of Extractions per 100 Fillings.
120.
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1936.
1937.

"The year has been notable for a still further increase in the number of student dental nurses. The number in training at 31st March, 1938, is as follows:

"Second-year trainees—
"Fourteenth draft .. .. 47 nurses.
"First-year trainees—
"Fifteenth draft (first group) .. 33 nurses (40 commenced, 1 resigned, and 6 were transferred to Second Group, Fifteenth draft).
"Fifteenth draft (second group) .. 28 nurses (30 commenced, 6 transferred from first group of the fifteenth draft, 5 resigned, and 3 were transferred to sixteenth draft).

"In order to deal with the larger number in the limited accommodation available the policy has been adopted of entering the annual drafts in two groups at six-monthly intervals. The graph of the Syllabus of Training which accompanies this report will serve to indicate the manner in which the rearranged course of training is being proceeded with.

"It is with much regret that I have to record the death of Nurse M. Hawkins, from pneumonia, in August, 1937. Nurse Hawkins was a member of the fourteenth draft, and was a particularly promising student.

"*Accommodation.*—Pending the completion of the new dental clinic and training-school now in course of erection, additional accommodation for the increased numbers of students had to be made by establishing an annexe to the present premises. For this purpose the Ministerial residence at Tinakori Road was adapted, and is serving the purpose very well.

"Certain portions of the training of both first- and second-year student dental nurses are being concentrated upon at the annexe.

"The Senior Instructor, Dr. R. M. S. Taylor, has been in charge, and associated with him has been Miss Haines as Senior Dental Nurse. It has been necessary for both staff and students to spend time at both the main building and the annexe, and the time occupied in transit between the two, although reduced to the minimum, has been a handicap.

"At the date of this report (31st March, 1938) building operations in connection with the new Wellington Dental Clinic have been in progress for several months. Arrangements are in hand for the laying of the foundation stone by the Prime Minister, the Right Hon. M. J. Savage, on the 30th April, 1938.

"*Examinations.*—It was necessary to hold two final examinations during the year. The first one, in September, 1937, was for the thirteenth draft, consisting of twenty-nine students, who, by virtue of being delayed three months in commencing training and then losing a further three months as a result of the poliomyelitis epidemic, were six months late in completing the course.

"Twenty-three candidates were successful, 3 gained provisional passes, and 3 who failed were successful in completing the course in December.

"The second final examination was held in March, 1938, for the 47 members of the fourteenth draft. Of this group, 41 were successful, the remaining 6 being required to present for a special final examination in September next. The group was also delayed by the poliomyelitis epidemic, and did not enter into their second year of training until June, instead of (as was intended) in April. Pressure of numbers in succeeding drafts made it necessary to hold their final examination at the normal time. It will be several months, however, before their transfer to the field is completed.

"The external examiners on these two occasions were respectively Dr. H. K. Allison, D.D.S., of Christchurch, and Dr. J. Y. Warren, D.D.S., of Auckland.

"To both of these gentlemen the Department is greatly indebted for much invaluable criticism and advice of a constructive and helpful nature.

"Two primary examinations were also held for the first and second groups of the fifteenth draft (1937–38), the first being in September, 1937, and the second in March, 1938. The details are as shown below:—

—	Number of Candidates.	Passed.	Failed.	Remarks.
First group ..	34	31	3	Two candidates failed one paper each. One candidate failed both.
Second group	30	29	2	Two candidates failed one paper each. (The three candidates from first group passed in second group examination.)

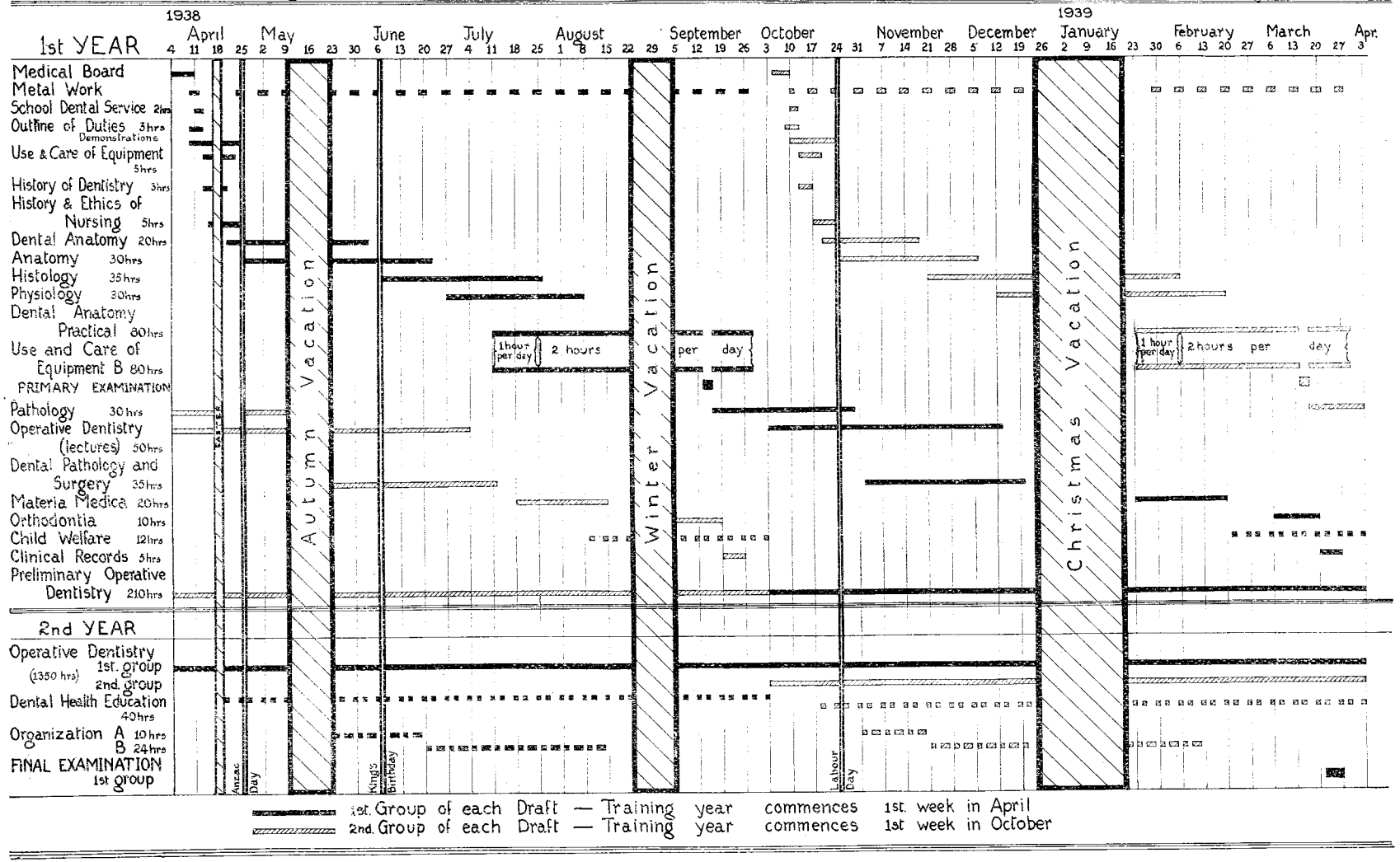
"The examiners were: First group: Dr. Wyn Irwin and Dr. Platts Mills; second group: Dr. Champtaloup and Dr. Platts Mills.

"*The Course of Training.*—This has been augmented by the inclusion of a short series of lectures by Miss F. M. Tattersfield on 'The Principles of Orthodontics,' the subject being dealt with solely from the preventive aspect.

"Two further short courses are being delivered by the Matron, Miss C. Hooper, whose experience in the world of general nursing and child-welfare is proving of great value. Her subjects are 'The History and Ethics of Nursing' and 'Child Welfare.' The latter embraces a short study of the various systems in vogue in connection with social services for mothers and children, and should be a decided asset in assisting to broaden the outlook of the students.

SCHOOL DENTAL SERVICE.

Training School for Dental Nurses, Wellington – Syllabus of Training 1938–39.



"The expanded course in dental health education is being pursued, and there is a noticeable increase in the interest displayed by students in this subject. In this connection I desire to acknowledge the very generous assistance of the Principal of the Wellington Training College, Mr. F. Lopdell, and his staff, whose co-operation in again arranging a course of lecture-demonstrations in 'Methods of Teaching' has been greatly appreciated.

"WELLINGTON DENTAL CLINIC.

"*Attendances and Operations.*—Attendances recorded and operations performed in the Wellington Dental Clinic for the years 1934–35 to 1937–38 are shown below:—

	Attendances.	Fillings.	Extractions.	Other Operations.
"1934–35	29,565	15,139	1,700	19,046
"1935–36	29,645	20,790	1,822	17,485
"1936–37	23,588	15,748	1,444	17,569
"1937–38	47,238	31,014	3,141	31,931
"Increase since last year	23,650	15,266	1,697	14,362

"Total attendances recorded and operations performed to 31st March, 1938:—

Attendances.	Fillings.	Extractions.	Other Operations.
"499,896	333,064	72,514	280,760

"The number of patients under treatment, as at 31st March, 1938, is 4,979.

"The number of admissions for the year is as follows:—

"New patients commenced	2,747
"Transferred *from* other centres	85
"Total	2,832

"The total loss of patients during the year:—

"Patients reaching maximum age for treatment—*i.e.*, twelfth birthday..	465
"Patients transferred to other centres	85
"Treatment lapsed through failure to attend	204
"Total	754

"The net increase of patients under treatment is therefore 2,078.

"As there has been over the past five years a steady decrease in the number of patients under treatment (due to the small number of dental nurses), the substantial increase shown is encouraging.

"*Waiting List.*—As indicated in the above section of this report, 2,747 new patients commenced treatment during the year.

"The number of names remaining on the waiting list as at the 31st March, 1938, is 1,095.

"The number of names remaining on the waiting list as at 31st March, 1937, was 3,398.

"It was not until June, 1937, after a lapse of nearly four years, that the treatment of new entrants was recommenced. At this stage the number of names on the list stood at approximately 3,500, and approximately half of this number had been on the list over three years.

"At present, of the 1,095 names on the list, none have waited more than seven months.

"It is anticipated that the length of the waiting-period will be steadily reduced, and that by the date of the next annual report the waiting list will have been eliminated.

"*Clinical Statistics.*—Attached hereto is a summary showing the incidence of dental caries in various age-groups. The summary has been compiled from the records of the initial examination of 707 children at the Wellington Dental Clinic."

Incidence of Dental Caries in various Age-groups.

(1) Age-group (Years).	(2) Number of Children in Group.	(3) Number of Perfect Sets in Group.	(4) Normal Number of Teeth for Age per Child.	(5) Normal Number of Teeth for Age for Whole Group.	Actual Number of Teeth for Whole Group.		Number of Sound Teeth for Whole Group.		Number of Carious Teeth for Whole Group.	
					(6) Number.	(7) Percentage of (5).	(8) Number.	(9) Percentage of (6).	(10) Number.	(11) Percentage of (5).
Over 10 and under 11	5	..	24	120	102	85·0	38	37·3	64	62·7
„ 9 „ 10	26	..	24	624	574	92·0	298	51·9	276	48·1
„ 8 „ 9	54	..	24	1,296	1,144	88·3	485	42·4	659	57·6
„ 7 „ 8	69	..	24	1,656	1,471	88·8	672	45·7	799	54·3
„ 6 „ 7	97	..	24	2,328	2,023	86·9	785	38·8	1,238	61·2
„ 5 „ 6	106	..	20	2,320	2,143	92·4	899	42·0	1,244	58·0
„ 4 „ 5	132	1	20	2,640	2,601	98·5	1,299	49·9	1,302	50·1
„ 3 „ 4	130	4	20	2,600	2,578	99·2	1,969	76·4	609	23·6
„ 2 „ 3	82	10	20	1,640	1,583	96·5	1,172	74·0	411	26·0
„ 1 „ 2	6	4	16	96	87	90·6	84	96·6	3	3·4
Total	707	19	..	15,320	14,306	93·4	7,701	53·8	6,605	46·2

Summary.—(*a*) 2·7 per cent. of the children examined had perfect sets; (*b*) 97·3 per cent. of the children examined had carious teeth; (*c*) in the whole group 93·4 per cent. of the normal number of teeth were actually present; (*d*) of the total number of teeth present 53·8 per cent. were sound; (*e*) of the total number of teeth present 46·2 per cent. were carious."

Plans for Expanding the School Dental Service.

The first step in the expansion of the School Dental Service was the appointment in 1936 of an increased number of student dental nurses. The number appointed was fifty, which was the maximum for the accommodation that was then available. By 1937, the accommodation of the training-school had been increased by the provision of the annexe in Tinakori Road, and seventy-five trainees were appointed. These entered the training-school in two drafts at six-monthly intervals. For 1938, seventy-six appointments have been made. Of these appointees, forty will commence training in April, 1938, and the remainder in October.

As the minimum training-period is two years, a number of the 1936 draft will be available for new clinics in the field during 1938. At the date of this report (31st March, 1938) arrangements are well in hand for establishing school dental clinics at twenty-two new centres, and for strengthening the staff at fourteen of the existing centres in order to enable local extension to be carried out.

The centres to which the appointment of school dental nurses has been authorized are:—

(i) New centres—

Beresford Street, Auckland.
Cornwall Park, Auckland.
Kawa Kawa.
Putaruru.
Rawene.
Takapuna.
Te Karaka.
Tuakau.
Tahuna.
Whakatane.
Ohura.
Okato.
Opunake.
Taupo.
Kawhia.
Whangamomona.
Mornington, Dunedin.
Phillipstown, Christchurch.
Cheviot.
Darfield.
Tolaga Bay
Meadowbank, Auckland.

(ii) Existing centres to be reinforced—

Whangarei.
Warkworth-Wellsford.
Ellerslie.
Tauranga - Te Puke.
Thames.
Pukekohe.
Whangarei Country.
Rotorua.
Linwood.
Beckenham.
Westland.
Nelson.
Dannevirke.
Napier.

Variations in the Incidence of Dental Caries.

Clinically it has long been observed that the incidence of dental caries in school-children varies in different districts. With the object of obtaining definite data on this point the Department carried out a survey which involved the detailed dental examination and charting of 2,268 children of school-entrance age—viz., five to six years. The children being of uniform age, the opportunity presented of comparing not only the proportion of carious teeth in different districts, but also what was considered to be an equally important factor, the degree of caries present. All carious teeth were therefore charted according to the accepted classification as first, second, third, or fourth degree. A formula was evolved for calculating the caries index, and the result is shown in the accompanying graph. Although the survey covers 2,268 children, the number examined in each district cannot be considered sufficient to give an accurate index of the position, and the results require to be checked by the examination of further children in the same age-group. However, the results as shown are interesting in that they confirm the variation between districts, which has so often been observed clinically, and, moreover, they may well be of value as a basis for further investigation.

Dental Treatment of North Auckland Maoris.

In August and September, 1937, a party of eight senior students from the Otago School of Dentistry, under Mr. O. E. L. Rout, B.D.S., a member of the staff, went to North Auckland, under arrangements made by the Department, to carry out emergency dental treatment for the Native population. The local arrangements were in the hands of the Medical Officer of Health for North Auckland, Dr. Duncan Cook. The district was divided into areas, to which the members of the party were allotted. Each member had the assistance of a district health nurse who was familiar with the district and who enjoyed the confidence of the Native people. The expedition was successful beyond expectation. As the treatment was necessarily of an emergency nature, it was practically limited to extractions, and these were done under local anæsthesia. During the ten days that were devoted to this work 2,881 patients received attention, and the number of teeth extracted was 16,270. Reporting on the work of the party, Mr. Rout said that only those teeth urgently requiring to be removed were extracted, and those showing only early signs of caries or gum disease were left, if they were likely to be serviceable for some time. Mr. Rout added that, in addition to extractions, a good number of scalings were done, both pre-operative and prophylactic, and a considerable number of Maoris were examined who did not require any treatment.

A Comparison of the Incidence and Extent of Dental Caries in Various Parts of New Zealand.

	Caries Index expressed by graph	Number of children	Number of children with caries	Number of teeth present	Number of carious teeth	Percentage of carious teeth	Caries Index	Average age
Whangarei		75	74	1528	676	44	1·32	5·9
Coromandel		76	67	1507	765	51	1·63	6·0
Ponsonby		73	70	1703	801	49	2·02	6·4
Mt. Eden		77	76	1589	869	53	1·66	5·9
Huntly		77	77	1468	939	64	2·44	5·10
Hamilton		70	70	1509	620	41	1·62	6·0
Tauranga		63	61	679	295	41	0·97	5·8
Ngatea		56	55	1175	625	53	1·26	5·4
Eltham		49	49	993	319	32	0·80	5·10
Stratford		78	78	1642	740	41	1·54	5·8
Waipawa		75	73	1490	593	40	0·85	5·7
Taumarunui		71	71	1492	690	46	1·99	6·2
Taihape		43	40	980	341	36	0·84	5·8
Rangitikei		75	75	1591	831	54	1·70	6·0
Waipukurau		70	69	1435	611	43	1·56	5·5
Palmerston North		76	76	1640	866	53	1·85	5·11
Wairarapa		64	61	1300	646	50	2·13	5·9
Levin		72	71	1553	706	45	1·34	5·8
Hutt		72	72	1458	732	50	1·55	5·11
Petone		74	72	1264	663	53	2·07	5·11
Mt. Cook (Wellington)		64	64	1424	773	54	1·50	6·3
Blenheim		73	71	1563	762	63	1·47	5·11
Denniston		13	12	237	156	65	2·13	5·6
Millerton		23	22	467	274	58	1·52	5·6
Kaitangata		62	61	1239	711	57	1·63	5·8
Brightwater		72	70	1470	752	51	1·28	5·8
St. Albans & Shirley		73	71	1502	760	51	1·47	5·8
Woolston		76	76	1631	857	53	1·71	5·9
Fairlie		30	30	600	317	53	0·99	5·6
Timaru		81	76	1723	918	53	1·75	6·0
Oamaru		75	71	1553	674	54	1·10	5·10
Clyde		12	12	246	116	47	1·20	5·11
Alexandra		31	31	633	225	40	1·36	5·6
Roxburgh		38	37	782	301	38	1·09	6·0
Balclutha		73	68	1531	692	45	1·05	5·4
Woodlands		55	52	1141	542	47	1·33	6·1
Invercargill		37	36	769	393	51	1·84	6·4
Totals		**2268**	**2218**	**47307**	**22811**	**48·648**	**1·774**	**5·672**

Dr. Cook, in submitting his report, said :—

> "All the work entailed considerable travelling, necessitating very early morning starts and late home-comings; in fact, in many cases, work was continued as long as the light lasted, and even in some cases by electric torch. I am of the opinion that the experiment has been a great success, and has been greatly appreciated by the Maori . . . The effect of the extraction of decayed teeth and the improved oral conditions which have followed have been noted by all the nurses and by myself, and the improvement of health in individual cases has been marked."

The Dental Council of New Zealand.

The Dentists Act which was passed in October, 1936, came into force on the 1st June, 1937. This Act, which is entitled "An Act to make Better Provision for the Registration and Control of Dentists," provides for the establishment of a Dental Council which controls the Dentists Register, and which has certain disciplinary powers. As the Act provides for two members of the Dental Council to be elected by postal ballot, preliminary Regulations, known as the Dental Regulations, 1937, were prepared in order to provide the necessary machinery for the ballot, and they were gazetted on the the 29th April, 1937.

The personnel of the Council for the first three years is as follows :—

J. Ll. Saunders, Esq., D.S.O., B.D.S., Director, Division of Dental Hygiene, representing the Director-General of Health (Chairman).

J. T. Cooper, Esq., appointed on the recommendation of the Minister of Health.

W. P. Somerville, Esq., appointed on the recommendation of the Minister of Health.

Professor R. Bevan Dodds, D.D.S. (N.Z.), a member of the Faculty of Dentistry in the University of Otago, appointed on the recommendation of the Minister of Health.

J. N. Rishworth, Esq., M.B.E., appointed upon election by postal vote of those dentists whose registered addresses are in the North Island.

O. V. Davies, Esq., L.D.S. (Vic.), appointed upon election by postal vote of those dentists whose registered addresses are in the South Island.

Professor C. E. Hercus, D.S.O., O.B.E., M.D., B.D.S., D.P.H., a member of the Faculty of Medicine in the University of Otago, appointed on the recommendation of the Minister of Health.

Dr. P. P. Lynch, M.D., nominated by the N.Z. Branch of the British Medical Association and appointed on the recommendation of the Minister of Health.

Secretary to the Council : J. W. Buchanan, Esq.

The inaugural meeting of the Council was held in Wellington on the 18th September, 1937.

Research.

The recently established Medical Research Council has decided to include in its activities an investigation into the incidence and cause of dental caries in this country. A Dental Committee has been set up under the chairmanship of Professor R. B. Dodds, Dean of the Dental Faculty, University of Otago, to prepare a plan for the consideration of the Council.

General.

Attention has continued to be given to dental health education during the year, although the number of activities recorded is less than in the previous year—842 as against 986. This decrease is due chiefly to shortage of staff and the necessity for keeping treatment up to date. When this shortage has been overcome it is hoped to organize dental health activities on a definite basis throughout the School Dental Service.

In conjunction with the Education Department, steps were taken during the year to define the position of officers of the School Dental Service in relation to head teachers of the schools at which they are stationed. As a result of these negotiations officers of the Dental Service have been accorded an official status in the school organization, and are now regarded as being "attached for special duty" to the staff of the school at which their clinic is situated.

The Department desires once again to acknowledge the valuable co-operation of Dental Clinic Committees throughout the Dominion. The work that is carried on voluntarily by the members of these Committees is invaluable in furthering the work of the School Dental Service. The Department also wishes to thank Education Boards and their staffs for their continued assistance, as well as teachers in all parts of New Zealand.

To the staff of the Dental Division itself I wish to express my thanks for their loyal and efficient service during the past year. That all arrears of work are now within measurable distance of being completely overtaken is very gratifying evidence of the industry and application displayed by the field staff.

On this occasion I would mention especially the work of the instructional staff of the training-school, upon whom during the past year the main burden of work has fallen in connection with the programme for the rapid expansion of the School Dental Service.

J. Ll. Saunders,
Director, Division of Dental Hygiene.

Centres at which School Dental Clinics were established as at 31st March, 1938.

Main Treatment Centres.	Authorized Sub-bases.	Main Treatment Centres.	Authorized Sub-bases.
Auckland District.			
Avondale	Avondale South.	Ngatea	Kaihere, Kerepehi, Turua, Waitakaruru.
Birkenhead			
Cambridge		Onehunga	
Dargaville	Te Kopuru, Ruawai.	Opotiki	Maraenui, Tanoatua.
Devonport		Otahuhu	
Ellerslie		Paeroa	
Normal School, Mount Eden		Papakura	
		Ponsonby	
Gisborne No. 1		Pukekohe	
Gisborne No. 2		Rotorua	Mamaku.
Gladstone Road, Auckland	Mount Albert.	Sandringham	
Grey Lynn		Tauranga	Te Puke.
Hamilton East		Te Aroha	
Helensville	Huapai.	Te Paroa – Totara	Maketu, Matata, Poroporo, Pukehina, Ruatoki, Tawera, Te Teko, Waiohau.
Henderson	Glen Eden.		
Huntly	Pukemiro, Te Kauwhata.		
Manurewa			
Matamata		Thames	Coromandel.
Maungawhau, Auckland		Tikitiki	Ruatoria, Te Araroa.
Morrinsville		Waihi	
Mount Eden		Warkworth	Wellsford.
Mount Roskill		Whangarei	Horahora, Whau Valley.
New Lynn		Whangarei	
Ngaruawahia	Glen Massey, Raglan.	Whitiora, Hamilton	
Wellington District.			
Blenheim		Palmerston North (Kingsway)	
Carterton	Greytown.		
Dannevirke		Palmerston North (College Street)	
Eketahuna	Tiraumea, Woodville.		
Eltham		Palmerston North (Terrace End)	
Featherston	Martinborough.		
Feilding		Patea	Waverley.
Gonville		Petone	
Hastings		Picton	Havelock, Rai Valley.
Hastings (Country)		St. John's Hill, Wanganui (Mobile Clinic)	Country schools from Turakina to Nukumaru.
Hawera			
Inglewood		Shannon	Eastbourne.
Levin		Stratford	
Lower Hutt		Taihape	Mangaweka.
Manaia		Taumarunui	Kakahi.
Marton	Hunterville.	Te Awamutu	
Masterton		Te Kuiti	Waimiha.
Masterton (Country)		Upper Hutt	
Napier		Waipawa	Otane.
New Plymouth		Waipukurau	Porongahau.
New Plymouth (Country)		Wairoa	
Ohakune	Raetihi.	Waitara	Awakino.
Ormondville	Takapau, Otaki.	Wanganui (Keith Street)	
Otorohanga	Piopio.	Wanganui East	
Pahiatua	Pongaroa.	Wellington	
Canterbury District.			
Addington		Rakaia	Methven.
Ashburton West		Rangiora	
Ashburton East	Tinwald.	Reefton	Inangahua Junction, Murchison, Waiuta.
Beckenham	Opawa.		
Brightwater	Richmond, Stoke, Tahunanui, Wakefield.	Runanga	Blackball, Taylorville.
		St. Albans	
Christchurch East		Shirley	
Fairlie	Pleasant Point.	Somerfield School, Christchurch	
Geraldine			
Greymouth		Southbridge	Leeston.
Hawarden	Hanmer Springs, Kaikoura.	Sumner	
Hokitika	Harihari, Kokotahi, Ross, Waiho Gorge, Wataroa, Weheka.	Sydenham	
		Takaka	Colliugwood.
		Temuka	Winchester.
Hornby		Timaru (Main)	West School.
Kaiapoi	Waimairi.	Timaru (Waimataitai)	
Linwood		Waimate	
Lyttelton		Westport	Denniston, Granity, Hector, Karamea, Millerton, Seddonville, Stockton, Waimangaroa.
Motueka	Upper Moutere, Tasman.		
Nelson			
New Brighton			
Papanui		Woolston	
Otago District.			
Alexandra	Clyde, Cromwell, Pembroke, Queenstown.	Oamaru	
		Oamaru (Country)	Kurow.
Balclutha		Otautau	Nightcaps, Ohai.
Dunedin Central		Palmerston, Otago	Seacliff.
Dunedin (Macandrew Road)		Port Chalmers	
Forbury		Ranfurly	Middlemarch, Naseby, Omakau, Oturehua.
Gore	Mataura.		
Invercargill		Tapanui	Lawrence, Roxburgh.
Kaitangata	Clinton.	Winton	
Milton		Woodlands	Bluff, Stewart Island.
Mosgiel	Green Island.	Wyndham	Edendale.

N.Z. SCHOOL DENTAL SERVICE

showing

LOCATION OF TREATMENT CENTRES,

1938.

REFERENCE.

Existing Main Treatment Centres	- shown thus:	●
Existing Sub-bases - - - -	,,	▲
New Clinics authorized - - -	,,	◒
Centres where additional Staff authorized	,,	⊖
Boundaries between Dental Districts -	,,	—·—·

Scale of miles.

10 5 0 10 20 30 40 50

Auckland Dental District.

Headquarters, AUCKLAND.

AUCKLAND

- AVONDALE
- BIRKENHEAD
- DEVONPORT
- GLADSTONE RD.
- GREY LYNN
- MAUNGAWHAU
- MT. ALBERT
- MT. EDEN
- MT. ROSKILL
- NEW LYNN
- OTAHUHU
- PONSONBY
- SANDRINGHAM
- EPSOM
- ONEHUNGA

● ELLERSLIE

⊖ ● BERESFORD ST.
CORNWALL PARK
TAKAPUNA
MEADOWBANK

▲ Avondale South

HAURAKI PLAINS

● NGATEA

▲ Kaihere
Kerepehi
Turua
Waikakaruru

South Auckland Dental District.

Headquarters, HAMILTON.

WANGANUI

● CENTRAL
WANGANUI EAST
GONVILLE
MOBILE CLINIC
serving schools from
Nukumaru to Turakina

PALMERSTON NORTH

● CENTRAL
COLLEGE ST.
TERRACE END

Wellington Dental District.

Headquarters, WELLINGTON.

WELLINGTON
(Training Centre)

N.Z. SCHOOL DENTAL SERVICE

showing

LOCATION OF TREATMENT CENTRES,

1938.

REFERENCE.

Existing Main Treatment Centres - shown thus: ●
Existing Sub-bases - - - - - ,, ▲
New Clinics authorized - - - ,, ◒
Centres where additional Staff authorized ,, ⊖
Boundaries between Dental Districts - ,, —·—·—

Scale of miles.

10 5 0 10 20 30 40 50

Canterbury Dental District.

Headquarters, CHRISTCHURCH.

CHRISTCHURCH

- CHRISTCHURCH EAST
- NEW BRIGHTON
- PAPANUI
- ST. ALBANS
- SOMERFIELD
- SUMNER
- SYDENHAM
- WAIMAIRI
- WOOLSTON
- ADDINGTON
- SHIRLEY

● ⊖ BECKENHAM, LINWOOD

◒ PHILLIPSTOWN

▲ Opawa

Otago Dental District.

Headquarters, DUNEDIN.

DUNEDIN

● CENTRAL, MACANDREW RD., FORBURY

◒ MORNINGTON

Stewart Island

APPENDIX A.

OUTLINE OF HEALTH ADMINISTRATION IN NEW ZEALAND.

The Acts administered by the Health Department:—

1. Health Act, 1920.
2. Hospitals and Charitable Institutions Act, 1926.
3. Food and Drugs Act, 1908.
4. Dangerous Drugs Act, 1927.
5. Poisons Act, 1934.
6. Nurses and Midwives Registration Act, 1925.
7. Medical Practitioners Act, 1914.
8. Medical Act, 1908.
9. Masseurs Registration Act, 1920.
10. Plumbers Registration Act, 1912.
11. Opticians Act, 1928.
12. Dentists Act, 1936.
13. Quackery Prevention Act, 1908.
14. Cemeteries Act, 1908.
15. Social Hygiene Act, 1917.

The Health Department was established by the Public Health Act of 1900. Its activities in the early stages were confined to environment hygiene and fell far short of the present conception of a Department of Health as a co-ordinating power in regard to preventive and curative medicine.

Important dates in the development of the Department were:—

1907, when the Sale of Food and Drugs Act was passed.

1909, when the Hospitals and Charitable Institutions Act was passed bringing under Hospital Boards functions previously administered by Charitable-aid Boards and separate semi-voluntary institutions. (In this same year the Hospitals and Charitable Aid Department, which formerly had been an entirely separate Department of State dealing with the administration of hospital and charitable insitiutions and private hospitals and the control of nurses and midwives, was amalgamated with the Public Health Department.)

1911, when the administration of the Native Medical Service was transferred from the Native Department to the Health Department.

1913, when the scheme for medical inspection of school-children was first put into being under the Education Department. (In 1921 this work, along with the then recently established School Dental Service, was transferred to the Health Department.)

1915, when the Medical Practitioners Act, dealing with the registration and control of medical practitioners, came into force.

1920, when the present Health Act was passed which consolidated the position as then attained and also extended the powers and functions of the Department in certain directions.

Since 1926 there have been a succession of Acts dealing with the training, registration, and control of various professional groups, including medical practitioners, dentists, nurses and midwives, masseurs, and opticians. In the administration of these Acts the Department is assisted by Boards containing representatives of the respective professions.

The effect of all this legislation has been increasing co-ordination of all the health services of the Dominion, both preventive and curative.

Under the Health Act, 1920, control of health matters was vested in the Department of Health. A Board of Health was appointed under the chairmanship of the Minister, consisting of representatives of the Department, the medical profession, the Faculty of Medicine in the University of Otago, the Municipal Association, the Counties Association, Hospital Boards, and Civil Engineers, together with a representative of the interests of women and children.

The functions of the Department of Health are set out in section 12 of the Health Act, which reads as follows :—

"12. *Functions of Department of Health.*—The functions of the Department of Health shall be—

"(*a*) To administer this Act and all other public Acts in so far as their purpose is the promotion of health :

"(*b*) To advise local authorities in matters relating to public health in so far as those local authorities are charged with the care of the public health by this or any other Act :

"(*c*) The prevention, limitation, and suppression of infectious and other diseases :

"(*d*) To promote or carry out researches and investigations in relation to matters concerning the public health, and the prevention or treatment of disease :

"(*e*) To publish reports, information, and advice concerning the public health :

"(*f*) The organization and control of medical, dental, and nursing services, so far as such services are paid for out of public moneys.

"(*g*) Generally, to take all such steps as may be desirable to secure the preparation, effective carrying-out, and co-ordination of measures conducive to the public health."

The staff of the Department includes the Director-General of Health, Directors of the Divisions of Public Hygiene, Hospitals, Nursing, Maternal Welfare, School Hygiene, and Dental Hygiene, and such number of Medical Officers of Health, Inspectors of Health, medical practitioners, nurses, and other officers as may be required. The Divisional Directors at headquarters work through and with the Medical Officers of Health.

The Dominion is divided into thirteen health districts, each of which is under the charge of a Medical Officer of Health. These officers who are medical practitioners with special qualifications in sanitary science, are responsible for the due observance of all enactments and regulations relating to public health, and act as advisers of the local governing bodies in matters affecting public health. Thus they are in charge of measures relating to quarantine, infectious diseases, housing, water-supplies, drainage, the provision of pure food, &c., and exercise a general control and supervision over all branches of departmental activity.

The work of the various Divisions of the Department may now be touched in more detail :—

(*a*) *The Division of Public Hygiene.*

The functions of this division, which has as its Director a medical practitioner with special qualifications in sanitary science, include the supervision of those activities which relate to public health in the more restricted sense of that term—viz., public water-supplies, drainage, refuse-removal, housing, control of infectious diseases and industrial diseases, quarantine, the purity of food and drugs, and control of offensive trades. While the Health Act throws on the local governing bodies the responsibility of providing certain fundamental health services, it recognizes that these bodies in a young, growing country such as New Zealand are for the greater part not yet strong enough to provide all the machinery required for securing the best results. For this reason the Medical Officers of Health act as advisers of the local bodies, although not actually their officers. Certain duties remain wholly under the control of the Health Department. These duties are chiefly the control of infectious diseases, the quarantine of overseas ships, and securing the purity of food and drugs.

Infectious Diseases.—The Health Act deals specifically with three classes of disease in regard to which medical practitioners and others have certain duties. These classes are—

Notifiable infectious diseases.
Non-notifiable infectious diseases.
Notifiable non-infectious diseases.

A schedule of those different classes is gazetted and can be altered from time to time by the Governor-General in Council.

In regard to notifiable infectious diseases, the duty of notification of its occurrence rests primarily on the medical practitioner, a fee being payable therefor. Power to enter premises on suspicion of the existence of notifiable disease is given to the Medical Officer of Health, who may order the removal of the patient to a hospital. In regard to all infectious disease, the Act provides penalties against those who do not take due precaution to prevent the spread of the disease.

Extensive regulations have been gazetted for the conservation and promotion of public health. Under these regulations the duties of medical practitioners, Inspectors of Health, and undertakers are defined in regard to notifications, and the measures to be taken in the event of outbreaks of certain diseases and the occurrences of epidemics are set out.

Quarantine.—Power is given to proclaim places of inspection quarantine grounds and quarantine stations. Quarantine stations have been established at Auckland and Wellington.

Food and Drugs.—The sale of food and drugs and their inspection is dealt with under the Sale of Food and Drugs Act and the Health Act. The former Act provides for the analysis by the Public Analyst of any article of food or drink or of any drug which may be sold, offered for sale, or exposed for sale, or for inspection of any place where there is any food or drug intended for sale. Regulations are provided for the prevention of adulteration of food, drink, or drugs and for the inspection of places where such things are manufactured and packed.

(*b*) *The Division of Hospitals.*

The Division of Hospitals is concerned with the administration of the Hospitals and Charitable Institutions Act. The staff consists of a Director, who is a medical practitioner, and such number of assistant Inspectors as enable adequate inspection of the buildings and close supervision of the conduct and business management of the institutions. The New Zealand hospital system is dealt with in another section.

Private Hospitals.—The Hospitals and Charitable Institutions Act includes provision for the licensing and control of private hospitals. These institutions are kept under close supervision. Before they are licensed they must comply with certain standards in regard to accommodation, equipment, and staff. They are of two distinct types—those managed by religious bodies, and those managed by private persons, either medical practitioners or nurses. Statistical details are set out in the table below :—

Nature of Institution.	Number licensed.		Total Beds.
Maternity	.. 156		847
Medical and surgical	.. 101		1,532
Mixed—*i.e.*, medical and surgical and maternity	37	Medical and surgical	134
		Maternity ..	135

(*c*) *The Division of Nursing.*

This Division is under the control of a Director, who is herself a registered nurse and midwife, The functions of the Division relate to—

(*a*) The training, examination, and registration of nurses, maternity nurses, and midwives.
(*b*) The inspection of hospitals which are training-schools.
(*c*) The inspection of public hospitals which are not training-schools.
(*d*) Supervision of the District Nursing Services under both Department and Hospital Boards.
(*e*) Post-graduate education for nurses.

The training and registration of nurses, midwives, and maternity nurses is governed by the Nurses and Midwives Registration Act, 1925. This Act provides for a Board consisting of the Director-General of Health or his Deputy, the Director of the Division of Nursing (who is Registrar of the Board), a registered medical practitioner, a representative of the Hospital Boards Association, two registered nurses, and a registered midwife ; the last three being nominated by the New Zealand Trained Nurses' Association or a similar body.

There are at present thirty training-schools for nurses. These are all public hospitals with the exception of a charitable institution staffed by the Sisters of the Home of Compassion. At present there are 5,178 nurses on the New Zealand Register.

There are four training-schools for midwives and an additional twenty-two training-schools for maternity nurses. At the present time 1,921 midwives and 823 maternity nurses are on the register by virtue of examination. There are in addition 173 midwives and 791 maternity nurses who are on the register by virtue of the fact that they were in practice as midwives on the date of coming into force of the Nurses and Midwives Registration Act.

(*d*) *The Division of Maternal Welfare.*

Maternal and infant-welfare work in New Zealand is founded on co-operation between the Department of Health, the Hospital Boards, the medical profession, and the Plunket Society.

The Director of this Division, who is a medical practitioner, is concerned with the inspection of private hospitals, particularly in regard to the methods of technique in maternity work and the prevention of puerperal sepsis. This same officer also undertakes the inspection of the State maternity hospitals and the many public maternity hospitals or maternity wards under the control of the Hospital Boards.

The Medical Officers of Health, through their staff of Nurse Inspectors, exercise a general supervision over the work of midwives and close control over the conduct of the many private hospitals in the Dominion.

The number of Maternity Hospitals in the Dominion is as follows :—

Four State maternity hospitals (the St. Helens Hospitals).
Thirty-nine public maternity hospitals and an additional thirty public hospitals with maternity accommodation.
One hundred and ninety-three private maternity hospitals.

These institutions altogether provide 1,589 beds, of which 606 are in State or public hospitals, while 983 are in private hospitals.

(*e*) *Division of School Hygiene.*

School medical work in New Zealand is carried out by the Division of School Hygiene which has as its Director a medical practitioner and which is responsible for the supervision of all measures for safeguarding the health of school-children and for ensuring a satisfactory environment at school.

The Service aims at securing for each child three complete physical examinations during his school life, but special examinations are carried out when parents, teachers, or the School Medical Officers consider them necessary. Children found to be suffering from defects are kept under observation until the necessary treatment is obtained. Mentally backward and feeble-minded children are given special consideration, arrangements being made for their entrance to special schools, special classes, or other institutions as circumstances indicate. The work of the Service is also being extended to include the examination of children attending free kindergartens, and in certain centres clinics are being established for the medical examination of the pre-school child.

If defects are found the practice of the School Medical Officer is to notify the parents of their existence, the choice of medical attendants being left entirely to the parents. If the parents are unable for financial reasons or are too apathetic to obtain the necessary advice and treatment, it is the duty of the School Medical Service to see that it is carried out. A great number of operations for minor defects are carried out at the public hospitals throughout New Zealand. In cities the percentage of treatment obtained is from 80 per cent. to 90 per cent. of the number recommended for it, but in the country where facilities are fewer it is much less.

It is the aim of the Service to secure the interest and co-operation of the parents, as it is realized that only in this way can the work be made effective. In pursuit of this aim parents are invited to be present at the examination of their children, an opportunity of which the majority avail themselves.

Milk-in-schools Scheme.—This scheme, which provides for the issue of pasteurized milk to school-children free of cost, was inaugurated early in 1937. It provides for the issue to each child of half a pint of high-grade milk which is pasteurized, bottled, and consumed through a straw. The source of supply is closely inspected, and the whole process of treatment and distribution closely supervised to ensure a high hygienic standard.

Approximately 157,000 school-children are now in receipt of milk under this scheme, which reaches 55 per cent. of the school population. Extensions of the scheme are in immediate prospect which will include another 18,000 children, bringing the number to whom milk is available up to over 68 per cent. of the school population.

Health Camps.—A successful feature of the work for the benefit of delicate and undernourished children has been the establishment of health camps. The great improvement in physical and mental vitality of the children attending such camps affords evidence of their value.

Health Education.—To improve the standard of health education in the district periodical lectures on the health of children are given to teachers, parents, and the general public, as well as short addresses on the care and health of the body to children in the schools.

School Medical Officers are responsible for the medical examination of all candidates for entrance to the teaching profession, approximately one thousand being seen each year. A short series of lectures to the students of training colleges in the four chief towns are given annually.

(*f*) *Division of Dental Hygiene.*

This Division undertakes the dental treatment of school-children. It has as its Director a registered dentist, and is staffed by dental surgeons mostly on the administrative and instructional side, and by dental nurses. The latter are specially trained by the Department to undertake the treatment of children's teeth. Their training covers a period of two years' intensive study, specially adapted for the work they have to perform.

After qualifying they are appointed to take charge of the school dental clinics established by the Department of Health throughout the Dominion. The law restricts the operation of State dental nurses to service under the Department of Health. Each dental clinic serves a certain group of schools, and the duty of the dental nurse is to render the younger children of these schools dentally fit as far as possible and maintain them in that condition. The treatment is largely standardized, the work of the dental nurse being limited to the treatment and filling of deciduous teeth, the filling of permanent teeth when the pulp is not involved, extractions with local anæsthetics, and prophylactic treatment. The work is organized on certain definite lines, and both the operative work and the organization are subject to frequent inspections by the supervising dentists.

In attacking the problem of dental caries the policy of the Department is a preventive one. In order to prevent the development of extensive dental caries all efforts are, in the first place, concentrated on the youngest children in the schools—that is to say, on the children in the infant classes, whose ages are from five to eight years. These children are then kept under dental observation as they progress through the school, being re-examined as far as possible every six months. Whenever the written consent of the parents is given, the attendance of children at this clinic is a matter of school routine. The attendance of children under school age—that is, from two years and a half to five years—is encouraged. It enables the operators to detect and remedy the defects earlier in contact with the parents.

Additionally a great deal of propaganda work is carried out in the form of leaflets, coloured posters, children's stories, exhibits, talks to parents and children, competitions, &c.

The School Dental Service was inaugurated in 1921, and was steadily developed until 1931, when, owing to the general financial stringency, the establishment of new clinics was postponed for the time being. Local extension has been carried out, however, within the limitations of the staff available, and at the present time some one thousand six hundred schools are officially linked up with the Service, and 90,000 children are under regular and systematic dental supervision and treatment.

During the last two years the expansion of the Service has been resumed, and a greatly increased number of nurses has been accepted for training, with a view to making the service available for the children of all the primary schools in the Dominion within the next three years. The number of school dental clinics at the present time is 253, of which 145 are main-treatment centres and 108 are sub-bases. The number of dental nurses in the field is 190, and the number at the training-school is 153, of whom 47 have completed their training, and will be transferred to clinics in the field within the near future.

(g) Maori Hygiene.

The Medical Officers of Health are responsible for the state of health of Maoris living in the health district over which they have charge. They keep in close touch with the Maoris by means of their ordinary staff of Health Inspectors and district nurses, also through medical practitioners who are subsidized or paid a "fee for service" to treat indigent Maoris.

Medical Treatment and Care of the Maoris.—The Government accepts responsibility for the extra-institutional care and treatment of Maoris, and for this purpose has a staff of district nurses. The district nurse's work is mainly preventive and educational. She ensures that cases requiring institutional care receive it, she gives minor treatments, and gives occasional bedside care to cases not suitable for institutions. In addition, she supervises the health of school-children, carries out anti-typhoid inoculation campaigns, and acts as a health educator among the race. Close touch is maintained by personal visits and by the use of leaflets in both English and Maori dealing with such subjects as the feeding of infants, prevention of typhoid and tuberculosis, treatment of scabies, &c. Maoris who require institutional treatment are admitted to public hospitals in the ordinary way. District nurses also have authority to engage a doctor at the Department's expense when occasion arises.

Maori Councils.—The North Island is divided into twenty-one Maori Council districts and the South Island into four. Each district has a Council consisting of seven members of the Maori race. Every settlement within such a district is entitled to have its Village Committee consisting of not more than five and not less than three members for each settlement. These committees have definite statutory powers and administer their respective by-laws under the jurisdiction of the Maori Council.

Staff of Department of Health as at 31st March, 1938.

(Exclusive of Institutional Staff.)

Medical Officers—	
(*a*) Head Office	5
(*b*) Medical Officers of Health	13
(*c*) School Medical Officers	15
Nurses—	
(*a*) Head Office Staff	3
(*b*) Nurse Inspectors	9
(*c*) District nurses	50
(*d*) School nurses	25
Dental Officers—	
(*a*) Head Office	2
(*b*) Training-schools	8
(*c*) District officers	7
Dental Nurses—	
(*a*) Fully trained	192
(*b*) In training	113
Inspectors—	
(*a*) Technical and Architectural Inspectors	3
(*b*) Health Inspectors	55
Part-time Medical Officers—	
(*a*) Port Health Officers	5
(*b*) Medical Officers to Maoris	23
Bacteriological Officers—	
(*a*) Medical (part-time)	2
(*b*) Technicians	3
Clerical and Stores—	
(*a*) Head Office	46
(*b*) District Offices	21
(*c*) Head Office typistes	14
(*d*) District Offices typistes	11
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OUTLINE OF THE HOSPITALS AND CHARITABLE AID SYSTEM.

The principal law governing the administration of hospitals and charitable aid in New Zealand is contained in the Hospitals and Charitable Institutions Act, 1926, a consolidation of previous enactments.

Under the Act of 1926 the Dominion was divided into forty-seven hospital districts. Provision, however, exists for the voluntary union of contiguous districts, and this provision has been availed of on two occasions.

By the Amendment Act of 1932 special provisions were made enabling a Commission of inquiry to be set up to report upon the question of amalgamating hospital districts. Following a recommendation to this effect districts can be amalgamated by Order in Council. This provision has also been availed of on two occasions. The number of hospital districts is at present 42.

Hospital Boards.

Each hospital district is controlled by a Board of not more than twenty or less than eight members representing the contributory local authority districts within the hospital district—*i.e.*, the Boroughs, Town Boards, and counties, or a combination thereof. The representation of the various contributory districts is determined by the Governor-General by Order in Council having regard to the relative populations and also to the relative values of rateable property in those districts.

Functions, Powers, and Duties of Hospital Boards.

Subject to inspection and a modicum of Government control, the Hospital Board is responsible for the provision of the public hospital, outdoor medical and nursing service, and for the administration of charitable relief. Subject to the approval of the Minister, the Board may establish any one of the following institutions:—

(*a*) A hospital or other institution for the reception or relief of persons requiring medical or surgical treatment, or suffering from any disease, whether infectious or not;
(*b*) A charitable institution for the reception or relief of children, or of aged infirm, incurable, or destitute persons;
(*c*) A maternity home;
(*d*) A convalescent home;
(*e*) A sanatorium for the reception or relief of persons suffering from consumption or other disease;
(*f*) An institution for the reception of habitual inebriates;
(*g*) A reformatory institution for the reception of women or girls;
(*h*) An institution established for any other purpose which the Governor-General by Order in Council declares to be a public charitable purpose within the provisions of this Act;
(*i*) An institution established for any two or more of the above-mentioned purposes. (Section 75.)

No single Hospital Board has in fact established all the institutions mentioned in the above list. Some of the smaller districts have limited their hospital activities to small general and maternity hospitals, combining with other Boards for the purpose of making provision for sanatorium treatment or contracting with other Boards for sanatorium and other institutional care, including that of old people. It is also customary for the majority of Boards to arrange with Boards of the larger centres for treatment of patients requiring specialist services or special treatment facilities, such as radium and deep X-ray therapy.

The functions of Hospital Boards do not include the establishment or control of mental hospitals, which are administered by the Government Mental Hospitals Department.

It is the duty of every Hospital Board to appoint such number of medical practitioners, dentists, nurses, dental nurses, midwives, and other officers as the Director-General deems necessary whether in an institution or elsewhere (section 37). Apart from what the Director-General may require, the Board has, of course, the ordinary power to make any such appointments (section 36).

It is also the duty of every Hospital Board to provide and maintain such hospitals and to make such other provisions as the Director-General considers necessary for the care and treatment of patients, including infectious disease cases (section 77 of 1926 Act and section 12 of 1932 Amendment). Every Hospital Board is also responsible for the administration of charitable aid within its district, whether indoor or outdoor relief (section 29), and is empowered to provide grants of money, food, medicines, disinfectants, surgical requisites, medical, surgical, or nursing attendance and other requisites to indigent, sick, or infirm persons in the district. A Hospital Board is also empowered to make grants or subsidies to medical or nursing associations, benevolent institutions, or private philanthropic associations as the Minister approves (section 85).

A Hospital Board may exercise any of its principal powers of granting relief to the sick or the indigent directly, or it may contract for the granting of such relief by the Crown in any sanatorium or any other institution, or by any other Hospital Board authority or person (section 91).

Special provision is made enabling Hospital Boards to combine by agreement to establish and maintain any institution which a single Board may lawfully establish (section 81; see also section 7, 1932 Amendment). This provision has been availed of in the case of a tuberculosis sanatorium in Central Otago, eight Hospital Boards being joined in its administration. This provision has also been availed of with regard to the provision of old people's home accommodation.

For the internal regulation of its institutions the Hospital Board is empowered to make by-laws, which are, however, not effective unless and until approved by the Minister. Any such by-laws may at any time be disallowed by the Governor-General (section 79). In the matter of by-laws prescribing scales of fees there is an extended power in the Minister's hands to require the making of such by-laws (section 80).

Finance.

The principal sources of revenue of Hospital Boards are recoveries from those assisted—*i.e.*, patients fees, &c.—which constitute about one-fifth of the total receipts, contributions by local authorities approximating two-fifths, and subsidies from the Government approximating two-fifths. Voluntary contributions, rents, interest, and dividends form only a small percentage.

In the month of April of each financial year (which commences on the 1st April) Hospital Boards are required to submit, for the approval of the Minister, estimates of their expenditure both for capital and maintenance purposes, and therefrom deduct the estimated receipts of the Board from all sources,

other than contributions by the contributory local authorities, and subsidy thereon. The amount so arrived at is termed the "net estimated expenditure" (section 46 to 48). After deducting therefrom the amount receivable by the Board as subsidies, determined by the Minister of Finance under section 43, such net estimated expenditure is apportioned amongst the contributory local authorities within the district in proportion to the capital value of the rateable property, determined by the Valuer-General as being approximately correct as at the 1st April in such financial year (section 49).

A Hospital Board has no power to strike a rate itself, but makes a levy upon its contributory local authorities for its requirements, and such levy constitutes a debt payable by the corporation of the authority to the Board, and may be recovered in Court (section 50). If any local authority considers the levy excessive it has the right to appeal to the Minister of Health, who may cause a Commission to be set up to inquire into the circumstances and report to the Minister whose decision thereupon is final (section 56).

As regards the method by which the contributory local authorities raise such levy, this is a matter entirely for the local authorities themselves. They may either raise it by a separate rate for the purpose or pay it out of their ordinary revenue (section 53). Their rating may be on capital value, unimproved, or annual value.

Provision is made against temporary financial embarrassment of Boards as follows: Levies are payable quarterly or monthly, as the Board may decide, and interest (usually at current bank overdraft rates) is charged contributory local authorities whose levies are unpaid after fourteen days of due date (section 50 (3)). Subsidy is payable whenever claimed upon levies received. The Department, within certain limits, makes advances on account of subsidy, deducting such advances from the next subsidy claim received (section 45). Boards are permitted to overdraw their general account to an amount not exceeding their unpaid levies and subsidies (section 60 (2)). If a Board's estimates for maintenance purposes have proved insufficient, the deficiency may be advanced out of the Consolidated Fund, and such amount, with interest thereon, is deducted from the following year's subsidy (section 54).

Government Subsidies.

Subsidies are granted at the rate of £1 for every £1 of contributions from local authorities to meet capital expenditure and on a scale averaging £1 for every £1 on contributions required for expenditure other than capital expenditure (see section 43 and the Fourth Schedule of Act). Subsidies are not now granted on voluntary contributions or bequests. The scale of subsidies on local authority levies for maintenance purposes contained in the Fourth Schedule of the Act runs from a minimum of 14s. to a maximum of 26s. subsidy per pound of levy. The principle to which the Schedule gives effect is that of the net maintenance requirements of Hospital Boards as a whole, one-half is raised by local contributions and one-half from the Consolidated Fund. Further, that higher subsidy is given to those districts where the burden of the local levy is relatively high in relation to the rateable capital value of the district. Conversely, a lower measure of subsidy is given to the district whose burden of local levy is relatively low.

Patients' Payments and other Recoveries in respect of Relief granted.

Under section 51 of the Destitute Persons Act, 1910, as amended in 1926, the cost of maintenance or relief granted by a Hospital Board is a debt due to the Board recoverable by ordinary legal process from the person relieved, the husband, or the parent of a child under twenty-one years of age. Maintenance orders under that Act may be made or varied in favour of a Hospital Board in certain circumstances (see sections 49 and 50 of that Act).

A Hospital Board has the usual power to compound for any debt due to it (section 104).

A Hospital Board has power to make contracts with any other body—for example, a friendly society—for the payment of the cost of relief. Any such contracts are subject to the approval of the Minister (section 90). This provision is mainly availed of in connection with contributory schemes for hospital benefit promoted by friendly societies.

APPENDIX B.

ACUTE ANTERIOR POLIOMYELITIS IN NEW ZEALAND.

HISTORICAL.

Although acute anterior poliomyelitis has been present since early times, it is only within the last sixty years that the occurrence of widespread epidemics has been recorded. There must have been epidemics before that, but it may be that more extensive and more rapid means of communication, with the consequent increased facilities for the dissemination of disease, have radically altered the epidemiological picture of this disease.

Only approximately one hundred years ago, in 1840, was the condition isolated as a morbid entity. In that year von Heine described the advanced stage of infection, and fifty years later Medin described the feverish stage of the disease and made a study of its morbid anatomy.

Until 1881 poliomyelitis was described simply as a sporadic affection, and more attention was given to the form and specific nature of the lesions than to its epidemiological character. In that year Bergenholtz, as a result of experience of the first recorded epidemic of infantile paralysis, in Sweden, stressed its epidemic character, but it was many years later before the infectious nature of the disease was generally recognized.

From this Scandinavian focus the disease spread to other European countries, and in 1894 to America, in which year occurred the Vermont epidemic, the first recorded in that continent. It was in 1894 that New Zealand first experienced an outbreak of poliomyelitis, but cases were known in this country before that date.

INCIDENCE IN NEW ZEALAND.

Acute poliomyelitis was made a notifiable disease in New Zealand in 1914 on the occurrence of a minor epidemic, chiefly confined to the South Island. Before that date, however, the disease was not unknown in the Dominion. In the *New Zealand Medical Journal* of 1905, Vol. IV, page 357, is mentioned the case of a girl of eighteen years who suffered from an attack of infantile paralysis when six months old, which would be in 1887–88. Our knowledge of the presence of the disease from that date until 1914 is fragmentary, but the references given below indicate that sporadic cases occurred and that an epidemic was experienced in 1894–95:—

1890. *N.Z. Medical Journal*, 1890–91, Vol. IV (old series), page 121. Under the heading "Our Canterbury Letter," and referring to a meeting held in November, 1890, it is stated: "Dr. Pairman, Lyttelton, exhibited a case of infantile paralysis and gave a short history of its progress and treatment from which it appeared that there was a likelihood of ultimate recovery."

1893. *N.Z. Medical Journal*, 1893, Vol. VI (old series), page 311. Under the heading "Auckland Branch General Meeting, September 13th, 1893," it is stated: "Dr. Lindsay read notes of a case of acute ascending paralysis ending in recovery."

1894. *N.Z. Medical Journal*, 1896, Vol. IX (old series), page 183. In a letter to the Editor, the late Dr. Robert Fulton, Dunedin, wrote: "Some time ago I communicated with you on the subject of 'infantile paralysis,' a curious outbreak of which was said to have occurred in Wellington. Could you, or any of your readers, give me any information on the subject? I can find no one in Wellington who has had a case (with the exception of Drs. Anson and Hislop) . . . May I ask any member of the profession who has seen a case of this very unusual and extraordinary disease occurring during the last two years to oblige me by sending a post-card giving a brief note of such case? I have had it authoritatively stated that no cases occurred in Auckland or Napier, and that practically the North Island escaped the outbreak of 1894. I have notes of cases from Christchurch, Waimate, Dunedin, Milton, Lawrence, Tapanui, Outram, Invercargill. As far as I can gather, no other places were affected."

Trans. Australasian Medical Congress, Auckland, 1914, page 30. In his Presidential address Dr. A. C. Purchase made a few remarks regarding the epidemic of infantile paralysis at that time present in Dunedin, and stated: "There was a similar epidemic twenty years ago, when cases appeared from the north to the south of these Islands, twenty-one cases being in Dunedin."

1895. *N.Z. Medical Journal*, 1895, Vol. VIII (old series), page 128 (April number). Wellington notes: "There is at present a remarkable epidemic of 'infantile paralysis.' One hears of new cases continually, and a large number have been under treatment at the hospital during the past few weeks . . . "

"Dr. Cleghorne writes that there was an epidemic in Blenheim some years ago, and that most of the patients made fairly good recoveries."

NOTE.—A search of the Wellington Hospital records for the years 1894, 1895, 1896 shows that no cases of "infantile paralysis" were admitted in 1894 or 1896, but that between February and September of 1895 seven cases were admitted with that diagnosis. One boy of thirteen years was admitted with a diagnosis of "paralysis." This boy, a probable case of the disease, was the first of a series admitted (4th February, 1895), and was followed by a second case on the 15th February and a third on the 18th February. The ages shown in the register are: Males, 13 months, 18 months, 3 years, 5 years, 9 years, 13 years; females: 2 years, 3 years. Three of the cases were admitted in February, two in March, two in April, and one in September. The only other cases admitted that year with a diagnosis of "paralysis" were a female of fifty years of age (June) and two males (forty-nine years and fifty-nine years) in November and December respectively.

1897–1900. The records of the Christchurch Hospital for this period show the admission of a female four years of age in October, 1897, a male of two years in October, 1899, and a female of one year in January, 1900. Private advice indicates that at least four males were victims of the disease in Christchurch in 1899. In 1900 there was a case of Landry's paralysis in Waimate, a male of eighteen who died after eleven days' illness (*N.Z. Medical Journal*, 1901, Vol. II, page 219).

1901. Dr. Paget, of this Department, recalls two cases of Landry's paralysis, females aged five years and one year, which occurred in a Taranaki family in May, 1901. Two other juvenile members of the family suffered from febrile attacks. In one of the cases the child died of respiratory paralysis in a few days, by which time recovery of movement in legs was occurring.

Prior to 1908 deaths from poliomyelitis were evidently included under the heading of some disease of the spinal cord or central nervous system. The numbers of European deaths registered yearly since that date are as follows :—

Year.	Number of Deaths.			Year.	Number of Deaths.		
	Males.	Females.	Total.		Males.	Females.	Total.
1908	1	2	3	1923	2	..	2
1909	1	2	3	1924	8	14	22
1910	3	1	4	1925	91	82	173
1911	1	..	1	1926	7	4	11
1912	..	2	2	1927	6	1	7
1913	..	2	2	1928	10	7	17
1914	16	9	25	1929	5	2	7
1915	2	2	4	1930	2	3	5
1916	76	47	123	1931	4	1	5
1917	6	4	10	1932	12	7	19
1918	2	2	4	1933	6	2	8
1919	1	..	1	1934	..	2	2
1920	1	1	2	1935	..	1	1
1921	8	3	11	1936	3	2	5
1922	6	3	9	1937	12	27	39

TABLE 1.—POLIOMYELITIS, 1915–37: DISTRIBUTION, BY MONTHS, IN NEW ZEALAND.

Year.	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	Totals.
1915	..	1	..	1	..	1	2	..	..	..	1	4	10
1916	119	319	320	167	44	19	9	5	4	4	4	4	1,018
1917	10	2	3	4	5	..	..	3	2	18	5	2	54
1918	1	1	1	1	..	1	1	..	..	..	..	..	6
1919	1	2	..	1	1	3	..	..	2	..	..	1	11
1920	2	1	..	17	14	7	5	2	5	10	4	9	76
1921	46	84	30	26	12	3	3	6	3	5	9	10	267
1922	21	20	21	14	4	5	3	2	2	3	2	1	98
1923	5	1	4	..	3	1	..	..	1	2	..	..	17
1924	2	2	..	..	..	1	1	1	..	2	5	59	73
1925	224	340	366	120	54	22	10	9	6	5	3	..	1,159
1926	..	4	4	1	..	..	1	1	2	..	1	8	22
1927	3	5	5	4	4	2	2	..	..	..	2	2	29
1928	5	5	11	11	4	1	..	1	3	2	2	2	47
1929	3	10	14	9	6	6	1	3	2	..	1	..	55
1930	1	3	..	..	1	1	1	1	1	1	..	2	12
1931	2	1	2	1	..	1	4	2	3	4	4	1	25
1932	12	31	39	23	8	6	1	8	5	2	7	8	150
1933	10	4	15	9	2	..	1	..	1	..	2	1	45
1934	..	3	1	2	2	..	1	1	..	2	1	1	14
1935	1	1	1	1	..	..	..	1	..	2	..	1	8
1936	..	..	..	..	..	1	..	..	..	..	1	85	87
1937	70	53	107	244	163	95	30	14	14	10	11	5	816
Totals, twenty-three years	538	893	974	656	327	176	76	60	56	72	65	206	4,099

Since the beginning of 1915 monthly records of notifications of poliomyelitis are available, and are given in Table 1. From this it will be seen that of the 276 months in the twenty-three years shown, there were only 64 in which no cases were notified. On two occasions there were no notifications for five consecutive months; August–December, 1918, and January–May, 1936, and on one occasion (July–October, 1936) four consecutive months without a case. Of the total number of cases, 88 per cent were notified in the December–May period, and 75 per cent. in the January–April period of the year.

Poliomyelitis has obviously been endemic in New Zealand for a long period, and undoubted immunity is widespread. As the continuance of infection in the community is due to the introduction of virgin contacts, and as immigration plays a minor part in such introduction, the spread of infection

is connected with the number of births. As records of notification of cases prior to 1932 do not show European and Maori cases separately, the numbers of births and cases given below are for the two races combined. The two periods shown, 1917–25 and 1927–37, commence immediately after an epidemic and end after the succeeding epidemic.

The rates given are not strictly comparable, as both paralytic and aparalytic cases are included, and the percentage of aparalytic cases in the total notifications varies in different epidemics and in different districts in New Zealand. In the centres of population a larger percentage of the cases notified are of the aparalytic type than in country districts. In inter-epidemic periods only paralytic cases are recognized and notified except in the vicinity of small localized outbreaks, whereas in times of epidemic prevalence, with more attention focused on the disease, medical advice is more frequently sought in cases of minor illness, and aparalytic cases constitute a considerable percentage of the total notified.

Figures for complete epidemic periods differentiating between the two types are not available except for the recent epidemic. In 1916, of 339 cases notified in the Wellington Health District during the period January–April, only 7 per cent. were described as "abortive" (Sydney Smith, "Infantile Paralysis in New Zealand," Public Health Report, 1916). In 1924–25, in the same area, for the period December–February, 42 per cent. of the 339 cases notified were aparalytic. In 1936–37, for the same area, 22 per cent. of the 204 cases notified were aparalytic, compared with 27 per cent. for the whole Dominion :—

Period.	Number of Births.	Number of Notified Cases of Poliomyelitis.	Notification, Rate per 1,000 Births.
1917–1925	261,303	1,761	6·7
1926–1937	343,131	1,310	3·8
1917–1937	604,434	3,071	5·1

It will be seen that from the beginning of 1917, the year following the first major epidemic in New Zealand, there has been one recognized case of poliomyelitis for every 200 births. The rate was much higher during the first period than during the second.

No unusual prevalance of the disease was noticed after 1895 until 1912, when there was an outbreak in North Auckland, about 40 cases occurring. In 1914 the second minor epidemic occurred. It is now impossible to obtain accurate information regarding this epidemic. In the published returns of the Department the cases are shown along with those for cerebro-spinal meningitis. A careful search of the records of the Otago Health District shows that of the 134 cases of the two diseases reported, 101 were of acute poliomyelitis, of which 9 occurred in January, 21 in February, 31 in March, 15 in April, 10 in May, and 7 in June.

This epidemic chiefly affected the South Island, but the North Island did not escape, as Dr. Sydney Smith, in his report on the 1916 epidemic, refers to the 1914 one and gives a table showing the distribution of 58 cases which occurred in the Wellington District during the period February–May. This table shows that 11 cases occurred in February, 23 in March, 15 in April, and 7 in May.

EPIDEMIC OF 1916.

This, the first major epidemic experienced by New Zealand, commenced in Auckland in December, 1915, although it was not until the beginning of January, 1916, that cases were reported to the Department. In a memorandum of date 10th January Dr. T. J. Hughes, Medical Officer of Health, Auckland, reported that between 4th January and 8th January 7 cases had been notified in the city and suburbs. Of these, 1 had first taken ill two months previously, 2 some three weeks, and 2 a fortnight previously. Another case had occurred in mid-December. These had only lately been visited and notified by medical practitioners. The majority of these cases were slight, although 1 was severe, but all were recovering.

By 24th January the number of cases had risen to 29, with 2 deaths, and by the 28th 48 cases had been notified in the city and suburbs and 7 in country towns. On 25th February the *New Zealand Herald* reported that the total cases notified to 24th February, 1916, numbered 149 in Auckland and adjacent areas and 118 in the country districts. During the period January–April the numbers notified totalled 519 (187 in city and suburbs, 332 in country), with 53 deaths.

The first cases in the Wellington Health District were notified in the last week in January, 3 cases being reported. In February 65 cases were notified, in March 178, and in April 93.

Christchurch first reported a case towards the end of February, and Dunedin 2 cases in the first week in March.

The course of the epidemic is shown in the following table :—

	North Island.		South Island.		Total.
	Auckland.	Wellington.	Canterbury.	Otago.	
January, 1916	74	3	..	..	77
February, 1916	242	53	2	..	297
March, 1916	149	151	17	5	322
April, 1916	64	89	27	10	190
May, 1916	15	33	6	4	58
June, 1916	..	11	2	3	16

It will be noticed that the South Island escaped lightly, probably as a result of immunity gained in the 1914 outbreak.

Of the total of 1,018 cases notified during the year, records are available of the age-grouping of 852, of which 515 were in Auckland District and 377 in Wellington District.

TABLE 2.—SHOWING DISTRIBUTION BY AGE-GROUPS, OF 852 CASES OF POLIOMYELITIS, 1916.

	Auckland District.	Wellington District.
Under 5 years	322	200
5 to 10 years	84	65
10 to 15 years	43	27
15 to 20 years	35	19
20 to 30 years	23	18
30 to 40 years	5	7
40 years and over	3	1
Totals	515	337

TABLE 3.—SHOWING DEATHS, BY AGE-GROUPS, FROM POLIOMYELITIS AMONG 852 CASES, 1916.

	Auckland District.	Wellington District.
Under 5 years	23	20
5 to 10 years	11	3
10 to 15 years	5	4
15 to 20 years	8	9
20 years and over	6	10
Totals	53	46

TABLE 4.—ACUTE POLIOMYELITIS, 1924–25: TABLE SHOWING NOTIFICATIONS, BY HEALTH DISTRICTS AND WEEK OF NOTIFICATION.

Week ended	North Auckland.	Central Auckland.	South Auckland.	Coromandel-Opotiki.	Taranaki-Horowhenua.	Wairarapa-East Cape.	Central Wellington.	Nelson-Marlborough.	West Coast.	Canterbury.	Otago.	Southland.	Totals.
24th November, 1924	..	..	..	..	..	..	..	..	..	1	..	..	1
1st December, 1924	..	..	..	..	..	..	3	..	..	..	..	..	3
8th December, 1924	..	..	..	..	..	..	6	..	..	..	..	..	6
15th December, 1924	..	2	..	..	..	..	11	..	..	..	..	..	13
22nd December, 1924	..	2	..	..	..	..	9	..	..	..	..	..	11
29th December, 1924	..	3	..	..	..	..	9	..	..	..	..	..	12
5th January, 1925	..	..	..	..	..	1	17	..	..	..	1	..	19
12th January, 1925	1	7	1	1	2	1	17	..	..	..	..	..	30
19th January, 1925	2	8	1	..	15	8	26	..	..	..	..	..	60
26th January, 1925	..	15	4	2	12	9	14	1	..	1	..	..	58
2nd February, 1925	5	24	5	..	22	6	10	4	1	11	..	..	88
9th February, 1925	8	32	2	2	24	8	8	4	1	13	2	..	104
16th February, 1925	7	8	13	1	47	9	10	9	..	33	1	..	138
23rd February, 1925	5	12	2	..	26	7	4	1	..	19	2	1	79
2nd March, 1925	3	10	4	5	30	3	1	3	3	28	8	..	98
9th March, 1925	7	6	7	3	21	6	6	6	..	48	8	..	118
16th March, 1925	3	3	3	..	20	8	3	2	..	24	3	1	70
23rd March, 1925	4	2	6	4	34	9	2	4	2	33	9	..	109
30th March, 1925	3	3	11	4	16	14	..	2	..	23	6	..	82
6th April, 1925	3	2	5	4	12	3	..	1	..	8	9	1	48
13th April, 1925	3	..	3	..	12	4	1	..	..	7	9	..	39
20th April, 1925	3	2	2	2	4	1	1	3	1	6	3	..	28
27th April, 1925	1	1	2	3	3	..	..	..	1	7	1	..	19
4th May, 1925	..	..	3	..	4	1	1	..	..	6	2	..	17
11th May, 1925	..	2	1	..	3	..	..	..	..	4	3	..	13
18th May, 1925	1	..	2	..	1	1	1	1	..	4	2	..	13
25th May, 1925	1	..	1	..	..	..	..	1	..	2	7	1	13
1st June, 1925	..	..	1	..	3	2	1	..	..	2	5	..	14
8th June, 1925	..	1	1	..	..	..	..	..	..	3	2	..	7
15th June, 1925	..	..	..	..	..	..	..	..	..	1	4	1	6
22nd June, 1925	..	1	..	..	1	..	1	..	1	1	..	..	5
29th June, 1925	..	..	..	..	..	..	..	..	..	..	1	..	1

The year 1917 showed an incidence above the average, but the disease remained sporadic until 1920, when 76 cases occurred, widely distributed, 28 of the cases being in Auckland. In 1921 a minor epidemic was experienced. Of the 267 cases notified, the North Island, with approximately double the population of the South Island, was responsible for 132. The increased incidence the following year was mainly in the North Island. Only a few cases were notified between 1922 and December, 1924, when the second major epidemic commenced.

The 1924–25 epidemic commenced in Wellington, and its progress is shown in Table 4, in which are given the notifications, by weeks, for the different health districts as then constituted. It will be seen that the epidemic spread was more rapid in the North Island. In Central Wellington, where the epidemic broke out, the peak was reached by the middle of January, and the epidemic was rapidly declining in that area whilst still on the increase elsewhere. As will be seen later, the 1936-37 epidemic commenced in Dunedin at the beginning of December in so far as recognized cases were concerned, rose to a peak in the same month, and was declining there some considerable time before other districts were seriously affected.

Of the two health districts contiguous to Wellington, the Taranaki-Horowhenua district, on the west coast, was much more seriously affected than the Wairarapa - East Cape district, on the east coast. The epidemic took some considerable time to cross Cook Strait to Canterbury, which suffered severely.

In 1925 the disease had attained a strong hold on Wellington Province and was spreading elsewhere before restrictions on the movements of children were instituted. Every part of New Zealand was affected, but the southern portion of the South Island was not seriously so.

The total notifications during 1924-25 were 1,252, and 195 deaths occurred. The age-grouping of the 1,159 cases occurring in 1925 was as shown below :

TABLE 5.—ACUTE POLIOMYELITIS, 1925 : TABLE SHOWING AGE-GROUPING OF CASES.

——	Males.	Females.	Total.
Under 1 year	38	24	62
1 to 5 years	320	259	579
5 to 10 years	150	123	273
10 to 15 years	65	50	115
15 to 20 years	39	25	64
20 to 25 years	7	12	19
25 to 30 years	13	4	17
30 to 35 years	5	4	9
35 to 40 years	7	3	10
40 years and over	4	7	11
Totals	648	511	1,159

There was another comparatively quiescent period from 1926 to 1932, in which latter year 150 cases were notified. Whilst the incidence of the disease was widespread, cases occurring in every district in the Dominion, the chief brunt of this outbreak was borne by the South Island (Canterbury 57 cases, Otago and Southland 37 cases).

The 45 cases in 1933 were widely distributed, but one localized outbreak in Taranaki contributed 14 to the total. The incidence of the disease dropped markedly during the next three years, only 22 cases being notified between the end of 1933 and the 1st December, 1936.

THE 1936-37 EPIDEMIC (1ST DECEMBER, 1936, TO 30TH NOVEMBER, 1937).

In New Zealand all actual or *suspected* cases must be notified, and all these cases are shown in the published weekly bulletin. All suspected cases so notified, and not subsequently confirmed, are omitted from the monthly returns of infectious disease, and therefore do not appear in the annual report of the Department.

During the eleven months ended 30th November, 1936, 7 notifications were received from five districts, Nelson-Marlborough (January, November) ; Canterbury (February) ; Central Auckland (March, July) ; Otago (June) ; South Auckland (June). Of these, only 2 were confirmed—the South Auckland case in June and the Nelson-Marlborough case in November. Assuming all these cases were poliomyelitis, the absence of confirmation being due to uncertainty of diagnosis in aparalytic cases, the year was one of exceptionally low incidence of the disease. Then at the beginning of December the condition very rapidly assumed epidemic proportions in Dunedin. That a mild form of poliomyelitis was prevalent in that area prior to December is indicated by the remarks of the Medical Officer of Health (Dr. T. Mackibbin), who in his report states :—

> "During October and early November, 1936, there was an unusual prevalence of pyrexia, gastro-intestinal disorders, and soreness of limbs. These febrile disturbances were not limited to the vicinity of Dunedin. For instance, in the Waikaka District, on the Otago-Southland border, there was at the same time as in Dunedin a wave of pyrexia and gastro-intestinal disorders. There was a similar wave in South Canterbury just before and while the first few cases were notified in Dunedin. A private school at Winchester was thus affected, and an early case in Oamaru was in a boy who had recently resided at the school.
>
> "Before it was known that paralysis was occurring these symptoms were not regarded as systemic signs of poliomyelitis, whereas later when it became known that this disease was epidemic all such cases were closely observed and on the first appearance of meningeal symptoms were hospitalized."

The measures taken by the Department to prevent the spread of the disease were as follows :—

(1) As soon as it became obvious that poliomyelitis in epidemic form was present in Dunedin, the public were notified of this fact. They were instructed as to the importance of obscure febrile attacks amongst children, and were advised in all such cases to seek medical advice.

(2) The medical profession were given early information as to the position. A memorandum which had been issued in connection with the epidemic of 1924-25 over the joint signatures of the then President of the New Zealand Branch of the British Medical Association and the Director-General of Health was brought up to date and a copy forwarded to every medical practitioner on the register. Such information as was available in regard to the use of nasal sprays and serum was also placed before the profession.

(3) The public were urged to keep children away from places of entertainment, and from public gatherings such as pictures, &c. The picture-theatre proprietors co-operated in a most generous way, and voluntarily agreed to the exclusion of children from picture-theatres throughout the whole of New Zealand.

(4) Schools throughout the whole of New Zealand were closed as soon as it was obvious that the disease was present in Dunedin in epidemic form.

(5) An early opportunity was taken to meet representatives of the New Zealand Branch of the British Medical Association, and to invite suggestions for the control of the epidemic. One valuable suggestion which was adopted was the appointment in each of the four main centres of medical practitioners with special knowledge of poliomyelitis and its treatment, who would be available for consultation with any general practitioner who wished their advice.

(6) Cases with few exceptions were admitted to hospital.

(7) In the early stages of the epidemic the incubation and isolation periods which were adopted were respectively fourteen days and six weeks. After some time these were reduced to ten days and four weeks, the principal reason being that Dunedin Hospital was becoming overcrowded with many mild and abortive cases which rapidly recovered and were free from clinical signs after a few days.

(8) Just before Christmas, when there was still considerable doubt as to the possible force of the epidemic, much prominence was given to the fact that cases were occurring in other parts of New Zealand which had close connection with Dunedin. In order to limit as far as possible the movements of people from Dunedin during the holiday season, restrictions were placed upon the exodus of children from Dunedin. The restrictions were not absolute, as in a limited number of cases, where there was no contact with known cases of poliomyelitis and the prospective travellers could show good and sufficient reason for wishing to leave Dunedin, permission was given them to do so.

The first cases reported were 2 in Dunedin on the 4th December. No further cases were reported until the 11th, when 3 were notified. By the 14th 11 cases had occurred, and on that date the schools in Dunedin were closed. The following week new cases numbered 37 in Dunedin, 2 in Southland, and 1 in the southern portion of the Canterbury District. This week marked the peak of the epidemic in Dunedin. It is interesting to note that, allowing an incubation period of seven days, the closing of the schools was apparently associated with the decline in incidence. There is no doubt that parents accepted the advice of the Department and isolated their children as far as possible from outside contact.

The epidemic showed no tendency to increase until March, and, with the exception of a comparatively few cases in other district in New Zealand, was confined to Otago and the two contiguous districts. Its progress in Otago and Southland is described by the Medical Officer of Health as follows :—

"A case which had its onset on 26th November, 1936, was notified from North-East Valley, Dunedin, on 4th December by a private practitioner, a second with onset also on 26th November was notified the same day from South Dunedin by the Dunedin Hospital, both mild in type. There was then a clear interval of seven days. On the 11th, 3 cases were notified as admitted to the Dunedin Hospital. Two of these, girls of fourteen and fifteen years respectively, showed definite paralysis. It was then apparent that an epidemic was beginning in Dunedin, of what magnitude no one could say, and measures to be described later were taken to control it.

"It is now clear in the light of house-to-house inquiries that from 13th November, 1936, onwards cases were occurring in Dunedin and its suburbs.

"The first traceable paralysed case occurred in Green Island, near Dunedin, the onset of symptoms being on 13th November, 1936.

"By 5th December cases presenting at least systemic symptoms of poliomyelitis, but not notified, had occurred in Caversham, South Dunedin, St. Kilda, Musselburgh, Mornington, towards the centre of the city in King Street and from North-East Valley.

"By 11th December, 5 statutory notifications of poliomyelitis, all from Dunedin and suburbs, had been received. Two of these, notified on Friday, the 11th, showed definite paralysis. On that day all medical practitioners in Otago and Southland were advised by circular regarding the epidemic and the precautionary measures recommended by the Ministry of Health of England. On Monday, 14th December, all schools were closed, other precautionary measures taken, and the public generally advised.

"Within the next few days the Dunedin Public Hospital quickly filled with cases. On 17th December the peak was reached, in which day 9 cases occurred. After this, in so far as Dunedin is concerned, the number fell almost as rapidly. By the 17th January the numbers dropped to about 2 per week. Throughout the remainder of Otago and Southland, the incidence of cases was much less rapid and the effects of the disease were less serious.

"Medical practitioners co-operated admirably and were advised to notify as positive and send to hospital all cases presenting definite meningeal symptoms or paralysis, but to isolate in private dwellings and observe closely the lighter cases presenting systemic symptoms only. On or about the 17th December, some 15 Dunedin practitioners were each seeing on an average some 5 or 6 cases daily, but notifying and hospitalizing the serious cases only. Even so, at one time, the resources of the Dunedin Public Hospital were severely taxed.

"From Dunedin the infection spread south in the direction of the Main South route to Milton, arriving there on 4th January. From there it spread farther south to Balclutha on the 7th and to the districts surrounding. This seems to be the limit of the southern spread from the Dunedin focus. Another direction of spread from Dunedin was up into the Maniototo District, arriving at Middlemarch on 15th January, passing on to Hyde, and then to Ranfurly which was first affected on 26th January.

"In Central Otago foci were probably set up at Alexandra and Cromwell by the arrival of 2 children from Dunedin who contracted poliomyelitis. From Alexandra it spread to Earnscleugh, and from Cromwell to Bannockburn and north through Luggate to Hawea. Besides Dunedin and suburbs another early focus was that at Waikaka, a village on the Otago-Southland boundary. There is now a definite record of a systemic case occurring there on 17th November, a younger sister also having been in bed for a few days previously with fever, vomiting, and headache. On the 27th a second case at Waikaka presented suspicious symptoms. Both these children had attended the same school, though not in the same class. The first child had returned to school on the 23rd November as she had not been seen by a doctor and had not been diagnosed as poliomyelitis. The second case, therefore, developed four days after the first one returned to school. About the same time 6 other children attending the same school were unwell with fever, vomiting, pains in the limbs, and listlessness. These, however, cleared up in a few days.

"From Waikaka the infection spread north-west to Wendon, Riversdale, Lumsden, and Lowther, from which places positive cases were notified.

"Oamaru and district were infected early from South Canterbury, where at the Waihi School, Winchester, attended by an Oamaru boy who contracted the disease, there was an early wave of pyrexia, but it is also likely that spread there occurred from Dunedin, although the same trail cannot be traced as in the other lines of spread.

"Infection arose at Orepuki and Waihoaka in western Southland relatively late—*i.e.*, on 16th January. These places are not in direct communication with Waikaka. It is from here possibly that the infection spread to Invercargill and its surrounding districts, appearing there a few weeks later. Then Invercargill experienced a sharp epidemic, which quickly subsided.

"Gore, affected later, may have derived infection from either Waikaka or Invercargill. A great deal of traffic passes between Invercargill and Gore. Having regard to the date of appearance in Gore, it is more likely to have come from Invercargill. By 23rd March the date of the first case in Gore, the focus at Waikaka had died out, whereas this was only ten days after the height of infection in Invercargill."

The closure of all schools, the restriction imposed on children under sixteen years of age travelling from Dunedin, the voluntary action of picture-theatre proprietors in excluding children from theatres, the discouragement of picnics and other functions at which children were likely to be present, and the publicity given to the epidemic were no doubt important factors in reducing the number of cases and delaying the spread of the epidemic. By the end of January the epidemic was declining, and early in February the restrictions on children travelling from Dunedin and attending theatres were lifted. The epidemic showed no sign of increasing, and it was decided to open schools on 1st March except in those localities where cases were still occurring. Except for the southern portion of the South Island, only sporadic cases had been experienced throughout New Zealand up to that time.

At the end of February and the beginning of March the second phase commenced, but for a few weeks this was practically confined to the southern portion of the South Island, the cases shown in Table 6 as occurring in Canterbury being chiefly in the southern portion of that district. In the latter half of March the epidemic spread to districts in the North, and by the beginning of April was widespread throughout the Dominion.

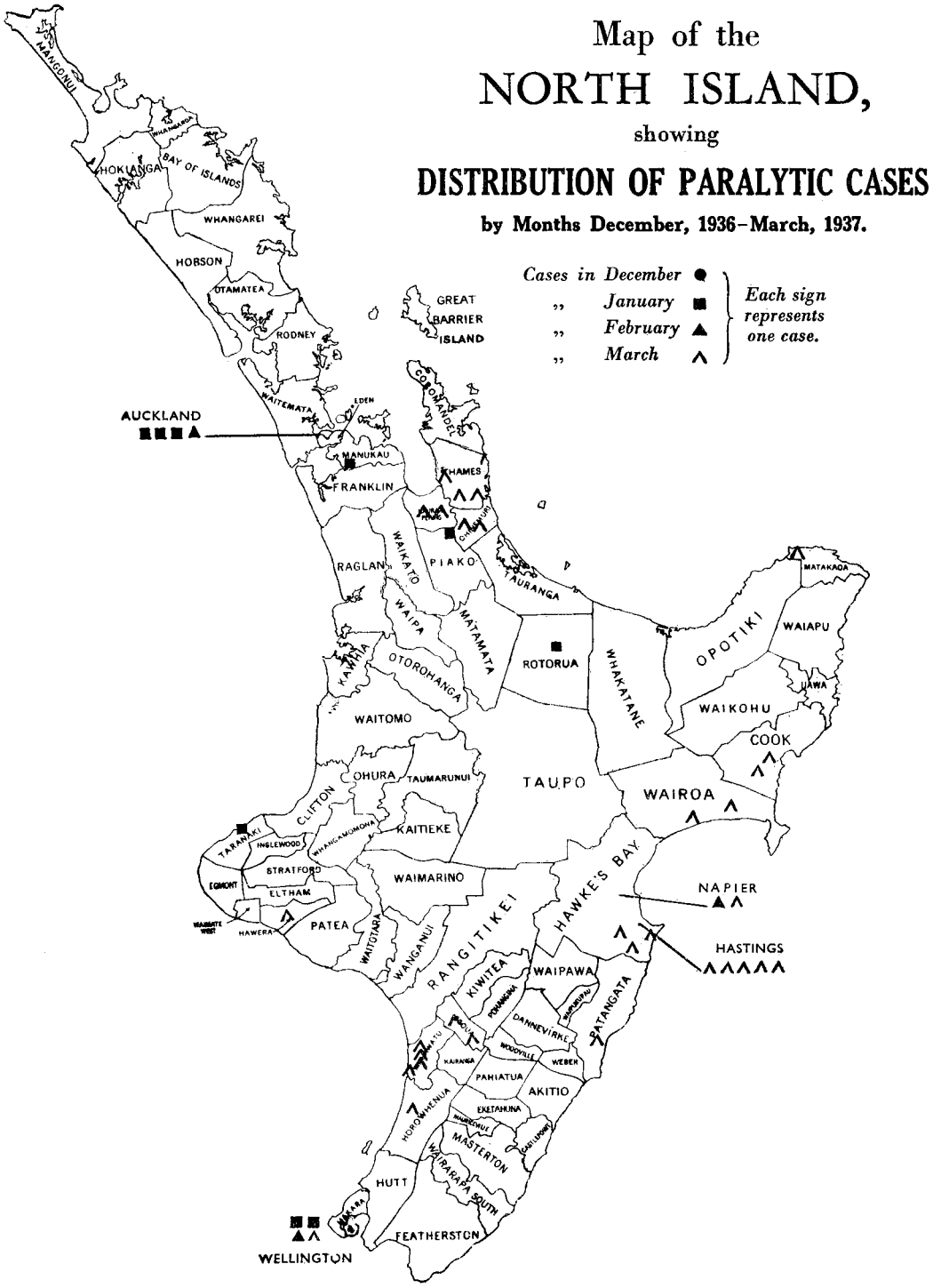
It would appear that the precautions taken had a definite effect on the course of the epidemic.

Table 7 shows the notifications of paralytic cases week by week. A comparison of Tables 6 and 7 shows that in some districts none but paralytic cases were reported, whilst in others the percentage of paralytic cases notified was fairly high.

Tables 8 and 9 show by race, sex, and age-groups the distribution of cases, by months and by Health Districts respectively, paralytic and aparalytic cases being shown separately.

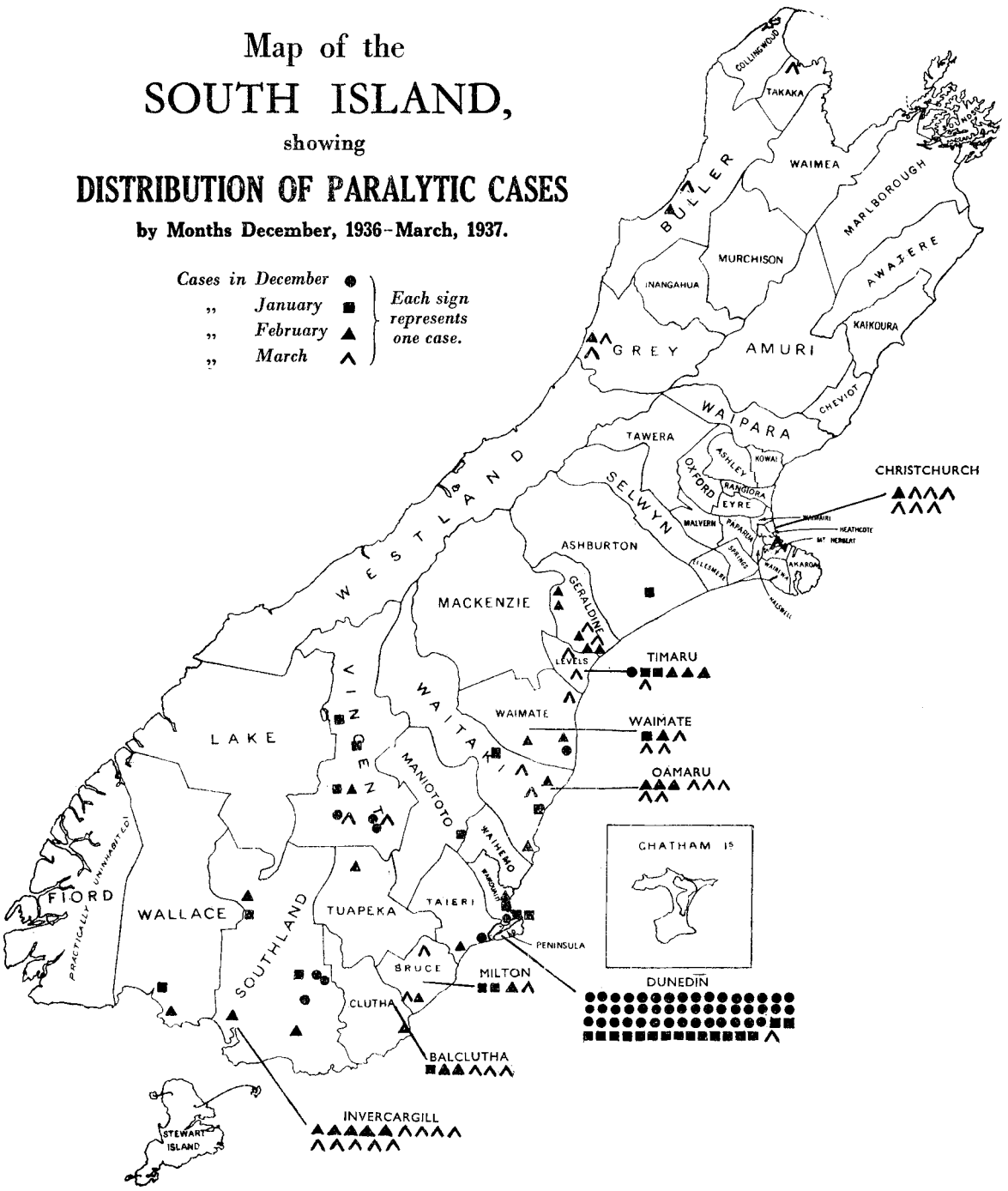
ACUTE POLIOMYELITIS IN NEW ZEALAND.

EPIDEMIC OF 1936-37.



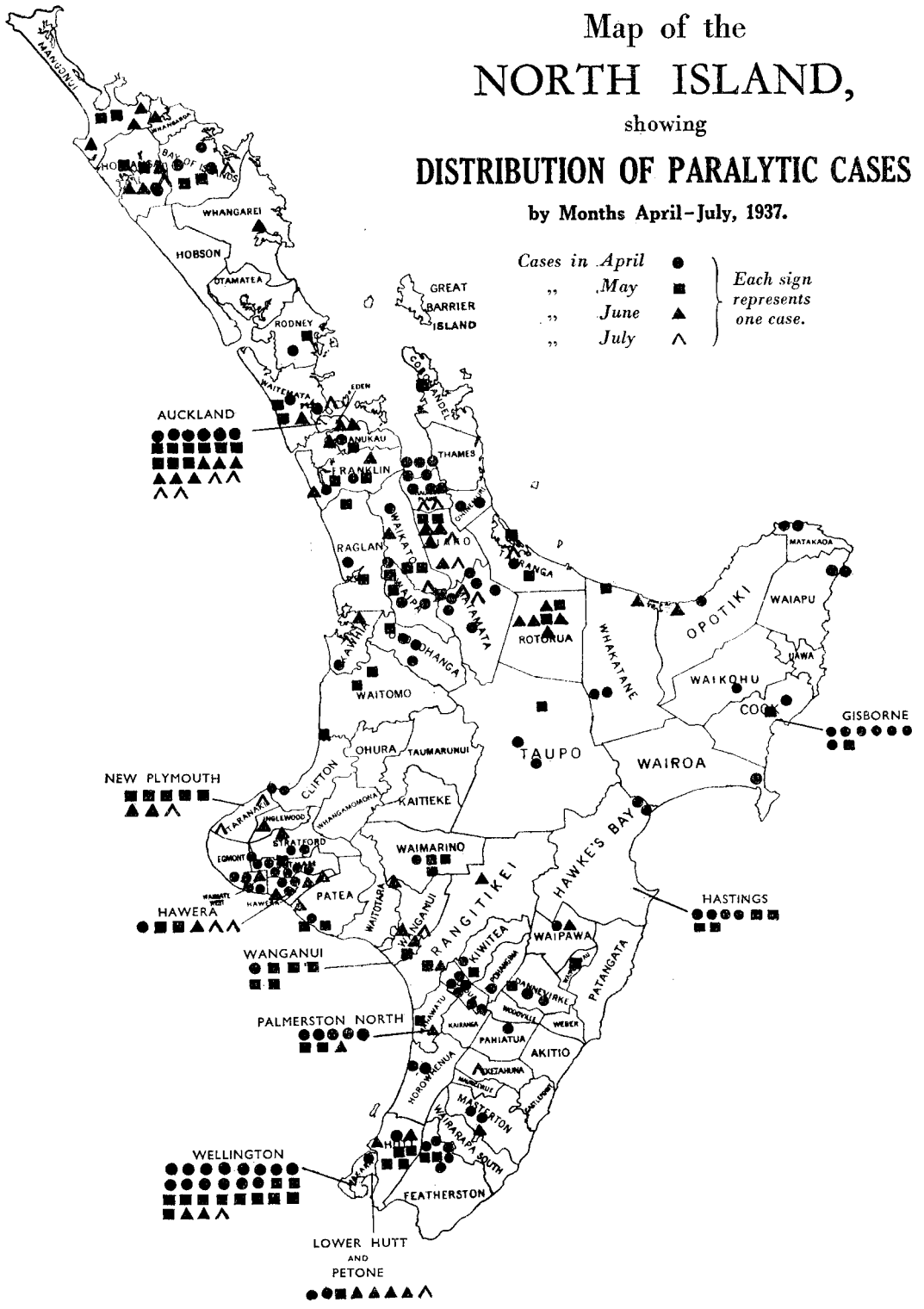
ACUTE POLIOMYELITIS IN NEW ZEALAND.

EPIDEMIC OF 1936-37.



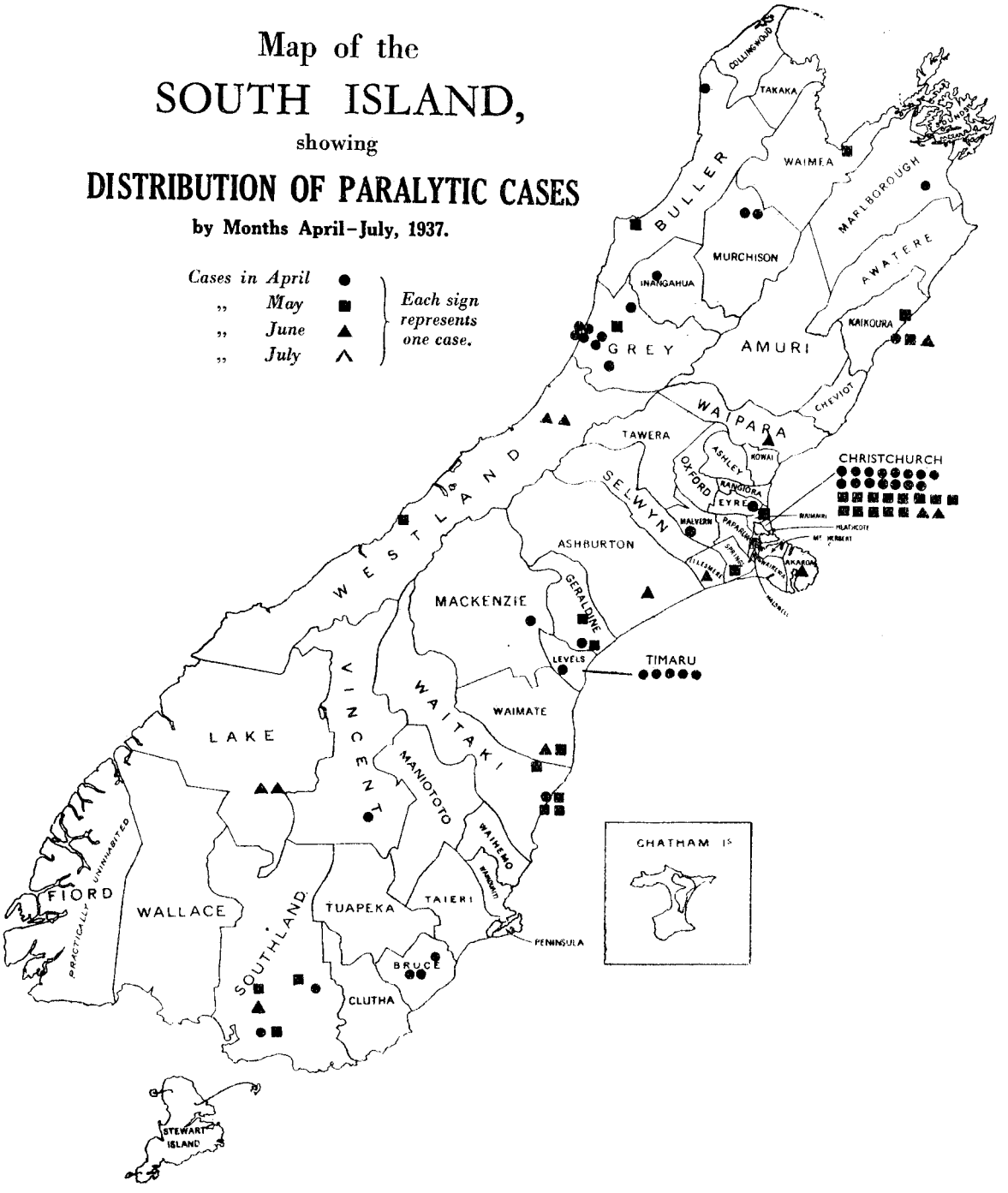
ACUTE POLIOMYELITIS IN NEW ZEALAND.

EPIDEMIC OF 1936-37.



ACUTE POLIOMYELITIS IN NEW ZEALAND.

EPIDEMIC OF 1936–37.



The accompanying maps show the incidence of paralytic cases by months, one set referring to the first phase (December, 1936, to March, 1937) and the other to the second phase (April–July, 1937). As the density of population varies markedly in different districts, a table is appended showing the paralytic cases by month of occurrence in each county, and in municipalities with a population of 2,000 and over, with the population of each area.

TABLE 6.—ACUTE POLIOMYELITIS (DECEMBER, 1936, TO NOVEMBER, 1937): ALL CASES, BY HEALTH DISTRICTS AND WEEK OF NOTIFICATION.

Week ended.	North Auckland (Population, 65,400).	Central Auckland (Population, 267,650).	South Auckland (Population, 133,800)	Thames–Tauranga (Population, 39,200).	Taranaki (Population, 68,600).	East Cape (Population, 62,000).	Wellington–Hawke's Bay (Population, 187,900).	Central Wellington (Population, 202,660).	Nelson–Marlborough (Population, 50,700).	West Coast (Population, 40,500).	Canterbury (Population, 241,550).	Otago (Population, 147,900).	Southland (Population, 76,900).	Population, 1,584,653. Totals.	Deaths.*
7/12/36	..	..	..	..	..	..	..	..	..	..	..	2	..	2	..
14/12/36	..	..	..	..	..	..	..	..	..	..	..	9	..	9	..
21/12/36	..	..	..	..	..	..	..	..	..	..	1	37	2	40	2
28/12/36	..	..	..	..	..	..	..	1	..	..	2	18	..	21	1
4/1/37	..	1	..	..	..	1	..	..	..	..	1	14	1	18	3
11/1/37	..	1	..	..	..	..	..	..	..	..	4	16	1	22	1
18/1/37	..	5	..	..	..	..	..	1	..	..	3	11	1	21	1
25/1/37	..	1	1	..	..	..	..	..	..	..	5	3	..	10	2
1/2/37	..	..	1	..	..	..	..	1	..	..	3	9	1	15	..
8/2/37	..	..	..	..	..	..	..	..	..	1	5	10	2	18	1
15/2/37	..	..	..	..	..	..	..	..	..	..	1	4	1	6	..
22/2/37	..	1	..	..	..	..	1	..	..	..	6	3	2	13	2
1/3/37	..	..	..	..	..	..	..	1	..	1	3	4	12	21	1
8/3/37	..	..	..	..	..	..	1	..	..	..	5	8	4	18	2
15/3/37	..	..	..	2	..	..	3	1	..	..	5	3	4	18	1
22/3/37	..	..	..	..	..	1	6	..	..	2	6	4	1	20	2
29/3/37	..	..	..	7	..	4	7	..	1	1	12	1	..	33	1
5/4/37	..	2	3	4	2	2	5	2	..	..	4	6	2	32	1
12/4/37	..	1	1	4	2	5	8	11	..	3	6	4	2	47	2
19/4/37	..	1	9	2	6	8	12	17	1	3	8	3	..	70	5
26/4/37	..	7	7	5	5	5	3	7	..	4	11	4	..	58	1
3/5/37	4	3	9	2	9	5	10	8	2	..	12	4	..	68	3
10/5/37	2	5	9	2	3	..	11	8	..	1	11	..	1	53	3
17/5/37	3	3	3	..	2	2	3	6	..	2	7	..	2	33	1
24/5/37	..	4	3	3	1	2	4	4	..	..	6	1	..	28	1
31/5/37	1	6	2	..	2	1	8	3	1	..	5	..	..	29	1
7/6/37	2	3	3	1	4	3	3	1	..	1	1	1	..	23	..
14/6/37	3	1	1	2	1	..	3	3	..	1	3	..	3	21	1
21/6/37	2	4	6	..	2	2	2	4	..	..	3	2	1	28	2
28/6/37	..	8	2	..	2	..	3	1	..	..	3	..	..	19	1
5/7/37	2	1	..	..	2	..	3	..	..	..	1	..	..	9	..
12/7/37	..	2	3	..	..	..	..	..	..	..	..	..	..	5	1
19/7/37	2	1	2	1	..	..	..	..	..	..	..	..	..	6	1
26/7/37	..	..	..	2	1	..	..	2	..	..	1	..	..	6	..
2/8/37	..	1	2	..	1	..	2	1	..	..	..	..	..	7	1
9/8/37	..	..	1	1	..	..	..	..	..	..	..	..	..	2	..
16/8/37	1	..	..	..	..	1	..	3	..	..	..	..	..	5	..
23/8/37	..	1	..	..	..	..	..	1	1	..	..	..	..	3	..
30/8/37	..	1	..	..	..	..	..	..	..	..	3	..	..	4	..
6/9/37	..	..	..	..	..	..	1	..	1	..	1	..	1	4	..
13/9/37	..	3	..	..	1	..	..	..	..	..	..	..	..	4	..
20/9/37	..	1	1	..	..	..	..	..	4	..	..	..	..	6	..
27/9/37	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4/10/37	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11/10/37	..	..	..	..	..	..	..	..	..	..	..	2	..	2	..
18/10/37	..	..	1	..	..	..	..	..	3	..	..	2	..	6	..
25/10/37	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
1/11/37	..	..	..	..	..	..	..	..	1	..	..	2	..	3	1
8/11/37	..	..	..	..	..	..	..	..	..	..	..	2	..	2	..
15/11/37	..	1	..	..	..	..	..	1	2	..	..	1	1	5	..
22/11/37	..	..	..	..	..	..	..	1	..	..	..	1	..	2	..
29/11/37	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
30/11/37	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..
Totals ...	22	69	70	38	47	41	99	88	17	20	148	192	45	896	46

* Deaths shown according to date of notification of case not according to date of death.

TABLE 7.—ACUTE POLIOMYELITIS, DECEMBER, 1936, TO NOVEMBER, 1937: "PARALYTIC" CASES, BY WEEK OF NOTIFICATION.

Week ended	North Auckland.	Central Auckland.	South Auckland.	Thames-Tauranga.	Taranaki.	East Cape.	Wellington-Hawke's Bay.	Central Wellington.	Nelson-Marlborough.	West Coast.	Canterbury.	Otago.	Southland.	Totals.
7/12/36 ..	..	..	..	..	..	..	..	..	..	..	..	2	..	2
14/12/36 ..	..	..	..	..	..	..	..	..	..	..	..	7	..	7
21/12/36 ..	..	..	..	..	..	..	..	..	..	..	..	24	2	26
28/12/36 ..	..	..	..	..	..	..	..	..	..	..	2	12	..	14
4/1/37 ..	..	..	..	..	1	..	..	..	..	..	1	7	1	10
11/1/37 ..	..	1	..	..	..	..	..	..	..	..	1	12	1	15
18/1/37 ..	..	2	..	..	..	..	..	1	..	..	..	7	1	11
25/1/37 ..	..	1	1	..	..	..	..	..	..	..	..	2	..	4
1/2/37 ..	..	..	1	..	..	..	..	1	..	..	2	6	1	11
8/2/37 ..	..	..	..	..	..	..	..	..	..	1	4	9	1	15
15/2/37 ..	..	..	..	..	..	..	..	..	..	..	1	1	1	3
22/2/37 ..	..	1	..	..	..	..	1	..	..	..	5	3	2	12
1/3/37 ..	..	..	..	..	..	..	..	1	..	1	2	4	8	16
8/3/37 ..	..	..	..	..	..	..	..	..	..	..	4	5	3	12
15/3/37 ..	..	..	..	2	..	..	2	1	..	..	2	2	3	12
22/3/37 ..	..	..	..	..	..	1	6	..	..	2	2	4	..	15
29/3/37 ..	..	..	..	5	..	4	7	..	1	1	8	1	..	27
5/4/37 ..	..	1	3	2	2	1	4	1	..	..	2	2	1	19
12/4/37 ..	..	1	1	2	2	4	8	7	..	3	6	1	1	36
19/4/37 ..	..	1	6	2	5	4	11	11	1	3	6	1	..	51
26/4/37 ..	..	6	4	4	4	5	2	2	..	4	6	2	..	39
3/5/37 ..	4	3	8	1	9	4	6	5	2	..	10	3	..	55
10/5/37 ..	2	5	5	2	2	..	9	7	..	1	7	..	1	41
17/5/37 ..	3	2	2	..	2	1	3	5	..	2	5	..	2	27
24/5/37 ..	..	3	2	1	1	..	4	4	..	..	3	1	..	19
31/5/37 ..	1	5	2	..	2	1	4	2	1	..	2	..	..	20
7/6/37 ..	2	3	2	..	4	1	3	1	..	1	1	..	..	18
14/6/37 ..	2	1	1	..	1	..	1	3	..	1	2	..	3	15
21/6/37 ..	2	3	6	..	2	1	1	4	..	..	1	..	..	20
28/6/37 ..	..	5	2	..	2	..	2	1	..	..	3	..	..	15
5/7/37 ..	2	1	..	..	2	..	2	..	..	..	1	..	..	8
12/7/37 ..	..	2	2	..	..	..	..	..	..	..	..	..	..	4
19/7/37 ..	2	1	1	1	..	..	..	..	..	..	..	..	..	5
26/7/37 ..	..	..	..	2	1	..	..	2	..	..	1	..	..	6
2/8/37 ..	..	1	2	..	1	..	..	1	..	..	..	..	..	5
9/8/37 ..	..	..	1	1	..	..	..	..	..	..	..	..	..	2
16/8/37 ..	1	..	..	..	..	1	..	3	..	..	..	..	..	5
23/8/37 ..	..	1	..	..	..	..	..	1	1	..	..	..	..	3
30/8/37 ..	..	..	..	..	..	..	..	..	..	..	3	..	..	3
6/9/37 ..	..	..	..	..	..	..	1	..	1	..	1	..	..	3
13/9/37 ..	..	3	..	..	1	..	..	..	..	..	..	..	..	4
20/9/37 ..	..	1	1	..	..	..	..	..	4	..	..	..	..	6
27/9/37 ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4/10/37 ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11/10/37 ..	..	..	..	..	..	..	..	..	..	..	..	1	..	1
18/10/37 ..	..	..	1	..	..	..	..	..	3	..	..	1	..	5
25/10/37 ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
1/11/37 ..	..	..	..	..	..	..	..	..	1	..	..	2	..	3
8/11/37 ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15/11/37 ..	..	1	..	..	..	..	..	..	2	..	..	1	1	5
22/11/37 ..	..	..	..	..	..	..	..	1	..	..	..	..	..	1
29/11/37 ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6/12/37 ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Totals ..	21	55	54	25	44	28	77	65	17	20	94	123	33	656

TABLE 8.—POLIOMYELITIS CASES, BY MONTHS.

Europeans.

	Under 1 Year.		1 to 2.		2 to 3.		3 to 4.		4 to 5.		0 to 5.		5 to 10.		10 to 15.		15 to 20.		20 to 25.		25 and over.		Totals.		
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M	F.	M.	F.	M.	F.	M.	F.	P.
"PARALYTIC" CASES.																									
1936—December	3	..	..	1	3	2	1	3	..	2	7	8	9	11	6	6	2	4	..	..	2	1	26	30	56
1937—January	..	..	..	1	2	3	2	1	1	1	5	6	2	8	3	2	6	3	4	2	2	1	22	22	44
February	..	..	1	1	3	..	2	..	4	2	10	3	6	4	4	2	2	1	1	2	4	1	27	13	40
March	..	..	1	..	4	3	1	4	3	1	9	8	11	11	7	6	3	5	2	..	2	4	34	34	68
April	2	2	1	5	8	6	10	7	9	7	30	27	22	24	20	12	3	7	5	4	3	1	83	75	158
May	1	..	2	2	6	5	7	6	4	2	20	15	23	18	11	7	9	3	4	..	4	3	71	46	117
June	..	..	1	..	4	..	5	5	1	4	11	9	10	8	9	6	4	1	3	1	3	2	40	27	67
July	..	..	1	2	..	3	1	..	1	..	3	5	1	5	3	2	1	..	1	2	1	..	10	14	24
August	..	1	..	1	1	..	1	..	1	..	3	2	1	3	..	1	1	..	..	..	..	..	5	6	11
September	..	..	..	..	..	1	..	..	1	..	1	1	2	1	1	2	..	..	1	..	1	1	6	5	11
October	..	..	..	..	..	..	1	..	..	1	1	1	1	1	1	2	..	1	..	..	..	..	3	5	8
November	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	2	1	..	..	..	..	..	2	4	6
Totals	6	3	7	13	31	23	31	26	25	20	100	85	88	96	66	50	32	25	21	11	22	14	329	281	610
"APARALYTIC" CASES.																									
1936—December	..	..	..	..	..	..	..	2	2	..	2	2	10	8	3	2	..	2	..	..	..	..	15	14	29
1937—January	1	..	..	..	1	1	..	..	..	1	2	2	2	3	2	1	2	2	3	1	2	3	13	12	25
February	..	..	..	..	..	..	..	1	1	..	1	1	2	2	2	1	1	1	..	2	..	..	6	7	13
March	..	..	..	..	..	1	3	1	1	..	4	2	8	2	7	3	2	..	..	..	3	..	24	7	31
April	1	..	..	..	..	1	2	..	3	1	6	2	16	13	9	10	1	1	2	1	2	1	36	28	64
May	..	1	..	1	1	..	2	..	1	2	4	4	11	6	6	4	..	1	1	..	..	..	22	15	37
June	..	..	1	..	..	..	1	1	2	..	4	1	3	2	1	3	4	1	1	1	2	..	15	8	23
July	..	..	..	..	..	..	..	..	..	..	..	..	2	1	..	1	..	1	..	..	..	..	2	3	5
August	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	1
September	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	1
October	..	..	..	..	1	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	2	..	2
November	..	..	..	..	..	..	..	..	1	..	1	..	1	1	1	..	..	..	..	..	..	..	3	1	4
Totals	2	1	1	1	3	3	8	5	11	4	25	14	56	39	32	25	10	9	7	5	9	4	139	96	235

TABLE 8.—POLIOMYELITIS CASES, BY MONTHS—*continued.*

Maoris.

	Under 1 Year.		1 to 2.		2 to 3.		3 to 4.		4 to 5.		0 to 5.		5 to 10.		10 to 15.		15 to 20.		20 to 25.		25 and over.		Totals.		
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	P.
"PARALYTIC" CASES.																									
1936—December	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
1937—January	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
February	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
March	..	..	..	..	2	..	1	1	..	..	3	1	..	2	..	..	..	..	..	1	1	..	4	4	8
April	1	..	1	..	2	2	1	1	1	..	6	3	2	5	..	..	1	1	1	..	..	1	10	10	20
May	1	..	..	..	..	..	..	..	..	..	1	..	..	..	2	..	..	..	1	1	1	1	5	2	7
June	..	..	..	..	..	..	3	..	1	..	4	..	..	..	..	..	..	..	..	1	..	..	4	1	5
July	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	1
August	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	1	1	2
September	..	..	1	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	1	1	2
October	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
November	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	1
Totals	2	1	2	..	4	2	5	2	2	..	15	5	2	9	2	..	1	1	3	3	3	2	26	20	46
"APARALYPTIC" CASES.																									
1936—December	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
1937—January	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	1
February	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
March	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
April	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	2	..	2
May	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	2	..	2
June	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
July	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
August	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
September	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
October	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
November	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Totals	..	..	..	..	..	..	1	..	..	..	1	..	1	..	2	..	1	..	..	..	..	..	5	..	5

TABLE 9.—POLIOMYELITIS, 1ST DECEMBER, 1936, TO 30TH NOVEMBER, 1937.

Europeans.

Health District.	Under 1 Year.		1 to 2.		2 to 3.		3 to 4.		4 to 5.		0 to 5.		5 to 10.		10 to 15.		15 to 20.		20 to 25.		25 and over.		Totals.		
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	P.
North Auckland—																									
Paralytic	..	..	1	..	..	3	..	..	1	..	2	3	1	2	..	3	..	1	..	..	..	..	3	9	12
Aparalytic	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	1
Central Auckland—																									
Paralytic	..	1	..	2	2	3	5	3	4	..	11	9	9	6	5	2	3	..	4	..	4	1	36	18	54
Aparalytic	..	..	..	..	..	1	1	..	2	1	3	2	2	1	1	..	1	..	2	1	..	..	9	4	13
South Auckland—																									
Paralytic	..	..	..	4	..	2	2	6	3	1	5	13	7	5	7	3	1	4	1	1	1	..	22	26	48
Aparalytic	..	1	..	..	..	..	..	..	1	..	2	..	2	..	2	7	..	1	..	..	1	..	7	8	15
Thames-Tauranga—																									
Paralytic	..	..	..	..	2	..	1	1	3	1	6	2	2	5	..	2	..	2	..	..	..	1	8	12	20
Aparalytic	..	..	..	..	..	..	..	..	..	..	..	..	5	4	1	..	1	..	1	..	1	..	9	4	13
Taranaki—																									
Paralytic	1	..	1	..	2	2	6	1	1	..	11	3	6	7	8	1	1	..	..	2	1	..	27	13	40
Aparalytic	..	..	..	1	..	..	..	..	..	..	..	1	..	1	..	1	..	..	..	..	..	..	..	3	3
East Cape—																									
Paralytic	..	..	..	..	1	..	3	..	1	1	5	1	4	5	..	..	1	..	..	..	2	..	12	6	18
Aparalytic	..	..	1	..	..	..	1	..	..	..	2	..	4	1	1	1	..	..	1	..	1	..	9	2	11
Wellington - Hawke's Bay—																									
Paralytic	..	..	1	1	6	3	2	4	2	2	11	10	12	9	11	5	4	1	2	2	2	1	42	28	70
Aparalytic	..	..	..	..	..	..	1	..	..	..	1	..	6	4	5	..	1	2	2	..	1	..	16	6	22
Central Wellington—																									
Paralytic	..	..	2	1	3	1	1	1	2	7	8	10	11	15	6	3	6	2	1	..	..	2	32	32	64
Aparalytic	..	..	..	..	..	..	1	..	2	1	3	1	8	5	3	2	..	..	..	..	..	..	14	8	22
Nelson-Marlborough—																									
Paralytic	..	..	..	..	..	1	1	..	..	..	1	1	2	1	..	4	1	1	2	..	..	1	6	8	14
Aparalytic	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
West Coast—																									
Paralytic	..	1	..	..	2	..	2	..	1	2	5	3	2	4	..	2	1	..	..	..	3	..	11	9	20
Aparalytic	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Canterbury—																									
Paralytic	3	1	2	2	3	1	3	4	2	..	13	8	14	11	12	11	6	3	5	2	3	6	53	41	94
Aparalytic	..	1	..	..	1	1	2	..	2	2	5	4	8	11	6	6	2	4	..	..	4	4	25	29	54
Otago—																									
Paralytic	2	..	..	2	8	6	2	5	2	6	14	19	16	24	12	11	6	7	6	4	2	2	56	67	123
Aparalytic	1	..	..	..	2	1	1	2	4	..	8	3	20	10	10	7	5	2	1	2	1	..	45	24	69
Southland—																									
Paralytic	..	..	..	1	2	1	3	1	3	..	8	3	2	2	5	3	2	4	..	..	4	..	21	12	33
Aparalytic	..	..	..	..	..	..	1	2	..	..	1	2	1	2	3	1	..	..	..	2	..	..	5	7	12
New Zealand: Europeans—																									
Paralytic	6	3	7	13	31	23	31	26	25	20	100	85	88	96	66	50	32	25	21	11	22	14	329	281	610
Aparalytic	2	1	1	1	3	3	8	5	11	4	25	14	56	39	32	25	10	9	7	5	9	4	139	96	235
Totals	8	4	8	14	34	26	39	31	36	24	125	99	144	135	98	75	42	34	28	16	31	18	468	377	845

TABLE 9.—POLIOMYELITIS, 1ST DECEMBER, 1936, TO 30TH NOVEMBER, 1937—*continued.*

Maoris.

Health District.	Under 1 Year.		1 to 2.		2 to 3.		3 to 4.		4 to 5.		0 to 5.		5 to 10.		10 to 15.		15 to 20.		20 to 25.		25 and over.		Totals.		
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	P.
North Auckland																									
Paralytic	1	..	..	..	..	..	3	..	..	..	4	..	..	..	1	..	1	1	..	2	..	..	6	3	9
Aparalytic	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Central Auckland—																									
Paralytic	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	1
Aparalytic	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	1
South Auckland—																									
Paralytic	1	..	1	..	..	..	..	..	..	..	2	..	..	3	..	..	..	..	..	..	..	1	2	4	6
Aparalytic	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	1
Thames-Tauranga—																									
Paralytic	..	1	..	..	1	..	..	1	..	..	1	2	1	1	..	..	..	..	..	..	..	..	2	3	5
Aparalytic	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Taranaki—																									
Paralytic	..	..	..	..	1	1	..	..	1	..	2	1	..	1	..	..	..	..	..	..	..	..	2	2	4
Aparalytic	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
East Cape—																									
Paralytic	..	..	..	..	2	1	1	..	..	..	3	1	1	1	..	..	..	..	2	..	1	1	7	3	10
Aparalytic	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	2	..	2
Wellington - Hawke's Bay—																									
Paralytic	..	..	..	..	..	..	1	..	1	..	2	..	1	1	..	..	..	..	1	1	1	..	5	2	7
Aparalytic	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Central Wellington—																									
Paralytic	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	1
Aparalytic	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	1
Nelson-Marlborough—																									
Paralytic	..	..	1	..	..	..	..	1	..	..	1	1	..	1	..	..	..	..	..	..	..	..	1	2	3
Aparalytic	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
New Zealand: Maoris—																									
Paralytic	2	1	2	..	4	2	5	2	2	..	15	5	2	9	2	..	1	1	3	3	3	2	26	20	46
Aparalytic	..	..	..	..	..	..	1	..	..	..	1	..	1	..	2	..	1	..	..	..	..	..	5	..	5
Totals	2	1	2	..	4	2	6	2	2	..	16	5	3	9	4	..	2	1	3	3	3	2	31	20	51

TABLE 10.—INCIDENCE OF PARALYTIC CASES OF POLIOMYELITIS, 1ST DECEMBER, 1936, TO 31ST JULY, 1937.

(In this table is shown the incidence of paralytic cases of poliomyelitis by counties and municipalities with over 2,000 population. The population for each county includes all boroughs and town districts within its geographical boundaries, except those with a population of 2,000 or over, which latter are shown separately, slightly inset, immediately under the counties in which they are situated.)

County.	Population, Census, 1936.	Dec., 1936.	1937.						
			Jan.	Feb.	Mar.	April.	May.	June.	July.
North Auckland Health District.									
Mangonui	8,750	..	..	..	..	..	2	3	..
Whangaroa	2,533	..	..	..	..	..	..	1	..
Hokianga	8,636	..	..	..	..	1	2	3	1
Bay of Islands	10,583	..	..	..	..	3	1	..	1
Whangarei	13,128	..	..	..	..	..	..	1	..
Whangarei	7,152	..	..	..	..	..	..	..	..
Hobson	6,481	..	..	..	..	..	1	..	..
Dargaville	2,176	..	..	..	..	..	..	..	..
Otamatea	5,184	..	..	..	..	..	..	..	..
Central Auckland Health District.									
Rodney	5,633	..	..	..	..	..	1	..	..
Waitemata*	14,378	..	..	..	..	2	2	1	..
Eden†	..	..	..	..	..	..	..	..	..
Auckland‡	201,757	..	3	1	..	7	9	6	5
Manakau	13,656	..	1	..	..	1	..	1	..
Otahuhu	5,252	..	..	..	..	..	..	2	..
Papatoetoe	2,381	..	..	..	..	..	..	..	..
Franklin	15,245	..	..	..	..	1	2	2	..
Pukekohe	2,536	..	..	..	..	1	1	..	..
South Auckland Health District.									
Raglan	9,878	..	..	..	..	1	2	..	..
Waikato	14,429	..	..	..	..	1	..	1	..
Cambridge	2,203	..	..	..	..	..	..	..	1
Waipa	14,905	..	..	..	..	2	4	..	..
Hamilton	16,150	..	..	..	..	..	1	..	..
Te Awamutu	2,224	..	..	..	..	..	..	..	..
Otorohanga	6,152	..	..	..	..	3	1	..	..
Kawhia	2,225	..	..	..	..	1	1	1	..
Waitomo	7,622	..	..	..	..	1	1	..	..
Te Kuiti	2,499	..	..	..	..	..	..	..	..
Taumarunui	3,642	..	..	..	..	..	..	..	..
Taumarunui	2,640	..	..	..	..	..	..	..	..
Matamata	11,309	..	..	..	..	6	1	..	2
Piako	12,045	..	..	..	..	..	..	1	1
Te Aroha	2,366	..	1	..	..	..	2	3	1
Rotorua	5,498	..	..	..	..	..	1	3	..
Rotorua	6,531	..	1	..	..	..	1	2	..
Taupo	3,669	..	..	..	..	2	1	..	..
Ohura	2,584	..	..	..	..	..	..	..	..
Kaitieke	4,047	..	..	..	..	..	..	..	..
Thames-Tauranga Health District.									
Thames	2,795	..	..	..	2	..	..	..	..
Thames	4,268	..	..	..	1	3	..	..	..
Coromandel	2,635	..	..	..	..	..	1	..	..
Ohinemuri	3,335	..	..	..	..	1	..	..	..
Paeroa	2,149	..	..	..	2	1	..	..	..
Waihi	3,916	..	..	..	..	..	..	..	..
Hauraki Plains	4,796	..	..	..	2	5	..	..	2
Tauranga	11,022	..	..	..	..	1	2	..	..
Tauranga	3,387	..	..	..	..	..	..	..	1
Great Barrier Island	454	..	..	..	..	..	..	..	..
East Cape Health District.									
Whakatane	11,400	..	..	..	..	2	1	1	..
Opotiki	5,955	..	..	..	..	1	..	1	..
Matakaoa	1,833	..	..	..	1	2	..	..	..
Waiapu	6,301	..	..	..	..	2	..	..	..
Uawa	1,727	..	..	..	..	..	..	..	..
Waikohu	3,315	..	..	..	..	1	..	..	..
Cook	7,581	..	..	..	2	1	1	..	..
Gisborne	13,587	..	..	..	..	7	1	..	..
Wairoa	6,970	..	..	..	2	1	..	..	..
Wairoa	2,524	..	..	..	..	..	..	..	..

* All boroughs and town districts with the exception of Helensville included in Auckland.
† Included in Auckland.
‡ Approximately the Auckland Metropolitan area.

TABLE 10.—INCIDENCE OF PARALYTIC CASES OF POLIOMYELITIS, 1ST DECEMBER, 1936, TO 31ST JULY, 1937—*continued.*

County.	Population. Census, 1936.	Dec., 1936.	1937.						
			Jan.	Feb.	Mar.	April.	May.	June.	July.
Taranaki Health District.									
Whangamomona	1,301	..	..	..	..	..	..	..	..
Clifton	2,876	..	..	..	..	..	..	..	..
Taranaki	8,409	..	..	..	..	2	..	..	2
New Plymouth	16,653	..	1	..	..	..	6	2	1
Inglewood	4,644	..	..	..	..	..	..	1	..
Egmont	5,647	..	..	..	..	1	..	..	..
Stratford	5,321	..	..	..	..	2	..	1	..
Stratford	3,755	..	..	..	..	..	..	..	..
Eltham	5,489	..	..	..	..	6	2	..	..
Waimate West	3,407	..	..	..	..	3	..	1	..
Hawera	5,820	..	..	..	1	3	..	3	..
Hawera	4,663	..	..	..	..	1	2	1	2
Wellington - Hawke's Bay Health District.									
Hawke's Bay	18,130	..	..	1	3	2	..	..	..
Napier	15,302	..	..	..	1	..	..	..	..
Hastings	12,750	..	..	..	5	4	4	..	..
Waipawa	4,679	..	..	..	..	1	..	1	..
Waipukurau	1,034	..	..	..	..	..	..	..	..
Waipukurau	2,050	..	..	..	..	..	1	..	..
Patangata	2,731	..	..	..	1	..	..	..	..
Dannevirke	5,428	..	..	..	..	1	..	..	..
Dannevirke	4,385	..	..	..	..	1	1	..	..
Woodville	2,966	..	..	..	..	..	..	..	..
Weber	378	..	..	..	..	..	..	..	..
Patea	5,939	..	..	..	..	1	2	1	..
Waimarino	5,749	..	..	..	..	1	3	..	..
Waitotara	3,672	..	..	..	..	..	..	..	..
Wanganui	23,178	..	..	..	..	1	5	..	..
Wanganui	3,822	..	..	..	..	..	1	3	..
Rangitikei	10,990	..	..	..	..	..	..	..	..
Taihape	2,183	..	..	..	..	..	..	1	..
Marton	2,737	..	..	..	..	..	1	..	1
Kiwitea	2,442	..	..	..	..	1	1	1	..
Pohangina	1,350	..	..	..	..	1	..	..	..
Oroua	3,872	..	..	..	1	2	..	..	..
Feilding	4,550	..	..	..	1	4	..	..	..
Manawatu	6,827	..	..	..	4	..	1	..	..
Kairanga	5,358	..	..	..	..	..	..	..	..
Palmerston North	22,202	..	..	..	..	5	2	1	..
Horowhenua	9,987	..	..	..	1	..	..	..	..
Levin	2,658	..	..	..	..	2	..	..	..
Central Wellington Health District.									
Pahiatua	4,517	..	..	..	..	1	..	..	..
Akitio	1,159	..	..	..	..	..	..	..	..
Eketahuna	2,781	..	..	..	..	..	..	..	1
Mauriceville	769	..	..	..	..	..	..	..	..
Masterton	3,416	..	..	..	..	..	..	..	..
Masterton	9,096	..	..	..	..	2	..	1	..
Castlepoint	629	..	..	..	..	..	..	..	..
Wairarapa South	4,922	..	..	..	..	..	..	..	..
Featherston	7,101	..	..	..	..	5	2	..	..
Hutt	8,705	..	..	..	..	..	3	1	..
Upper Hutt	3,871	..	..	..	..	1	1	1	..
Lower Hutt	15,960	..	..	..	..	1	1	2	1
Petone	10,933	..	..	..	..	1	..	2	..
Eastbourne	2,279	..	..	..	..	..	..	..	..
Makara	6,045	..	..	..	..	1	..	..	..
Wellington	115,705	..	2	1	1	14	11	2	1
Nelson-Marlborough Health District.									
Sounds	1,073	..	..	..	..	..	..	..	..
Marlborough	9,168	..	..	..	..	1	..	..	..
Blenheim	5,036	..	..	..	..	..	..	..	..
Awatere	1,783	..	..	..	..	..	..	..	..
Waimea	14,506	..	..	..	..	..	..	..	..
Nelson	11,214	..	..	..	..	..	1	..	..
Motueka	2,169	..	..	..	..	..	..	..	..
Takaka	1,999	..	..	..	1	..	..	..	..
Collingwood	1,517	..	..	..	..	..	..	..	..
Murchison	1,919	..	..	..	..	2	..	..	..

TABLE 10.—INCIDENCE OF PARALYTIC CASES OF POLIOMYELITIS, 1ST DECEMBER, 1936, TO 31ST JULY, 1937—*continued.*

County.	Population. Census, 1936.	Dec., 1936.	1937.						
			Jan.	Feb.	Mar.	April.	May.	June.	July.
West Coast Health District.									
Buller	6,350	..	..	1	1	1	..	..	..
Westport	4,241	..	..	..	..	..	1	..	..
Inangahua	3,891	..	..	..	..	1	..	..	..
Grey	8,343	..	..	..	..	5	1	..	..
Greymouth	8,115	..	..	1	2	3	..	..	..
Westland	3,969	..	..	..	..	..	1	2	..
Canterbury Health District.									
Kaikoura	2,402	..	..	..	..	1	3	1	..
Amuri	2,674	..	..	..	..	..	..	..	..
Cheviot	1,387	..	..	..	..	..	..	..	..
Waipara	2,734	..	..	..	..	..	..	1	..
Kowai	2,078	..	..	..	..	..	..	..	..
Ashley	803	..	..	..	..	..	..	..	..
Rangiora	4,911	..	..	..	..	..	..	..	..
Rangiora	2,239	..	..	..	..	..	..	..	..
Eyre	1,896	..	..	..	..	1	..	..	..
Oxford	1,702	..	..	..	..	..	..	..	..
Tawera	938	..	..	..	..	..	..	..	..
Malvern	3,033	..	..	..	..	1	..	..	..
Paparua	5,757	..	..	..	..	..	..	..	..
Waimaire	14,471	..	..	..	..	..	1	..	..
Riccarton*	5,389	..	..	..	..	..	..	..	..
Heathcote	5,932	..	..	..	..	..	1	..	..
Christchurch	100,685	..	..	1	6	14	12	2	..
Lyttelton	3,264	..	..	..	1	..	..	..	..
Halswell	2,120	..	..	..	..	..	1	..	1
Mount Herbert	447	..	..	..	..	..	..	..	..
Akaroa	2,196	..	..	..	..	..	..	1	..
Chatham Islands	702	..	..	..	..	..	..	..	..
Wairewa	1,034	..	..	..	..	..	..	..	..
Springs	1,847	..	..	..	..	..	1	..	..
Ellesmere	3,897	..	..	..	..	..	..	1	..
Selwyn	1,624	..	..	..	..	..	..	..	..
Ashburton	13,708	..	1	..	..	..	..	..	..
Ashburton	5,683	..	..	..	..	..	..	1	..
Geraldine	8,805	..	..	5	2	1	1	..	..
Levels	5,557	..	..	..	2	1	1	..	..
Timaru	17,397	1	2	3	1	5	..	..	..
Mackenzie	3,158	..	..	..	..	1	..	..	..
Waimate	7,234	1	..	2	1	..	..	..	..
Waimate	2,315	..	1	1	3	..	1	1	..
Otago Health District.									
Waitaki	10,460	..	2	2	3	1	..	..	..
Oamaru	7,487	..	..	3	4	1	3	..	..
Waihemo	2,118	..	..	..	..	..	..	..	..
Waikouaiti	6,986	2	1	1	..	..	..	..	..
Port Chalmers	2,165	1	2	..	..	..	..	..	..
Peninsula	2,810	..	1	..	..	..	..	..	..
Taieri	6,004	..	..	1	..	..	..	..	..
Dunedin†	74,736	44	15	..	1	..	..	..	..
Mosgiel	2,105	1	..	..	..	..	..	..	..
Bruce	7,224	..	2	2	3	3	..	..	..
Clutha	8,848	..	1	3	3	..	..	..	..
Tuapeka	6,371	..	..	1	..	..	..	..	..
Maniototo	3,330	..	1	..	..	..	..	..	..
Vincent	6,510	3	3	1	2	1	..	..	..
Southland Health District.									
Lake	3,835	..	..	..	..	..	..	2	..
Wallace and Fiord	12,165	..	1	1	..	..	..	..	..
Stewart Island	617	..	..	..	..	..	..	..	..
Southland	31,610	3	2	3	..	1	2	1	..
Invercargill	21,504	..	..	5	9	..	1	..	..
Gore	4,635	..	..	..	..	1	..	..	..
Bluff	2,038	..	..	..	..	..	..	..	..

* Cases included in Christchurch, which also includes the Boroughs of Sumner and New Brighton.
† Includes St. Kilda and Green Island Boroughs.

INCIDENCE.

TABLE 11.—SHOWING, BY RACE AND SEX, THE POPULATION IN EACH AGE-GROUP, THE NUMBER OF PARALYTIC CASES OF POLIOMYELITIS, AND THE RATE PER 10,000 OF SUCH CASES IN EACH GROUP.

Age-group.	Males.			Females.			Persons.		
	Population.	Cases.	Rate per 10,000.	Population.	Cases.	Rate per 10,000.	Population.	Cases.	Rate per 10,000.
				Europeans.					
Under 1 year	12,200	6	4·9	11,900	3	2·5	24,100	9	3·7
1 year	11,600	7	6·0	11,100	13	11·7	22,700	20	8·8
2 years	11,800	31	26·3	11,200	23	20·5	23,000	54	23·5
3 years	11,800	31	26·3	11,300	26	23·0	23,100	57	24·7
4 years	12,100	25	20·7	11,500	20	17·4	23,600	45	19·1
Under 5 years	59,500	100	16·8	57,000	85	15·0	116,500	185	15·9
5–9 years	65,100	88	13·5	62,100	96	15·5	127,200	184	14·5
10–14 years	68,700	66	9·6	65,600	50	7·6	134,300	116	8·6
15–19 years	67,800	32	4·7	65,100	25	3·8	132,900	57	4·3
20–24 years	68,100	21	3·1	66,000	11	1·7	134,100	32	2·4
25 years and over ..	432,911	22	0·5	424,826	14	0·3	857,737	36	0·4
All ages	762,111	329	4·3	740,626	281	3·8	1,502,737	610	4·1
				Maoris.					
Under 1 year	1,650	2	12·1	1,700	1	5·9	3,350	3	9·0
1 year	1,300	2	15·4	1,250	..	..	2,550	2	7·8
2 years	1,350	4	29·6	1,200	2	16·7	2,550	6	23·5
3 years	1,500	5	33·3	1,400	2	14·3	2,900	7	24·1
4 years	1,450	2	13·8	1,450	..	..	2,900	2	6·9
Under 5 years	7,250	15	20·7	7,000	5	7·1	14,250	20	14·0
5–9 years	6,650	2	3·0	6,500	9	13·8	13,150	11	8·4
10–14 years	5,400	2	3·7	5,200	..	..	10,600	2	1·9
15–19 years	4,300	1	2·3	4,050	1	2·5	8,350	2	2·4
20–24 years	4,000	3	7·5	3,850	3	7·8	7,850	6	7·6
25 years and over ..	16,300	3	1·8	13,974	2	1·4	30,274	5	1·7
All ages	43,900	26	5·9	405,574	20	4·9	84,474	46	5·4

It will be seen that, for Europeans in all age-groups, except one year and five to nine years, the male rate exceeded the female rate, and that for Maoris the male rate was in excess in all but three of the age-groups. The heaviest incidence fell on the two- and three-year-old groups.

The attack-rate for the various age-groups differed markedly in the recent epidemic from the experience in the two major epidemics of 1916 and 1925. Whereas in 1924–25 the rate for children under five was 51·1 per 10,000 and for those from five to ten years was 21·9—less than half that in the younger age-group—in 1936–37 the position was reversed, the heaviest incidence falling in the older age-group. The following table shows for the five-yearly age-groups under twenty years of age and for one group twenty years of age and over the incidence of all notified cases whether paralytic or not: (*a*) In the Wellington District, 1916 (337 cases which occurred during the first four months of the year), (*b*) in New Zealand for the period 1924–25, and (*c*) in New Zealand for the recent epidemic, and (*d*) the incidence of paralytic cases in each age-group during the recent epidemic. The latter shows that the incidence of paralytic cases was greatest in the lowest age-group.

TABLE 12.—SHOWING INCIDENCE OF POLIOMYELITIS, BY AGE-GROUPS, IN THREE MAJOR EPIDEMICS.

——	(*a*) 1916.	(*b*) 1924–25.	(*c*) 1936–37.	(*d*) 1936–37.
Under 5 years	43·1	51·1	18·7	15·7
5–10 years	15·8	21·9	20·7	13·9
10–15 years	7·6	8·9	12·2	8·1
15–20 years	4·8	5·3	5·6	4·2
20 years and over	1·2	0·8	1·0	0·8

INCIDENCE BY HEALTH DISTRICTS.

TABLE 13.—SHOWING INCIDENCE OF NOTIFIED CASES OF POLIOMYELITIS, BY HEALTH DISTRICTS, 1936–37.

Health District.	Incidence per 10,000 of Mean Population.	
	(*a*) All Cases.	(*b*) Paralytic Cases.
North Auckland	3·36	3·21
Central Auckland	2·58	2·05
South Auckland	5·23	4·04
Thames-Tauranga	9·69	6·34
Taranaki	6·85	6·41
East Cape	6·60	4·51
Wellington - Hawke's Bay	5·27	4·10
Central Wellington	4·34	3·21
Nelson-Marlborough	3·35	3·35
West Coast	4·94	4·94
Canterbury	6·13	3·89
Otago	12·98	8·32
Southland	5·85	4·29

The incidence in different parts of the Dominion varied materially, Otago, where the epidemic originated, having the highest incidence, and Auckland Central, the most densely populated, the lowest. Thames-Tauranga, a rural area with no large towns, had the second highest incidence for "all cases" and the third highest for "paralytic" cases.

INCIDENCE IN URBAN AND RURAL DISTRICTS (PARALYTIC CASES ONLY).

In the four main centres of population—the cities of Auckland, Wellington, Christchurch, and Dunedin, including the boroughs contiguous or in close proximity thereto—the incidence of poliomyelitis was 3·4 per 10,000 of population. Auckland, the largest centre, had the lowest incidence, and Dunedin, the smallest centre, the highest incidence.

In ten smaller centres with population ranging from 11,000 to 26,000 the incidence rate was 4·6 per 10,000.

For the remainder of the Dominion the rate was 4·5 per 10,000 of population.

In the four main centres 26 per cent. of the paralytic cases were under five years of age and 37 per cent. between five and ten years. In the remainder of the Dominion 33 per cent. were under five and 27 per cent. between five and ten years. Nine per cent. of the cases in the four centres were twenty years of age or over, and 13 per cent. in the country areas. The age-groups from ten to twenty years did not differ markedly in town and country.

MORTALITY.

The deaths from poliomyelitis numbered 46, 42 European and 4 Maori. In addition, four deaths occurred from other causes in cases suffering from some degree of paralysis: A Maori male, six years of age, with paralysis of both legs, died six months later from rheumatic fever; a male of six months, with paralysis of one leg, died six weeks later from septicæmia following an abscess; a female of seven years with severe paralysis—legs, arms, and abdomen—died four months later from broncho-pneumonia, and a male of eleven years with extensive paralysis—legs, arms, and abdomen—died six months later from broncho-pneumonia. Omitting these cases, which after inquiry were excluded from the list of deaths from poliomyelitis, the various fatality rates were:—

	Deaths per 100.	
	(*a*) All Cases.	(*b*) Paralytic Cases.
European—		
Males	6·4	9·1
Females	3·2	4·3
Europeans	5·0	6·9
Maori—		
Males	6·5	7·7
Females	10·0	10·0
Maoris	7·8	8·7
Both races and both sexes	5·1	7·0

Of the Maori deaths 2 were of males aged thirty-six and fifty-six years and 2 of females aged two years and forty years respectively.

The Europeans deaths by sex and age-groups were as follows :—

TABLE 14.—DEATHS OF EUROPEANS FROM POLIOMYELITIS.

——	Males.	Females.
Under 1 year	..	..
1 year	..	1
2 years	1	..
3 years	1	..
4 years	..	..
Under 5 years	2	1
5–10 years	4	3
10–15 years	5	1
15–20 years	4	3
20–25 years	5	..
25–30 years	4	2
30–40 years	1	1
40–50 years	4	1
50 years and over	1	..
Totals	30	12

PROGRESS OF CASES.

A card index of all cases throughout the Dominion showing signs of muscle involvement was compiled and progress reports obtained up to March, 1938. Cases not then shown as recovered will be followed up until improvement ceases, and ultimately it will be possible to assess the permanent damage caused by the epidemic.

The table given below shows for the 896 cases which occurred between 1st December, 1936, and 30th November, 1937, the position as at March, 1938 :—

——	Males.	Females.	Total.
Died of poliomyelitis	32	14	46
Died from other causes	3	1	4
Recorded as recovered	92	94	186
Recorded as markedly improved	84	74	158
Recorded as moderately improved	76	64	140
Little or no improvement	60	46	106
No progress reports	8	8	16
Total paralytic cases	355	301	656
Total aparalytic cases	144	96	240
Total cases	499	397	896

CLIMATIC CONDITIONS.

In his report on the epidemic of poliomyelitis in 1916 in the Wellington District, Dr. Sydney Smith, stated :—

> " It will be seen that over the district as a whole, and in each individual locality, there has been a period of very high temperatures—higher than any of the previous five years and a fairly low rainfall. The higher temperatures coincided with the greatest number of cases occurring week by week, and the notifications of cases fell with the fall in temperature."

No such correlation as that indicated above occurred in the recent epidemic. The Medical Officer of Health, Dunedin, states :—

> " I know of no climatic or other reason to account for its commencing a month or so earlier than usual in Dunedin and developing to danger point before Christmas. The temperatures in general were low and the rainfall fairly heavy. There was, moreover, no apparent relation between the daily incidence of infection and the daily temperature and rainfall."

The Medical Officer of Health, Christchurch, states in his report :—

> " This outbreak was unusual in one respect, that, contrary to anticipation with the drop in the mean temperature during the months of April and May, these months proved to be the peak months, a rapid decline in the notifications taking place in June and subsequent months."

The Medical Officer of Health, Auckland, reports:—

"The warmer climate in the north certainly has not resulted in any increase in susceptibility to the disease; indeed, during the warmer months—January, February, and March—with an average maximum temperature of 69·9° F. only 17 cases occurred, while during April, May, and June, with an average maximum temperature of 61·5° F., the peak period occurred with 72 cases."

CLINICAL PARTICULARS.

No attempt has been made to include the clinical features of the epidemic or the various diagnostic tests, such as the cell count, colloidal gold test or the Pandy test for globulin. These aspects of the outbreak will no doubt be dealt with elsewhere. The following short notes on treatment as carried out at the Dunedin Hospital and included in the report of the Medical Officer of Health may be of interest:—

TREATMENT.

Physio-therapy.—The distinctive feature in the treatment used during the epidemic in the Dunedin Hospital was the immediate commencement of physio-therapy.

Splinting.—Splints were applied as soon as paralysis appeared. The light-weight metal type was principally used. These were well perforated for ventilation and lined with gamgee tissue, which was changed twice daily as the sweating was excessive.

Plaster only was used in emergency, or for hand splints, where it was difficult to obtain a suitable position with metal. Positions were chosen which gave relaxation of the paralysed groups, or an intermediate position when two opposing groups were affected.

No extreme positions were used, especially so in the case of the knee, where 10° flexion was always maintained.

In cases where there was paralysis of both deltoids some difficulty was found in preventing the patient slipping away from his shoulder, with a resulting difficulty in elevating the outer extremities of the clavicles. This was particularly the case when the patient had any degree of respiratory affection necessitating his being propped up.

Light frames were used for the spinal muscles and fracture boards placed under the mattresses.

Movement.—This was begun at once and not left, as hitherto, until the acute stage was recovered from.

The range of movement was carefully maintained, great care being taken at all times to guard against stretching of ligaments, especially of the knee and spine. Begun at once, movements were usually painless and any subsequent adaptive shortening prevented.

This contraction of splinted and unexercised muscles has been a great and persisting difficulty in cases which were sent into hospital from country districts where no movements were given during the isolation period.

As well as careful passive movements, the patient was encouraged to perform active movements and to concentrate on the paralysed muscle or muscles with the object of maintaining motor memory.

Weak groups of muscles were trained by the sling method, more individual groups on cardboard.

General exercise was given in a hot swimming-bath, patients being put into it early in treatment. Some special training was given in the water, but it was used principally to allow freedom of movement for all muscles. It never seemed to have any undesirable effect on the weakened muscles and had most beneficial general results.

Heat.—Infra-red and short-wave therapy were tried on those patients who had extreme spasm of the vertebral muscles and resultant discomfort. However, no relief or marked improvement could be claimed, although more of the patients felt easier during the actual application.

Electricity.—Interrupted Galvanism and Faradism were not used. It was thought more satisfactory to concentrate on muscle training.

Ambulatory Splints.—The usual types were supplied when the patient's condition was satisfactory.

SUMMARY.

New Zealand has experienced three major epidemics (1916, 1925, 1937) and four minor ones (1894, 1914, 1921, 1932).

A recognizable epidemic is preceded by a wave of unrecognized pyrexias and vague symptoms, and is also accompanied by such cases.

Closing of all schools in a district is probably a valuable protective measure, if other gatherings of children are prohibited at the same time.

The seasonal incidence in New Zealand is usually late summer, with a peak in March, and continuing well into the winter. The curve of this epidemic shows a departure from the normal.

The morbidity was for all cases notified 5·7 per 10,000 of population, and for cases with paralysis, 4·1 per 10,000.

The age-incidence was higher in this epidemic than in the last one (1925)—80 per cent. of notified cases in 1937 being under fifteen years of age, compared with 89 per cent. in 1925.

The age-incidence is slightly lower in urban areas than in rural.

The case-mortality was 5·1 per cent. of all notified cases and 7 per cent. of paralytic cases.

The closing of schools, the prohibition of gatherings of children and the parental shepherding appear to have appreciably checked the spread of this epidemic.

APPENDIX C.

PRELIMINARY REPORT ON A DIPHTHERIA IMMUNIZATION CAMPAIGN, SOUTH AUCKLAND HEALTH DISTRICT.

HELEN DEEM, M.D., and H. B. TURBOTT, M.B., D.P.H.

PLAN OF CAMPAIGN.

Early in 1937 it was decided to offer immunization against diphtheria to all children between ages one and sixteen years within the South Auckland Health District, the cost to be defrayed by the Health Department. The school population of the district is over 20,000 children, the adult population over 120,000. It was hoped to immunize as many pre-school children as possible.

Parents of children at schools, public or private, receive a cyclostyled letter explaining the procedure, asking for written consent to the immunization of their children, and inviting them to bring along pre-school children also. This consent allows preliminary Schick and Moloney tests, three injections of anatoxin, followed six months later by a further Schick test to give assurance or otherwise of diphtheria protection achieved. At first only two doses of anatoxin were given, as the literature available suggested 90 per cent. or more immunity was achieved. As it became apparent most parents would prefer the third dose and the possibility of 100 per cent. protection, the full course has been given, and is now standard routine. Newspaper publicity was used, through a series of articles and through advertisements, in an endeavour to reach the pre-school population without older brothers or sisters at schools. The publicity is only effective in towns served by their own local newspapers, and it has proved difficult to get much response from pre-school children in rural areas for a variety of reasons.

This preliminary report is given to show the widespread need for diphtheria protection in both towns and country and to pass on experience gained to date in this mass immunization campaign.

SENSITIVITY TO ANATOXIN.

The Moloney Test.—The definition for Moloney reactors given by the Commonwealth Laboratories is, we consider, unsatisfactory; therefore Underwood's classification was used by us—viz., +++ *Moloney:* A large area of erythema up to 40 mm. in diameter with a definite palpable area of induration in the centre; ++ *Moloney:* An area of erythema of more than 10 mm. diameter with an area of slight induration in the centre: + *Moloney:* Area of erythema up to 10 mm. diameter with no induration.

The +++ Reactors were rejected.
The ++ Reactors were given reduced doses of anatoxin..
The + Reactors were given full doses of anatoxin.

At the commencement of the experiment we cut the doses given to the ++ reactors considerably, but when we found that many of these went on to larger doses without showing any reaction we adopted the policy of giving the ++ reactors an initial dose of 0·25 c.c., and those ++ reactors who had more than a slight degree of induration we rejected as we found them liable to have reactions after receiving very small doses of anatoxin. The small doses were moreover not sufficient to produce immunity.

A summary of 1,576 Moloney tests (made by one of us—H.D.) will now be considered.

+++ *Moloney Reactors.*—Five per cent. of the children tested showed +++ Moloney reactions and had to be rejected. Seventy-five per cent. of these reactors were over the age of ten years; nevertheless, one child of five and another of six years showed the marked reaction, hence the necessity for Moloney testing all school-children prior to injecting them.

Many of the +++ Moloney reactors were Schick positive. This finding was naturally more common amongst the younger children.

Reactions to Anatoxin Injections.—As mentioned previously the ++ Moloney reactors were given reduced doses of anatoxin. Many of these showed no reaction whatsoever and were eventually given the full dose. Thirty-eight per cent. of those children showing reactions were, however, ++ Moloney reactors.

In some cases sensitivity developed during the course of the injections. Twenty-one per cent. of those showing reactions showed this phenomenon.

Classification of Reactions.—Of 1,061 children injected 76 (*i.e.*, 6·? per cent.) had reactions.

Reactors (76)—	Per Cent.
++ Moloney (initially), 29 cases	38
+Moloney (initially), 13 cases	17
— Moloney (initially), first injection 11 cases	14·5
— Moloney (initially), second injection, 16 cases	21
Moloney (initially), third injection, 3 cases	4
Immediate general reaction, 4 cases	5

A glance at the above table shows clearly that the Moloney positive reactor who receives a reduced dose of anatoxin is much more likely to develop an unpleasant reaction than the Moloney negative reactor. The Moloney negative reactor may, however, have a reaction occasionally.

Diphtheria Immunization without Preliminary Testing Indefensible.

In the course of the work parents occasionally insisted children should be given anatoxin injections when they had missed the preliminary tests. Also in the younger age-groups we at first would protect an occasional child who had been absent at preliminary tests by proceeding direct to injections. Experience has shown this group to produce undue reactions as compared with the tested group.

Some of the children are naturally somewhat awed when they come along for their preliminary skin-test, and some may even vomit or faint before anything is done to them. When the teachers are sensible and make light of the procedure instead of sympathizing with the children there is usually no trouble whatsoever.

The Types of Reaction.

1. *Local.*—An area of marked erythema, swelling, tenderness at the site of injection.

2. *General.*—Headache, vomiting or nausea, anorexia, and sometimes pyrexia coming on a few hours after the injection was given. As these symptoms are chiefly subjective it is often difficult to assess the extent of the general reaction. In some cases we are sure they have had a purely psychological basis.

3. *The Immediate General Reaction* (incidence about three per 1,000), is, we believe, a manifestation of true anaphylactic shock and is not an anxiety phenomenon. It may occur after the first, second, or third injection of anatoxin.

The following is a description of such a reaction: The child looks very pale as if he is about to faint. The pulse is slow and very weak, and later may be irregular. The child is conscious throughout and usually complains of feeling cold, but of nothing else.

There is an immediate response to adrenalin.

Susceptibility to Diphtheria of Present Child Population.

Of School-children.—During 1937 children of all ages attending public or private schools to a total of 4,198 were Schick tested. Of these 3,055 or 72·8 per cent. were Schick positive. Readings were taken at forty-eight hours in a proportion of rural schools where travelling made this necessary, but in the majority at seventy-two hours. Redness and infiltration of 1 cm. and more was accepted as positive.

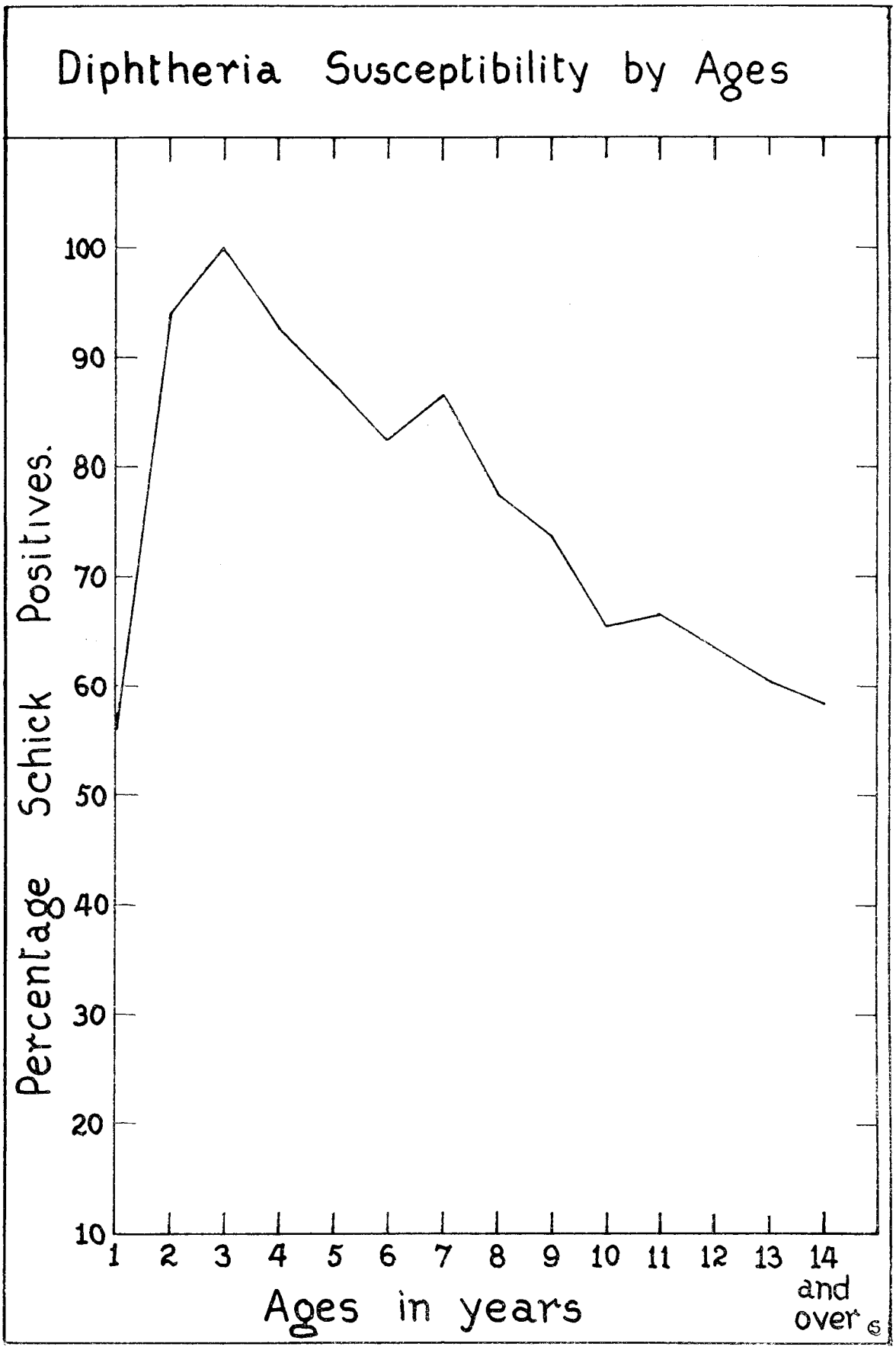
When rural and larger town children (towns 5,000 population or more) are considered separately, the susceptibility of town children is 66·6 per cent., as against 75·3 per cent of rural children. The danger from diphtheria is therefore widespread throughout the district. For some years now only sporadic cases of diphtheria have arisen, and no major epidemic. A generation of school-children has grown up whose immunity to diphtheria is low (27·2 per cent. Schick negative).

Of Pre-school Children.—Only a proportion of the pre-school children were Schick tested. One hundred and forty-four babies and children under five years gave 133 Schick positives, or 92·4 per cent.

Of Maori Children.—One hundred and seventy-eight Maori children tested gave 50 Schick positives (28·1 per cent.), and 128 Schick negatives (71·9 per cent.). This is practically the reverse of the susceptibility among pakeha children.

One of us (H. B. T.) tested 2,054 Maori children in 1930, finding 255 Schick positives (12·41 per cent.). The small number of Maori children tested in 1937 show increased susceptibility. This is thought to be due to the admixture of pakeha blood. In the 1930 group more than half the total were full-blooded Maoris; in the 1937 group the majority were half or more than half pakeha blood.

By Ages.—The accompanying graph illustrates the susceptibility by ages in years. Beginning at 55 per cent. at age one there is a sharp rise to 100 per cent at age three. Thereafter there is a very gradual fall through the ages to return at age fourteen and older to 58 per cent., practically the same level as at age one. The years of greatest risk are seen to be ages two to seven.


Diphtheria Susceptibility by Ages
Percentage Schick Positives.
100
90
80
70
60
50
40
30
20
10
1 2 3 4 5 6 7 8 9 10 11 12 13 14
Ages in years
and over

Pseudo-Schick versus Moloney Test.

In the previous section the 4,342 school and pre-school children were Moloney tested at the same time for the purpose of eliminating reactors who would be upset by the anatoxin. The Moloney test is best read at forty-eight hours, the Schick test at seventy-two hours or later. The pseudo-Schick seemingly can be used instead of the Moloney, the heated Schick toxin employed as a control throwing a certain proportion of pseudo-reactions. These pseudo-reactions seem equally efficacious in determining those who are sensitive to the injection material.

The heated Schick toxin was employed as a control, the Moloney test not being used, in 931 children. There were 172 pseudo-positive and 126 pesudo-negative reactions, a total of 298 showing this type of sensitivity, or 32 per cent., mostly mild with some few severe, the latter being eliminated.

In addition to the children already mentioned, there were 500 who received only the Moloney test. There were 20 severe reactions, and 251 mild ones, a total of 271, or 54·2 per cent. The severe reactors were eliminated.

These two groups of 931 and 500 children were given the protective anatoxin injections. There seems to be little advantage in the newer Moloney test over the older pseudo-control as a guide to reactors. After eliminating in both groups all severe reactions at testing-time, after the injections were given, 3·4 per cent had general constitutional upsets in the Moloney group, as against 3·1 per cent. in the Schick-control group.

Moloney Test alone inadvisable.

It is frequently stated that in mass immunization campaigns the Schick test may be dispensed with, and injections given after the Moloney or other form of "detector" dose has been employed. Those who hold this view give themselves more work in the long run, and also give to a considerable proportion of naturally immune children quite unnecessary injections of potent material. Results so far establish conclusively that the Moloney positive reactor is not necessarily Schick negative, and the former test cannot replace the latter. The Schick test is simple, easy, and accurate, and in the present campaign has already saved us very considerable work. By using the Schick test 1,154 have already been eliminated as naturally immune; (6·6 per cent. of the pre-school group and 27·2 per cent. of the school group). Over three thousand injections have been avoided. This means a large saving financially, while there is the personal satisfaction of knowing that unnecessary injections are avoided and one's time is being economized.

Campaign Results to Present Date.

Not all the children who submit to preliminary testing proceed to immunization, as parents change their minds, either then or after first or second doses. Absence from school or change of locality accounts for further incomplete immunizations. Nevertheless, the majority see the full course through.

To the present date 420 pre-school children have been dealt with, 86 receiving one injection, 188 two injections, and 146 three injections of anatoxin.

Of school-children, 4,972 obtained parental consent, 274 only of these missing the preliminary testing by Schick and Moloney tests. In the schools from which these children came there were 9,971 scholars attending. The campaign so far has handled 49·8 per cent. of the available school population, almost half.

Anatoxin has been given to 3,393 school-children, 286 receiving one injection, 474 two injections, and 2,633 the full course of three injections. During 1938 Schick tests will be made on these children to ascertain the immunity gained, a further report being made in due course.

Approximate Cost of Paper.—Preparation, not given; printing (1,225 copies, including maps and graphs), £162 10s.

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