1950

NEW ZEALAND

DEPARTMENT OF HEALTH

ANNUAL REPORT OF THE DIRECTOR-GENERAL OF HEALTH

Presented in Pursuance of Section 100 of the Hospitals Act, 1926, and in Pursuance of Section 78 of the Mental Defectives Act, 1911

HON. J. T. WATTS, MINISTER OF HEALTH

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CONTENTS

REPORT OF THE DIRECTOR-GENERAL OF HEALTH

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 1949 50.

The following changes have occurred among the senior staff of the Department during the year ended 31st March, 1950:—

Dr. T. R. Ritchie retired on superannuation from the position of Director-General of Health.

Dr. John Cairney (formerly Superintendent-in-Chief, Wellington Hospital Board) was appointed Director-General of Health.

Miss M. I. Lambie retired on superannuation from the position of Director, Division of Nursing.

Miss E. R. Bridges (formerly Nurse Instructor, Head Office) was appointed Director, Division of Nursing.

Dr. L. C. McNickle resigned from the position of Director, Division of Hospitals.

Dr. C. A. Taylor (formerly Director, Division of Tuberculosis) was appointed Director, Division of Hospitals.

Dr. G. L. McLeod (formerly Medical Officer of Health, Wellington) was appointed Assistant Director, Division of Hospitals.

Dr. J. Russell resigned from the position of Director, Division of Mental Hygiene.

Dr. R. G. T. Lewis (formerly Medical Superintendent, Kingseat Mental Hospital) was appointed Director, Division of Mental Hygiene.

Dr. D. F. Eastcott was appointed Assistant Director (Epidemiology), National Health Institute.

I should like to make special mention of the services rendered to the Department by Dr. T. R. Ritchie and Miss M. I. Lambie.

Dr. Ritchie joined the Department in 1918 after his return from war service in Gallipoli and France. After serving in a number of senior positions in the Department (including a period in Western Samoa) he was promoted in 1943 to the position of Deputy Director-General of Health. On the retirement of Dr. M. H. Watt early in 1947, Dr. Ritchie acted as Director-General of Health for some months before being formally appointed to that position in October, 1947. Throughout his service Dr. Ritchie was motivated by the highest ideals, and his contribution to the work of the Department has been real and lasting.

Miss Lambie also joined the Department in 1918. In 1931 she was appointed Director, Division of Nursing, a position which she held up to the time of her retirement. Miss Lambie's contribution to the work of the Department and to the advancement of the nursing profession in the Dominion has been outstanding. She is recognized throughout the world as an authority on nursing matters.

Both Dr. Ritchie and Miss Lambie carry with them into retirement the very best wishes of their colleagues.

The vital and medical statistics which appear in the report are, in general, for the calendar year 1949. On the other hand, financial figures and, in particular, the reports of the Divisions of Hospitals and Clinical Services are for the year ended 31st March, 1950.

A Medical Statistics Branch of the Department was established in March, 1949, and this year the report of the Branch appears as a separate section. Figures are given showing the trends in birth-rate, death-rate, infant mortality, and maternal mortality,

and the report concludes with a review of the deaths from cancer over the past fifty years. Cancer is essentially a disease of the later decades of life, and there is little doubt that the increase in the crude (or actual) death-rate from cancer is due in large part to the increased proportion of older people in our population. It is interesting to compare the fifty-year review of the death-rate from cancer with a similar review of the death-rate from tuberculosis which appeared in the last annual report. Both tables refer to Europeans only. Over the fifty years the crude death-rate from tuberculosis (which, in general, is responsible for deaths at an earlier age than cancer) has decreased from 9·87 per 10,000 of mean population to 2·46, while over the same period the death-rate from cancer has increased from 5·63 to 13·98.

The number of live births registered and the birth-rate per 1,000 of mean population remain at a high level. The year 1947 saw the greatest number of live births (49,804) thus far recorded in this country; the birth-rate was 27·63, and the European birth-rate was the highest recorded since 1912. The figures for 1949 (European, 43,999; Maori, 4,888; total 48,887) show some reduction on the figures for 1948, but this reduction is less than as between 1947 and 1948. The birth-rate for 1949 was European, 24·89; Maori, 43·09; combined, 25·99; compared with 25·52, 45·09, and 26·69 respectively in the previous year.

In 1947 the maternal-mortality rate (European and Maori combined) reached the remarkably low figure of 1·18 per 1,000 live births. In 1948 the rate was 1·30, while for 1949 it is 1·23. The European rate for 1949 (1·02) is even lower than the corresponding rate for 1947, and is, in fact, the lowest ever recorded in this country. The actual figures for maternal deaths, excluding septic abortion, for 1949 are: European, 45; Maori, 15. Deaths from septic abortion numbered only 3, all European.

The position with regard to puerperal sepsis is worthy of comment. During 1949 the number of cases notified was 52, and there were no deaths. It is not so very long ago that puerperal sepsis was one of the dreaded complications of childbirth, with a considerable mortality. In this country, for example, over the five years from 1920 to 1924 the average number of cases notified per year was 210 and the average number of deaths per year was 54. A number of factors have contributed to the improvement, the most recent being the introduction of the sulphonamide drugs and penicillin. I believe, however, that the present position constitutes a high tribute to the standard of care afforded by the medical and nursing professions, and, speaking as one who has watched the position as an observer outside the Department, I feel that considerable credit is due to past and present officers of this Department, both medical and nursing, for their sustained efforts over the years.

The problem of reducing the number of still-births and neo-natal deaths—*i.e.*, deaths during the first month after birth—is one which is receiving considerable attention in various countries. While certain of these deaths are due to causes, such as congenital malformation, which cannot be prevented, the question does arise as to "the contribution which medicine can make to the prevention of human wastage by saving the potential lives which are lost at or before birth, and children who die during the first month of life . . . It is clear that the widest scope for the saving of the youngest life is care of the pregnant woman, skilful midwifery, prevention of prematurity, and protection of the new-born from infection" (Bourne and Williams, 1948).

In New Zealand the still-birth rate for Europeans (statistics of Maori still-births are not available) has shown a steady decline over the last ten years, and in 1949 reached 17·66 per 1,000 total births, which is the lowest on record for this country.

The infant-mortality rate (deaths under one year of age) for Europeans for 1949 was 23·73 per 1,000 live births; this is the second lowest rate recorded in New Zealand, the lowest being 21·93 in 1948. Of the total rate of 23·73, neo-natal deaths (under one month) account for 17·00, while the remaining 6·73 represent deaths between one month and twelve months. The marked reduction in the infant-mortality rate for Europeans over

the past fifty years was commented on in last year's report; though the neo-natal rate has in half a century been reduced by almost one-half, the improvement in infant mortality has been principally in the period after one month of age. The newly-born infant to-day faces about half the risk in its first month of life as it did in 1900, but only about one-seventh of the risk between the ages of one month and one year. When we examine the causes of death of infants under one month (Table 54) we find that, out of a total of 748 deaths last year, 669 occurred within the first week and that 378 were due to premature birth.

Figures for the infant-mortality rate for Maoris are available only from 1930. The figures for 1949 are: neo-natal (under one month), 22·91; one and under twelve months, 63·22; giving a total of 86·13 per 1,000 live births. While the neo-natal death-rate is slightly higher than for Europeans, the disturbing features of the figures for Maoris are the fact that the rate for the period from one month to twelve months is even to-day higher than it was for Europeans at the beginning of the century, and the fact that the Maori infant-mortality rate as a whole has risen in the past two years.

The report of the Division of Public Hygiene indicates that the epidemic of poliomyelitis, which began in November, 1947, and continued throughout 1948, could be regarded as coming to an end in July, 1949. A few cases continued to occur in the remaining months of the year. A survey of the epidemic written by Dr. Maclean, Director of the Division, appears as an Appendix to this report.

Another important feature of the report of the Division of Public Hygiene is the reference to the low incidence of diphtheria during 1949, the number of cases notified (89) being the smallest thus far recorded. This surely is a tribute to the success of the immunization campaign, but it still remains important that every possible step should be taken to make immunization against diphtheria available to every child. Recently there have appeared in the press cabled reports suggesting a possible association between immunization and the occurrence of paralysis in poliomyeltitis. There has been no suggestion that immunization causes poliomyelitis, but there has been recorded in other countries a small number of cases in which, in the presence of an epidemic of poliomyelitis, children who received immunizing injections at a time when they were presumably incubating the virus of poliomyelitis developed paralysis of the limb into which the injection had been given. A recent editorial in the British Medical Journal concluded with these sentences: "Other investigations into the alleged association between poliomyelitis and recent immunization are being carried out, and even if the results should confirm the Australian work and the *prima facie* case put forward, there will be no reason for irresponsible pessimism. It is well known that there are other factors which can increase susceptibility to paralytic poliomyelitis—for example, it is not now considered wise to carry out tonsillectomy when poliomyelitis is prevalent. A dispassionate assessment of the relative risks can be made only when the full facts are known."

With the passing of the Health Amendment Act, 1947, the Department of Health and the Mental Hospitals Department were amalgamated, and the Division of Mental Hygiene of the Department of Health was established. On this occasion the report of the Division of Mental Hygiene appears for the first time as a section of the Department's annual report.

Several of the divisional reports make reference to shortage of staff. Medical Officers of Health are urgently needed for several of the smaller health districts as well as for additional staffing in the larger districts; in the Division of Mental Hygiene the shortage of medical officers is acute; the work of the Division of Child Hygiene is handicapped by a shortage of school medical officers; there is a serious need for additional dental officers. There is still a shortage of nurses relative to the demand, and the number of public hospital beds which are temporarily closed from this cause is estimated at 850.

In most of our mental hospitals there were occasions during the year when the actual nursing staff was at least 50 per cent. below establishment. The Dental Division finds itself faced with the problems arising from a marked increase in the school population due to the high birth-rate in recent years, and as a temporary measure it has been necessary to arrange for the older children to be transferred from school dental clinics to the care of private practitioners. The work of caring for the sick must go on, irrespective of staffing difficulties, and no praise can be too great for those who carry the burden of the work in our general hospitals and mental hospitals with a loyalty and a devotion to duty that are characteristic of the nursing profession in New Zealand.

The report of the Division of Tuberculosis shows a further increase in the known cases of tuberculosis in New Zealand, but this is considered to be due to continued efforts in case-finding rather than to any actual increase in the incidence of the disease. The crude death-rate from all forms of tuberculosis shows a further decrease from 4·04 in the previous year to 3·74 per 10,000 of mean population. Reference is also made to the extension of the B.C.G. vaccination programme.

The report of the Division of Child Hygiene records a further improvement in the nutrition of primary-school children, and comments in some detail on the gratifying improvement in the position with regard to goitre. A disturbing feature of the report is, however, the increase recorded in postural defects of slighter degree; the figure was 27 per cent. in 1945, and is 41 per cent. in 1949.

The report of the Division of Hospitals discusses with some care the trends over the past ten years. The latest year for which figures are available in detail is the year ended 31st March, 1949. A comparison with similar figures for the year ended 31st March, 1940, shows that the number of occupied beds had increased by approximately one-half, that the total staff receiving payment had nearly doubled, and that the number of outpatient attendances had more than doubled. Costs, however, rose to a greater degree than the numbers of patients and staff. The total maintenance expenditure for 1948–49 was approximately three and a half times what it had been in 1939–40, and when the whole of this maintenance expenditure is expressed in terms of occupied beds it is found that the result gives a cost per occupied bed for 1948–49 which is 2·3 times the cost per occupied bed for 1939–40.

No one with an interest in our hospital system can fail to view with concern the steady mounting of hospital costs. The increased demand for hospital beds and other services provided by Hospital Boards is due to a variety of causes, not the least of which consists in changing trends in medical and surgical practice. In the two financial years referred to above, approximately half the total maintenance expenditure consisted of salaries and wages, an item which to-day is determined almost entirely either by awards or by statutory regulations, and which thus is beyond the control of Hospital Boards. Something of the changes that have taken place in our hospitals can be realized from the fact that, when I first became a Hospital Superintendent over twenty years ago, nurses in training had one day off duty a month and the commencing salary of a ward sister was £10 per annum lower than the present salary of a first-year pupil nurse.

The increase in hospital costs is not a new problem. The total maintenance expenditure in the year 1926–27 was approximately two and a half times what it had been in the year 1916–17, and was the subject of a careful analysis in the Appendix to the Director-General's report for the year ended 31st March, 1927. The conclusion was then reached that the large increase which had taken place in the past decade was due to a series of causes, the first three of which are stated as follows: "Decrease in the purchasing-power of the £1 note; increased number of hospital beds; increase in staff required owing to the more complicated methods of hospital treatment, including the employment of a greater proportion of trained nurses."

An important event during the year just concluded consisted in the finalizing of arrangements for the amalgamation of the six North Auckland hospital districts to comprise a single district administered by the Northland Hospital Board. It is conceded by many who have given thought to the problem that a smaller number of hospital districts would be more desirable than the thirty-seven that still exist, and it is not without interest to note that a draft Bill placed before a Hospital Conference in 1908, prior to the passing of the Hospitals and Charitable Institutions Act, 1909, provided for twenty hospital districts, of which the newly created Northland district would have been one.

While recent annual reports have had occasion to refer to the impossibility of maintaining regular inspections of hospitals, it is gratifying to note that there was some improvement in this respect towards the end of the last hospital year. It is hoped that, with some further increases in staff, the Division will be in a position to maintain closer contact with Hospital Boards and their administrative officers. The attitude of the Department must continue to be one of supervision rather than control, and of readiness to make available to Boards and their officers the benefit of its advice and experience.

The report of the Division of Clinical Services shows that in the year just concluded there was a further increase in expenditure on all social security benefits administered by this Department, with the exception of maternity benefits. Hospital benefits and pharmaceutical benefits each cost something over £2,000,000, while medical benefits cost over £2,500,000. Following the presentation of the report of the Medical Services Committee in 1948, important legislative changes were made last year in the form of amendments to both the Medical Practitioners Act and the Social Security Act. The Medical Practitioners Disciplinary Committee provided for by the Medical Practitioners Amendment Act, 1949, has been set up, and the appointed day for the coming into force of Part III of the Social Security Amendment Act, 1949, was fixed as 1st April, 1950.

The two most recently established Divisions are the Division of Physical Medicine, whose Director is stationed at Rotorua, and the Division of Occupational Health. These two Divisions are still in what may be called the pioneering stage, and the reports of the Directors will be read with interest. A special report by Dr. Garland, Director of the Division of Occupational Health, on accidents among bush workers appears as an Appendix.

NATIONAL HEALTH INSTITUTE

Some progress has been made towards the establishment of the National Health Institute. The building acquired has been found to need strengthening against earthquake damage, and alterations will have to be done in two stages spread over a longer period than expected. Working drawings are now being prepared, and it is hoped that the alterations will begin to take shape during the coming year. Meanwhile, as indicated above, the first medical staff appointment has been made—namely, that of an Assistant Director as epidemiologist and biostatistician. Two further appointments, of Director and an Assistant Director as microbiologist, are being delayed until the work on the building proceeds.

HEALTH EDUCATION

A very full programme of health education was carried out during the year. There has been no change in the methods of publicity which have been used in the Department's efforts to make and keep the general public "health conscious," though greater use has been made of them.

BOARDS ASSOCIATED WITH THE DEPARTMENT

The Board of Health, the Medical Council, the Dental Council, the Medical Research Council, the Nurses and Midwives Board, the Opticians Board, the Physiotherapy Board (formerly the Masseurs Registration Board), the Plumbers Board, the King George V Memorial Fund Board, and the Dominion Advisory Board of the New Zealand Federation of Health Camps (Inc.) continued their activities during the year. Preliminary steps were also taken to set up the Occupational Therapy Board under the powers granted by Parliament in the Occupational Therapy Act, 1949.

In general the work of these Councils and Boards has been a logical development or continuation of their activities during previous years.

Arising out of information submitted to it, the Medical Council conducted an inquiry into allegations made against a certain medical practitioner. As a result it reached the conclusion that the practitioner concerned had been guilty of infamous conduct in a professional respect. Accordingly the Council has applied to the Supreme Court for an order for the removal of this practitioner's name from the Medical Register.

While it is difficult to differentiate between the various research projects being undertaken by the Committees of the Medical Research Council, one project which has been directed by Dr. F. H. Smirk seems worthy of particular mention; this is the treatment of high blood-pressure with hexamethonium iodide, a preliminary report upon which has been presented to the Council by its Clinical Medicine Research Committee, of which Dr. Smirk is Chairman. The question of the early provision of facilities for virus research, to a degree sufficient to meet the immediate requirements in respect of our New Zealand problems, has also received the attention of the Medical Research Council.

VISITORS FROM OVERSEAS

During the past year distinguished visitors to New Zealand from the health point of view have included—

Dame Katherine C. Watt, Chief Nursing Adviser, Ministry of Health, England.

Sir Henry Dale, formerly Director of the National Institute for Medical Research, England, and a former member fo the United Kingdom Medical Research Council.

Professor G. W. Pickering, Professor of Medicine, St. Mary's Hospital, London (Sims Travelling Professor).

Dr. H. G. Wallace, Deputy Director-General, Department of Public Health, Sydney, Australia.

In addition, as noted in the report of the Director, Division of Dental Hygiene, a Dental Mission from the United Kingdom visited New Zealand.

NEW ZEALAND REPRESENTATION ABROAD

During the year New Zealand was represented at the following overseas gatherings connected with health matters:—

(1) Second World Health Assembly, held in Rome during May, 1949, by Dr. L. S. Davis, Director, Division of Child Hygiene, Department of Health, as Chief delegate, and Mr. T. P. Davin, of the Office of the High Commissioner, London, as alternate.

(2) International Cancer Research Commission, held in Paris in July, 1949, by Sir James Elliott.

(3) ILO Conference of Experts on Pneumoconiosis, held in Sydney in March, 1950, by Dr. D. P. Kennedy, Industrial Medical Officer, Department of Health.

CONCLUSION

The Department is indebted to the many local bodies and organizations with which it has been associated for the willing co-operation it has received over the past year. My own appointment covered only the final two months of the year ended 31st March, but I wish to express my appreciation of the loyal support accorded to me by my Deputy (Dr. Turbott), the Deputy Director-General (Administrative), the Directors of all Divisions, and other senior officers of the Department.

JOHN CAIRNEY,
Director-General of Health.

REPORT OF THE DIRECTOR, DIVISION OF PUBLIC HYGIENE

(The statistics in this report refer to the calendar year 1949.)

INFECTIOUS DISEASES

Streptococcal Sore Throat (Including Scarlet Fever).—Cases numbered 1,049 (Europeans, 1,038; Maoris, 11), compared with 1,110 for 1948. The disease continues to be of a mild character.

Diphtheria.—The low figure of 89 (Europeans, 83; Maoris, 6) sets a record for New Zealand. Departmental officers have continued the policy of immunizing school children and pre-school children. In addition, a large number of children have been immunized by private practitioners, but unfortunately the Department cannot obtain accurate figures of the numbers treated. The importance of having their young children immunized against diphtheria is kept permanently before the public by means of newspaper advertisements, posters, and display notices in buses and trams. This education of the public must be kept up, as otherwise, in the absence of the disease, apathy is likely to develop. The Dunedin district is remarkable in that no case of diphtheria has been notified in the three years 1947–49. A recent survey was carried out in twelve large schools and revealed that 85 per cent. of the primer children had been immunized before entering school.

Enteric Fever.—There were 60 cases of typhoid fever (Europeans, 20; Maoris, 40) and 20 cases of paratyphoid fever (Europeans, 4; Maoris, 16). The Maori figures for 1948 were 15 cases of typhoid with no cases of paratyphoid. An interesting group of cases of typhoid fever in the Gisborne district was traced to a chronic carrier, who had also been the probable cause of a number of isolated cases during a period of several years. An account of this series of cases has been written by Dr. T. C. Lonie and appears as an Appendix to the Department's report.

Of the Maori cases of typhoid fever, a group of 9 were due to the use of water from a spring polluted by adjacent pit privies at a higher level. The spring water had been used in preference to satisfactory water from the adjacent borough supply which was readily available.

An interesting group of 16 cases of paratyphoid A fever was reported by the Medical Officer of Health, Auckland. All of these patients were Maoris or Polynesians. The cases were at first thought to be due to the eating of polluted shell-fish, but no evidence of pathogenic contamination could be found in the 144 samples of mussels, pipis, cockles, and winkles taken from the suspected areas. As Dr. Thompson points out, paratyphoid A fever, although common in Asiatic countries, is very uncommon in Europe, Australia, and New Zealand. Some of the patients were living under very crowded conditions, and there was every opportunity for close personal contact. Four close contacts of one of the paratyphoid patients were admitted to hospital with fever on the same day, but were found to be suffering not from paratyphoid fever, but from septicaemia due to *B. faecalis alkaligenes*.

Influenza.—Only the more severe forms of influenza are notifiable, and the notified cases during 1949 were 14. Of these cases, 12 occurred in the Palmerston North district and included a group of cases of unusual type. During the latter half of August 6 cases were admitted to a country hospital, and included one child four years of age and five infants aged from three and a half months to eighteen months. One infant died two days after admission, and three died on the days they were admitted to hospital. Post-mortem examinations were made in these cases, and showed numerous hæmorrhagic patches on the lung tissue but without evidence of consolidation. In the opinion of the pathologist, death was due to an unusually virulent type of influenzal infection causing such intense toxæmia that death occurred before there was time for the development of typical influenzal broncho-pneumonia. The pathologist stated that he had recently seen two similar cases in young babies that had shown loss of appetite and fretfulness followed by convulsions, coma, and death. In these cases also the post-mortem findings in the central nervous system were negative, and only slight pathological changes were found in the lungs.

The infants referred to above came from widely scattered homes. A certain amount of mild influenza was prevalent in the district at that time.

Puerperal Sepsis.—The notified cases (Europeans, 47; Maoris, 5) showed a considerable reduction in the case of Europeans on the figures for previous years. The sulphonamide drugs have played an important part in reducing the incidence of puerperal fever.

Poliomyelitis.—The epidemic which began in explosive fashion in November, 1947, continued throughout 1948, and cases were still occurring in considerable numbers when last year's report was written. During July there was a noticeable drop in notifications, and for record purposes it was considered that the epidemic ended in that month. Cases mostly of a mild nature continued to occur during the remainder of the year, particularly in the Auckland district. The total cases for the year 1949 were 355 (Europeans, 346; Maoris, 9). A report of the whole outbreak from November, 1947, to July, 1949, is published as an Appendix to the Departments' report.

Bacillary Dysentery.—Maori cases notified were 39—a drop on the numbers occurring in previous years. The majority of these cases occurred in the Gisborne district, where the disease has a stubborn endemicity. The European cases numbered 116, and 102 of these occurred in a private boarding-school. Infection appears to have been introduced by an unsuspected carrier who was engaged for casual work in the kitchen. Shortly after her arrival a large number of both staff and pupils were affected. Unfortunately, the infection was carried over to a second school term by a symptomless carrier and interfered considerably with the ordinary routine of the school. The micro-organism concerned was *Shigella flexneri*.

Amoebic Dysentery.—This disease continues to be unduly prevalent, and was notified in 46 males and 5 females—all Europeans.

Food Poisoning.—There were 111 cases reported (Europeans, 104; Maoris, 7). There were six outbreaks involving 3 persons or more, as well as a number of single cases notified as food poisoning.

An outbreak occurred in the maternity annexe of a public hospital and affected 5 patients and 7 members of the nursing and domestic staffs. The causative organism was *S. aertrycke*, and evidence pointed to a bread custard meringue as being the probable vehicle of infection. The eggs used were hen eggs. The milk vendor supplying the hospital had had a suspicious illness a day or two before, but his fæces were free from the causative organism, and none of his other numerous customers was affected. A housemaid on the hospital staff was found to be a carrier of *S. aertrycke*, and as she had been helping in the kitchen and had not herself suffered any symptoms of food poisoning, it appeared probable that she was the cause of the outbreak.

In another outbreak 6 persons, out of a household of 7 who shared the same meal, suffered from diarrhoea and vomiting two to four hours later. The meal consisted of cold corned beef and a warmed-up sago pudding with milk. The corned beef was found twenty-four hours later to be heavily contaminated with *Staphylococcus aureus*, while *Streptococci* were recovered from the milk.

At a University hostel 31 students suffered from food poisoning attributed to infected milk served as a junket. Facilities for storage of milk were found to be very bad.

A small outbreak in Dunedin affected 6 people, and was attributed to staphylococcal infection of home-cooked ham.

An outbreak affecting 8 people in four different households was traced to brawn sold by one butcher. The brawn was made on 10th March, was on sale on Friday, 11th, and Monday and Tuesday, 14th and 15th March. During the week-end it was kept in a refrigerator. The families concerned purchased brawn on 11th, 14th, and 15th March respectively, and in most cases consumed it on the same day. About 20 people in all ate the brawn, but only 8 of them were affected with nausea, vomiting, abdominal pain and diarrhoea. The incubation period varied from five to ten hours. Coagulase positive *Staphylococcus aureus* was recovered from the surface of brawn remaining in the shop on the 15th, from the inside of a piece of brawn thrown out by one of the affected households, and from the fæces of one of the patients. All the patients recovered within twenty-four hours.

In a sanatorium, patients and staff were troubled with persistent attacks of vomiting and diarrhoea, and investigation suggested that imported egg-pulp used to make scrambled eggs was the possible cause. Bacteriological investigation showed one sample of the egg-pulp to contain *S. typhi-murium*.

Outbreaks of food poisoning almost invariably reveal carelessness in the handling or storage of food, and possibly the commonest fault is neglect to wash the hands before handling food. The hands may become infected with fæcal organisms or nasal organisms, and if the conditions of food storage are unsatisfactory the bacteria have every opportunity for multiplication.

With these facts in mind the Department is intensifying the pressure on occupiers of every type of food premises to have adequate hand-washing facilities available to all food-handlers. Unfortunately those concerned frequently do not appreciate the importance of these simple precautionary measures, and much education of food-handlers is necessary.

Weil's Disease.—Hæmorrhagic jaundice is not known to have ever occurred in this country, and until recently no rats had been found to be harbouring *Leptospira icterohaemorrhagiae*. Recently, however, a rat was caught near the wharves in Dunedin and was found to be infected. Steps are being taken to have rats caught at the other ports and examined for this parasite.

Venereal Diseases.—Tables 1 and 2 show the numbers of persons attending the principal venereal diseases clinics for the years 1945–49 :—

Table 1—Number of Persons Seen for First Time and Found to be Suffering from Syphilis

Year.	Auckland.		Wellington.		Christchurch.		Dunedin.		Total.		Grand Totals.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
1945	61	34	11	20	15	8	27	6	114	68	182
1946	77	26	20	25	25	13	30	4	152	68	220
1947	58	52	7	28	16	5	26	4	107	89	196
1948	84	61	23	42	29	4	25	4	161	111	272
1949	47	64	30	38	16	4	14	1	107	107	214

Table 2—Number of Persons Seen for First Time and Found to be Suffering From Gonorrhoea

Year.	Auckland.		Wellington.		Christchurch.		Dunedin.		Total.		Grand Totals.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
1945	389	413	178	54	149	66	46	9	762	542	1,304
1946	639	329	235	42	168	31	115	13	1,157	415	1,572
1947	623	303	262	41	168	27	53	19	1,106	390	1,496
1948	555	261	247	43	138	33	53	23	993	360	1,353
1949	655	326	248	18	148	22	53	30	1,104	396	1,500

While there has been some reduction in the new cases of syphilis, the figures for new gonorrhœal infections show a considerable increase, particularly in Auckland. A reduction can only be achieved if those controlling the clinics will endeavour to discover sources of infection. When this information is supplied to the Department the suspected contacts are interviewed where possible, and put under treatment if found to be infected. One Medical Officer of Health reports that in the matter of providing information as to sources of infection "the clinics have failed rather dismally. Also notices of default from treatments have not been received in all cases as early as they might have been."

The attached tables give details of the notifiable diseases reported in 1949.

Table 3A—Notifiable Diseases in New Zealand for Year Ended 31st December, 1949, Showing Distribution by Months

(Europeans)

	Streptococcal Sore Throat.	Diphtheria.	Enteric.		Tuberculosis.		Cerebro-spinal Meningitis.	Poliomyelitis.	Influenza.	Erysipelas.	Puerperal Fever.		Eclampsia.	Tetanus.	Hydatids.	Trachoma.	Ophthalmia Neonatorum.	Food Poisoning.	Bacillary Dysentery.	Amœbic Dysentery.	Undulant Fever.	Chronic Lead Poisoning.	Malaria.	Actinomycosis.	Lethargic Encephalitis.	Anchylostomiasis (Hookworm).	Other.	Totals.
			Typhoid.	Paratyphoid.	Pulmonary.	Other Forms.					Ordinary.	Following Abortion.																
January	67	6	9	..	105	14	1	94	..	11	8	10	6	1	2	..	1	11	4	3	1	..	1	..	2	..	..	357
February	70	6	1	1	110	20	2	63	..	12	4	..	8	1	2	1	..	42	4	4	..	..	1	..	..	..	..	352
March	107	7	..	1	114	21	2	81	..	17	5	4	2	1	4	..	..	17	9	7	3	1	1	..	..	..	..	404
April	93	8	1	..	88	18	3	33	..	9	2	3	6	2	1	1	..	..	2	5	2	1	1	..	..	..	..	279
May	84	7	2	..	108	16	1	18	..	14	4	2	7	3	1	..	..	2	..	2	4	..	..	..	..	..	..	275
June	75	8	..	1	87	21	2	10	..	17	6	1	6	..	2	..	..	2	2	6	..	..	1	..	..	..	..	247
July	81	10	1	..	87	21	3	9	..	13	1	..	3	2	1	1	1	1	55	5	..	1	1	..	1	..	..	298
August	84	10	..	..	120	25	10	6	1	14	4	3	11	..	4	..	..	5	1	6	4	..	1	..	..	..	..	309
September	116	6	3	1	89	14	1	5	8	11	2	3	6	4	3	..	1	12	1	3	5	..	..	..	..	1	..	295
October	102	8	..	..	101	32	5	8	..	10	2	4	8	2	4	..	2	..	19	1	8	..	1	..	..	..	..	317
November	78	3	2	..	89	33	5	9	2	13	2	4	6	1	2	..	..	3	17	1	4	..	1	..	..	..	..	275
December	81	4	1	..	119	20	3	10	3	9	7	..	9	..	1	..	..	9	2	6	..	..	..	..	..	1	..	285
Totals	1,038	83	20	4	1,217	255	38	346	14	150	47	34	78	17	27	3	5	104	116	49	31	3	9	..	3	2	..	3,693
1948	1,106	154	15	25	1,356	263	39	915*	9	167	65	73	73	23	47	4	6	159	96	61	37	4	14	..	9	..	..	4,719
1947	866	506	98	8	1,396	296	42	130	3	185	69	90	96	18	52	5	3	22	53	21	32	2	12	1	2	..	..	4,008
1946	1,454	1,577	36	13	1,530	290	87	112	3	193	76	66	55	23	52	9	7	245	78	31	26	2	50	2	3	..	..	6,020
1945	5,033	996	23	8	1,722	329	98	14	6	248	75	100	46	12	41	10	5	111	151	21	25	3	187	3	5	..	53†	9,325
1944	7,612	693	24	11	1,501	211	135	45	8	310	73	157	44	18	28	6	6	31	147	3	37	3	397	6	1	..	12	11,519

* Corrected return. † Beriberi.

Table 3B.—Notifiable Diseases, by Health Districts, for Year Ended 31st December, 1949

(Europeans)

Name of Disease.	Whangarei.	Auckland.	Hamilton.	Tauranga.	New Plymouth.	Gisborne.	Palmerston North.	Wellington.	Nelson.	Christchurch.	Greymouth.	Timaru.	Dunedin.	Invercargill.	Totals.
Streptococcal sore throat	9	229	82	19	56	7	121	176	6	122	27	96	71	17	1,038
Diphtheria	..	15	23	2	10	6	10	11	2	..	..	3	..	1	83
Enteric fever—															
(*a*) Typhoid	1	..	5	..	..	10	..	1	2	..	1	..	..	..	20
(*b*) Paratyphoid	..	..	1	..	..	..	..	1	..	1	1	..	..	..	4
Tuberculosis—															
(*a*) Pulmonary	22	282	70	20	20	26	152	208	34	126	17	65	127	48	1,217
(*b*) Other forms	..	39	11	5	9	5	23	40	22	35	4	6	39	17	255
Cerebro-spinal meningitis	3	10	3	..	3	..	2	9	..	2	..	2	..	4	38
Poliomyelitis	11	121	29	2	31	2	11	7	24	13	4	28	61	2	346
Influenza	..	..	1	..	..	..	12	..	1	..	..	..	..	..	14
Erysipelas	1	35	11	11	1	4	20	37	..	10	3	4	6	7	150
Puerperal fever—															
(*a*) Ordinary	..	2	5	1	4	..	3	5	1	22	2	..	..	2	47
(*b*) Following abortion	..	20	1	..	..	..	3	9	..	..	..	1	..	..	34
Eclampsia	2	15	9	2	6	3	6	10	..	10	4	4	7	..	78
Tetanus	..	4	1	1	..	1	3	2	..	2	..	1	1	1	17
Hydatids	..	4	3	1	..	1	6	5	..	5	..	1	1	..	27
Trachoma	..	1	..	..	..	1	..	1	..	..	..	..	..	..	3
Ophthalmia neonatorum	..	2	..	..	..	..	1	..	..	..	2	..	..	..	5
Food poisoning	..	6	7	1	2	7	10	20	..	10	1	2	38	..	104
Bacillary dysentery	..	7	3	..	..	2	102	2	..	..	..	..	..	..	116
Amœbic dysentery	..	3	..	..	..	..	7	37	..	2	..	..	..	..	49
Undulant fever	..	4	5	..	3	2	2	3	1	5	1	1	1	3	31
Chronic lead poisoning	..	..	..	..	..	..	1	2	..	..	..	..	..	..	3
Malaria	..	3	..	..	..	1	1	1	1	2	..	..	..	..	9
Lethargic encephalitis	..	..	..	..	..	..	3	..	..	..	..	..	..	..	3
Anchylostomiasis (hookworm)	..	2	..	..	..	..	..	..	..	..	..	..	..	..	2
Totals	49	804	270	65	145	78	499	587	94	367	67	214	352	102	3,693

Table 3c—Notifiable Diseases in New Zealand for Year Ended 31st December, 1949, Showing Distribution by Age and Sex

(Europeans)

Diseases.	0–1.		1–5.		5–10.		10–15.		15–20.		20–25.		25–30.		30–35.		35–40.		40–45.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Streptococcal sore throat ..	4	3	114	119	186	243	69	117	20	34	11	34	9	20	2	12	6	10	4	6
Diphtheria	2	1	12	9	17	11	5	3	1	5	5	4	1	1	1	1	..	2	..	..
Enteric—																				
Typhoid	..	..	1	..	3	2	..	..	..	..	..	2	3	..	1	2	..	2	..	1
Paratyphoid	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	1	..
Tuberculosis—																				
Pulmonary	2	..	9	11	18	11	9	18	42	80	78	132	73	113	49	64	58	58	54	35
Other forms	3	1	20	17	14	16	15	3	15	16	7	15	11	17	10	7	3	5	11	1
Cerebro-spinal meningitis ..	3	5	5	7	5	..	1	1	1	..	1	..	1	1	4	..	1	..	..	..
Poliomyelitis	2	1	22	29	53	39	44	28	26	21	18	11	10	11	3	6	9	3	2	4
Influenza	2	2	1	3	1	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..
Erysipelas	2	1	4	2	1	5	3	..	1	..	2	2	2	1	4	4	6	6	7	3
Puerperal fever—																				
Ordinary	..	..	..	..	..	..	..	..	..	4	..	11	..	16	..	10	..	3	..	2
Following abortion	..	..	..	..	..	..	..	..	..	1	..	5	..	11	..	13	..	2	..	2
Eclampsia	..	..	..	..	..	..	..	..	..	7	..	30	..	23	..	8	..	7	..	3
Tetanus	1	..	2	1	4	1	1	..	1	..	1	1	..	1	1	..	..	..	..	..
Hydatids	..	..	1	..	1	..	1	..	1	1	4	3	..	..	1	1	..	..	1	1
Trachoma	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..
Ophthalmia neonatorum ..	3	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Food poisoning	1	1	5	6	2	2	3	1	9	8	5	18	3	5	2	5	2	4	2	2
Bacillary dysentery	3	1	2	1	1	3	..	41	..	49	1	3	1	2	2	..	2	..	1	1
Amœbic dysentery	..	..	..	..	..	..	..	..	..	..	..	1	14	..	11	1	8	1	5	..
Undulant fever	..	..	1	..	1	..	..	2	2	..	2	..	3	..	5	1	3	1	1	..
Chronic lead poisoning ..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	2	..	..	..
Malaria	..	..	..	..	..	..	..	..	..	..	1	..	1	..	2	1	1	..	1	..
Lethargic encephalitis	1	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Anchylostomiasis (hookworm) ..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..
Totals	29	18	200	206	307	334	151	214	122	226	136	273	135	222	98	137	101	104	91	61

Table 3D—Notifiable Diseases in New Zealand for Year Ended 31st December, 1949, Showing Distribution by Age and Sex—continued

(Europeans)

Diseases.	45–50.		50–55.		55–60.		60–65.		65–70.		70–75.		75–80.		80+.		Totals.		
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Streptococcal sore throat	3	3	1	3	1	2	..	..	2	..	..	..	..	..	..	..	432	606	1,038
Diphtheria	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	44	39	83
Enteric—																			
Typhoid	..	1	..	..	..	1	..	..	1	..	..	..	..	..	..	..	9	11	20
Paratyphoid	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	1	4
Tuberculosis—																			
Pulmonary	48	11	44	14	43	11	42	10	32	7	22	6	8	1	2	2	633	584	1,217
Other forms	8	5	5	4	4	7	2	5	4	2	..	1	..	..	1	..	133	122	255
Cerebro-spinal meningitis	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	23	15	38
Poliomyelitis	2	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	192	154	346
Influenza	..	..	1	1	1	..	..	..	..	..	..	..	..	..	..	..	7	7	14
Erysipelas	6	6	3	12	..	9	10	16	3	8	2	5	2	5	4	3	62	88	150
Puerperal fever—																			
Ordinary	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	47	47
Following abortion	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	34	34
Eclampsia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	78	78
Tetanus	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	12	5	17
Hydatids	1	2	..	..	..	1	..	2	2	2	..	..	1	..	..	..	14	13	27
Trachoma	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	3	..	3
Ophthalmia neonatorum	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	2	5
Food poisoning	1	..	1	2	1	3	4	3	1	..	1	..	1	..	..	..	44	60	104
Bacillary dysentery	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	14	102	116
Amœbic dysentery	5	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	46	3	49
Undulant fever	1	..	1	..	2	..	1	1	1	2	..	..	..	..	..	..	24	7	31
Chronic lead poisoning	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	3
Malaria	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	8	1	9
Lethargic encephalitis	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	3
Anchylostomiasis (hookworm)	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2
Totals	76	29	59	39	54	34	62	37	46	23	25	12	13	7	7	5	1,712	1,981	3,693

Table 3F.—Notifiable Diseases in New Zealand for Year Ended 31st December, 1949: Distribution by Health Districts.

(Maoris)

—	Streptococcal Sore Throat.	Diphtheria.	Enteric Fever.		Tuberculosis.		Cerebro-spinal Meningitis.	Poliomyelitis.	Erysipelas.	Puerperal Fever.		Eclampsia.	Tetanus.	Hydatids.	Trachoma.	Ophthalmia Neonatorum.	Food Poisoning.	Bacillary Dysentery.	Undulant Fever.	Totals.
			Typhoid.	Paratyphoid.	Pulmonary.	Other Forms.				Ordinary.	Following Abortion.									
Whangarei	..	..	..	..	158	7	2	1	..	..	..	..	..	..	..	..	..	..	..	168
Auckland	1	1	15	16	37	1	..	..	2	1	1	..	..	1	2	..	..	1	..	79
Hamilton	5	2	14	..	69	4	2	5	..	2	..	..	1	1	3	..	..	8	1	117
Tauranga	..	..	..	..	9	..	1	1	..	..	..	..	..	..	2	..	..	3	..	16
New Plymouth	..	..	..	..	23	3	..	..	..	1	..	..	..	1	..	..	1	..	..	29
Gisborne	2	..	7	..	67	25	1	..	1	..	..	..	..	3	1	..	6	24	..	137
Palmerston North ..	2	2	4	..	68	14	1	..	1	..	..	1	1	5	..	1	..	3	..	103
Wellington	1	1	..	..	18	4	1	1	..	..	..	..	..	3	..	..	..	..	..	29
Nelson	..	..	..	..	4	2	..	..	..	1	..	..	..	1	..	..	..	..	..	8
Christchurch	..	..	..	..	18	..	..	1	1	..	..	..	..	1	..	..	..	..	..	21
Greymouth	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3
Timaru	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Dunedin	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Invercargill	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Totals	11	6	40	16	476	61	8	9	5	5	1	1	2	16	8	1	7	39	1	713
1948	4	12	27	..	404	62	6	49	6	1	..	1	..	6	14	..	1	59	3	..
1947	5	40	40	..	412	69	6	5	4	5	1	1	..	8	11	3	2	78	2	..
1946	11	106	47	2	449	51	13	1	10	6	1	1	2	12	16	6	3	25	1	..
1945	48	79	42	1	450	71	20	2	8	3	..	1	1	6	19	2	7	45	..	..

Table 4—Samples of Food and Drugs Taken and Dealt With During 1949

District.	Milk.				
	Number of Samples.	Samples Not Complying.		Warnings Issued.	Prosecutions Recommended.
		Number.	Percentage.		
Whangarei	258	6	2·3	6	..
Auckland	3,607	197	5·4	122	2
Tauranga	262	9	3·4	5	2
Hamilton	1,970	45	2·3	11	7
New Plymouth	277	8	2·8	1	..
Gisborne	670	30	4·5	4	..
Palmerston North	1,337	176	13·1	42	7
Wellington	2,498	52	2·1	18	15
Nelson	370	10	2·7	5	1
Christchurch	2,879	253	8·7	217	21
Greymouth	248	38	15·3	12	17
Timaru	1,122	148	13·1	116	15
Dunedin	1,214	110	9·0	52	3
Invercargill	648	58	8·9	36	1
Totals	17,360	1,140	6·5	647	91

District.	Other Foods and Drugs.				
	Number of Samples.	Samples Not Complying.	Warnings Issued.	Prosecutions Recommended.	Seizures of Unsound Food.
Whangarei	71	9	4	..	..
Auckland	596	130	62	5	11
Tauranga	3	1	1	..	..
Hamilton	177	27	7	6	21
New Plymouth	130	20	12	1	2
Gisborne	269	41	7	1	2
Palmerston North	297	84	23	3	18
Wellington	160	29	7	1	12
Nelson	64	2	2	..	3
Christchurch	364	119	82	20	22
Greymouth	27	12	9	3	1
Timaru	307	69	56	3	3
Dunedin	466	122	17	3	18
Invercargill	99	9	2	..	16
Totals	3,030	674	291	46	129

FOOD AND DRUGS

Milk.—Milk is the most important of all foods from the public health viewpoint on account of its great food value, the great quantities consumed, and its potentialities as a vehicle of dangerous infection unless produced and handled with care. Reference to Table 4 will show that on the results of sampling there is a slight improvement in quality as compared with 1948 when a total of 18,244 samples were tested and 8·2 per cent. failed to comply with the necessary standard. The proportion of non-complying samples is still far too high in certain districts, and particularly in those of the South Island. Many of the non-complying samples, particularly in Christchurch, showed a

failure to reach the standard for non-fatty solids. Milk is required to contain 8·5 per cent. of non-fatty solids (protein, milk sugar, and salts) and 3·25 per cent. of fat, and the milk of some breeds of cows at certain times of the year fails to reach this standard. This milk, of course, is a perfectly wholesome food, though it has a lower food value than milk which complies with the standard. Cows which give a low-testing milk give also a large quantity of milk, and if the milk is sold on a gallonage basis such cows are profitable. The standard for milk set by the regulations had been purposely designed to require milk such as can be produced by an average well-fed herd containing a proportion of animals producing milk of better than lowest quality. In many districts the milk consistently shows test results very considerably higher than the legal minimum. It is considered that the production and sale of large quantities of low-testing milk constitutes an economic fraud on the consuming public, who are paying the same price as those who receive a far richer milk.

The remedy lies in the hands of the authorities who buy the milk from the producers. If payment is made in such a way that butterfat content as well as total volume is taken into account, the public will receive milk of higher food value. This has been the consistent policy of the Wellington City Council, and milk sold in Wellington normally contains more than 4 per cent. butterfat and a correspondingly high proportion of other solids.

In Palmerston North the prosecution of a producer found sending watered milk to a treatment house failed on a legal technicality as the milk was to undergo " bulking " before being sold. It was therefore not legally " milk for sale." A necessary amendment has since been made to the Food and Drugs Act, and a similar prosecution would now be followed by a conviction.

The preference of a large section of the public for raw milk continues, in spite of all the advice given by the Department. In one district 76 samples of raw milk were tested bacteriologically, and 17·1 per cent. of these samples were found to contain living tubercle bacilli, while 22·3 per cent. contained Br. abortus, the micro-organism which causes undulant fever. It is quite certain that the latter disease is far more common than is revealed by notification, and most of this infection could be prevented if only pasteurized milk were drunk. The foolishness of drinking raw milk that may contain living tubercle bacilli does not need any stressing.

Owing to a shortage of Health Inspectors, routine milk sampling in one district had to be discontinued for some months. On the resumption of sampling, 26 out of 38 non-complying samples contained added water. This shows clearly the importance of routine sampling, even when the general quality of milk appears to be satisfactory.

The effectiveness of the Department in maintaining a high quality in the milk sold to the public is still more seriously hampered by its exclusion from all places where milk is produced and processed. Milk sampling and testing, except for the detection of economic frauds, goes only a very little way towards ensuring a safe milk supply, and defects or faulty methods of handling, leading to possible infection of the milk, may exist, and will not be revealed by sampling and testing alone. A reasonable measure of safety can only be ensured if the same authority is combining sampling and inspection. The two procedures are complementary, and effective control is impossible when one Department inspects milk-processing plants and another Department samples and tests the milk. Either one Department or the other should be responsible for the oversight of milk processing and sale.

Other Foods Sampled.—A total of 3,030 samples of other foods were taken, and 674, or 22·2 per cent., failed to comply with the required standard. Slightly over half of these samples were of milk shakes, ice cream, cream, and other milk products. Other foods sampled included sausages and mincemeat, other meat products, bread, non-alcoholic beverages, iodized salt, jam, essences, egg-pulp, alcoholic beverages, tea, and coffee. A small number of drugs was sampled, but this necessary work is seriously restricted by the inability of the analysts to undertake more work.

Table 4 gives details of the samples taken, the number failing to comply, and the action taken.

Unsound food was seized and destroyed on 129 occasions.

The Use of Iodized Salt.—As the use of iodized salt has been a commonplace in this country for many years, it is interesting to note that recently the Medical Research Council in Great Britain recommended that all domestic salt should be iodized.

Iodized salt was first introduced in New Zealand in 1924, and contained potassium iodide in the proportion of 1 part in 250,000. In 1939 the proportion of potassium iodide was increased to 1 part in 20,000.

The use of iodized salt is not compulsory, but advocacy of its use is a prominent feature of the Department's health education campaign. A recent survey shows that in the great majority of homes only iodized salt is used.

Egg-pulp.—In recent years there has been an increasing tendency to preserve eggs by pulping and freezing, whereas formerly it was a common practice for bakers to obtain eggs in the shell and preserve them. During the process of pulping, one inferior egg can contaminate a large quantity of pulp, and the material offers a very favourable medium for the growth of bacteria. Although the pulp is frozen, there is ample opportunity for the multiplication of bacteria both before it enters the cool store and when it is again thawed out before being used.

Samples of egg-pulp invariably show high bacterial counts when tested, and it is not uncommon for the specific micro-organisms of food poisoning to be found. Reference has already been made to cases of food poisoning in an institution which were thought to be due to the use of egg-pulp. Even though thorough cooking can usually be relied on to destroy any bacteria present, the use of highly contaminated food, even for cooking purposes, cannot be commended. While egg-pulping on a large scale is commercially convenient, it must be deplored by the hygienist. A system whereby whole eggs could be packed in containers of suitable size and chilled or frozen would ensure food of far superior quality and save much waste.

Bacteriological Sampling of Foods.—The bacteriological aspect of public health is seriously restricted by shortage of laboratories able and willing to undertake bacteriological investigations in connection with food, food-poisoning outbreaks, and infectious diseases. In recent years, public health bacteriology has made enormous advances, but much of the work now regarded as routine in other countries is not attempted in New Zealand. There is great need for a well-equipped central laboratory under a bacteriologist of high calibre where the more advanced investigations can be carried out.

DANGEROUS DRUGS AND POISONS

In view of the publicity given to New Zealand's high consumption of heroin, it will be of interest to compare our consumption of this and other dangerous drugs with the consumption in other English-speaking countries. The following figures are compiled from information published by the Permanent Central Opium Board, and show the consumption of drugs per million of population.

Table 5—Average Consumption of Dangerous Drugs for Years 1946-48
(Per million of population)

——	Morphine.	Heroin.	Cocaine.	Codeine.
	Kg.	Kg.	Kg.	Kg.
New Zealand	9·62	3·53*	4·26	59·91
Australia	16·84	3·46	10·06	50·51
Canada	7·26	2·20	3·26	85·93
Union of South Africa	4·11	1·49	2·05	9·45
United Kingdom	17·44	1·99	4·52	61·41
United States	13·91	Nil	5·74	95·77

* Corresponding figure for 1949 is 2·5 kilograms per million.

It is satisfactory to record that the consumption of heroin showed a further decrease during 1949. The consumption for the last four years is as follows:—

	Kilograms.		Kilograms.
1946	7·83	1948	5·85
1947	6·69	1949	4·64

Exempted Preparations.—Certain compound drugs which contain a dangerous drug as an ingredient but which are considered to be in a form unattractive to an addict are exempted from the provisions of the Dangerous Drugs Act and may be sold without restriction. It was found recently that one of the exempted preparations—liniment of opium—was allegedly being made and disposed of in very excessive quantities in one particular locality. As it appeared possible that these transactions were in reality a device to cover the illegal use of tincture of opium, which is used in the manufacture of liniment of opium, steps were taken to remove the liniment from the list of exempted preparations. The immediate result was a very marked fall in its recorded consumption, and this fact would appear to have confirmed the Department's suspicions. It is clearly apparent that some measure of control is necessary to ensure that exempted preparations alleged to have been manufactured are in fact manufactured.

Drug Addiction.—The number of drug addicts known to the Department shows a slight reduction, and a large proportion of them are over seventy years of age. One Medical Officer of Health reports that four addicts in his district have undergone treatment in an institution, and appear to have been cured.

It is found that in most cases of addiction the drug was prescribed in the first place as medical treatment for some abnormal condition. Some medical practitioners unfortunately are not sufficiently aware of the danger inherent in prescribing drugs of addiction for long-standing and non-fatal conditions.

In some cases the attention of medical practitioners has been drawn to this, and the dose prescribed for a particular patient has been reduced or a change made to some other drug without addictive properties.

Dangerous Drugs: First-aid Kits.—An amendment to the Dangerous Drugs Regulations has been enacted to enable morphine to be included in first-aid kits in aircraft.

Control of Dangerous Drugs.—By an amendment to the regulations, medical practitioners are required to write out prescriptions for dangerous drugs in their own handwriting. This is intended to make the forging of such prescriptions more difficult.

Prescription Poisons.—The drug heptalgin, also known as phenadoxone, has been included in the First Schedule to the Poisons Act and made a prescription poison. This means that it may not be sold except on a doctor's or dentist's prescription.

GENERAL

Staffing of Districts.—The work of the Department in the important sphere of environmental hygiene continues to be very seriously hampered by the grave shortage of Medical Officers of Health. Not only are the larger health districts understaffed, but three of the smaller districts have been without a resident medical officer for very long periods. If members of the existing staff of Medical Officers of Health must each give oversight to two districts, all districts suffer and nothing but the barest routine work is possible. Just as in all preventive undertakings results are not immediately apparent, so the harmful effects of understaffing may for a time escape notice. Deterioration is, however, inevitable. Not only is the maintenance of relatively high standard of healthy living jeopardized, but advances to a still higher standard become impossible. A determined policy of recruitment that will remedy this serious deficiency is a matter of urgency.

Names of Health Districts.—In a *Gazette* notice dated 15th February, 1950, the names of the health districts were altered. The boundaries of the districts are the same as before, but each is now named after the principal town or city in place of the cumbersome titles formerly used.

Control of Medical Advertisements.—An amendment to the Medical Advertisement Regulations has been enacted to require that where any drug, cosmetic preparation, or dentifrice is manufactured or packed in New Zealand this fact must be clearly stated in every advertisement or label. In the past certain cosmetic preparations that were manufactured in New Zealand were advertised in such a way as to make it appear that they were specially imported from London, Paris, or New York. This action was taken at the request of the trade.

Training of Inspectors.—The full-time course at the Wellington Technical College for the training of Health Inspectors was concluded at the end of the year, and is being repeated this year with a fresh class. Six candidates are officers of this Department, and the Department of Labour and Employment has again entered six Inspectors of Factories for training. Much of the instruction is given by the staff of the technical college, and officers of the Wellington City Engineer's staff are again giving great assistance.

Unfortunately, the local authorities, many of whom are badly in need of well-trained Inspectors, have displayed great reluctance to sponsor candidates for training. This is a short-sighted policy, as a gradual raising of the examination standard is taking place, and candidates who do not receive proper training may find the qualifying examination beyond them.

In many health districts Medical Officers of Health are organizing quarterly meetings of departmental and local-authority Inspectors for discussions on some aspects of their work. These meetings are proving very valuable, particularly for the Inspectors of small local authorities, who work in comparative isolation.

Cattle Saleyards.—A recent amendment to regulations under the Health Act alters the requirements for cattle saleyards. Rather more discretion is now allowed to the Medical Officer of Health to waive the requirements as to paving in the case of saleyards that are used only infrequently. In such cases the needs of good sanitation are satisfied if the saleyards are properly cleaned up immediately after use.

Staff.—In conclusion, I wish to record my appreciation of the work of the Principal Inspector of Health, the Divisional Clerk, and the other clerical officers in the Division. Their efficient and willing co-operation can always be relied on.

F. S. Maclean,
Director, Division of Public Hygiene.

REPORT OF THE DIRECTOR, DIVISION OF MENTAL HYGIENE

At the end of the year there were 9,500 persons on the registers of the Division, including 64 persons at Ashburn Hall, the only private institution licensed under the Mental Defectives Act. In addition, 902 patients were on probation in the care of relatives or friends.

There were 8,543 persons in residence in Government mental hospitals on 31st December, 1949. This is an increase of 191 when compared with figures as at 31st December, 1948. Of the number in residence, 8,139 were subject to reception orders and 404 were voluntary boarders.

Persons admitted for the first time totalled 1,722, an increase of 13 on the figures of the previous year. Voluntary boarders still form an increasing proportion of the total admissions to our hospitals.

During the year ended 31st December, 1949, 1,532 persons were discharged, or 64·83 per cent. when calculated on the number admitted. Although it cannot be said that all such patients were discharged as fully recovered, it is believed that at least 47·15 per cent. of the 1,532 had recovered at the respective times of their discharge.

It is of interest to record that during the year 881 persons were admitted as voluntary boarders and 801 were discharged. These figures show clearly the advantages to be gained by early treatment and the exercise of volition by the individuals concerned in seeking that treatment.

SENILES

The admissions continue to include a considerable number of senile cases. One large hospital records that over 25 per cent. of their committed patients were sixty-five years of age or over.

These cases tax our available accommodation and place an added strain on our nursing staff.

It would seem that there are three main reasons for the continued increase in the senile admission rate :—

(1) The lack of available domestic help in the homes of relatives.
(2) The reduction of beds available in public and private hospitals for these cases because of the shortage of available staff.
(3) A change in the individual attitude towards responsibility and obligation in connection with the care of the aged.

TREATMENT

The various special treatments have continued during the year. Each has its uses, but none by itself is of any great value unless it is co-ordinated with psychotherapy, occupational and recreational therapies, and the general routine activities of hospital life.

Electro-convulsive Therapy has been the most widely used of the physical treatments. Contrary to popular opinion, it is not suitable for every type of case. It is very important that discretion is exercised in its use.

The neuro-surgical operation of leucotomy appears to have found a definite place in the treatment of certain types of psychotics whose mental condition has proved to be resistant to other methods of treatment. Most of this work has been carried out in association with the department of neuro-surgery at the Dunedin Public Hospital, although some operations have been performed at Auckland Public Hospital.

In this country great care is being taken in the selection of cases suitable for neuro-surgical treatment.

STAFFING

During the year there has been an acute shortage of medical officers. This has meant the working of very long hours by the medical staff in maintaining the standard of treatment in our hospitals as well as endeavouring to meet the requests from sources outside the Division for psychiatric opinions and reports.

The female nursing staff shortage has continued. At most of the hospitals there were occasions when the effective strength was more than 50 per cent. below the authorized establishment. This means that very long hours have to be worked during a week. Sometimes the Matrons have been faced with difficulty in providing sufficient staff to meet basic essential needs, let alone anything else. Psychiatric nursing is not receiving the recruits which it needs. The public has a responsibility in this matter.

PREVENTIVE PSYCHIATRY

The medical staff of the mental hospitals carry out a large volume of psychiatric work outside their hospitals. There are two aspects of this work:—

(1) *Clinical.*—Many out-patient clinics are held away from Mental hospitals, and consultant services are given to public hospitals and to various Government Departments such as Pensions, Police, and Child Welfare.

The vast majority of the persons seen at these clinics never reach the stage of having to enter mental hospitals. A large proportion continue to remain in employment as economic units of the community.

The figures for one very busy mental hospital show 1,169 out-patient consultations; also, 456 in-patients of the adjacent public hospital were given psychiatric examinations.

This is an established part of the work of the Division, and it is of great value to the community.

(2) *Education.*—It is pleasing to record the increasing public interest in the work of our hospitals, and more especially in the application of mental hygienic principles to the general community for the improvement of mental health as well as the prevention of nervous and mental illness.

Talks on mental hygiene have been given by the medical officers to various organizations during the year. It is important that this growing interest should be nurtured.

CONDITION OF THE BUILDINGS

Many of the buildings are old and should be replaced. Temporary improvements have been made to older wards, which will have to be used for years yet. Maintenance is particularly heavy at Seacliff owing to the moving ground on which the hospital is built.

Maintenance work has been carried out at all the hospitals, but the progress is not keeping pace with the requirements. This is due to shortage of labour and materials. Our own artisan staff do what they can, but they are numerically small, and for much of the work we depend on the Ministry of Works.

The officers of the Division are gravely concerned at the lack of progress.

CAPITAL EXPENDITURE ON BUILDINGS

Capital expenditure on new works during the year amounted to £171,442. The following is a summary of the amount spent at each hospital during the year, only the major works being named :—

Auckland : £12,524. A new boiler-house is under construction.
Kingseat : £2,009.
Lake Alice : £93,006. Villas and staff homes have been completed.
Tokanui : £2,024.
Levin Farm : £7,754. A new laundry is under construction.
Porirua : £23,715. A villa, the laundry, and occupational therapy block have been completed.
Nelson : £3,774.
Seaview : £2,444.
Sunnyside : £6,922.
Seacliff : £16,463. Heating of nurses' home ; preparatory work at Cherry Farm.

EQUIPMENT, FURNISHING, ACCOMMODATION

All the hospitals have continued to improve their clinical facilities in the wards. This is of great benefit to the patients and the staff.

The furnishings in all the hospitals show a marked improvement, although there is still a great deal to be done. For those patients whose stay is prolonged, a much more comfortable and homelike appearance is being achieved.

Serious overcrowding exists in all the hospitals, and unless faster progress with our building programme is achieved, the already serious position will become much worse. Some of the day-room space for our patients is used for sleeping accommodation, and this results in less comfort for them.

APPRECIATION

The District Inspector, Official Visitors, and clergy have all taken a great interest in the patients of the hospitals. Their work is of inestimable value to both the patients and the staff. The officers of the Division would like to express their grateful thanks for this help.

Our hospitals have numerous benefactors, who do a wonderful amount of good work for our patients, making contributions of money and presents, bringing concert parties and sports teams to our hospitals, extending hospitality in inviting our patients back to visit them, and showing many other kindnesses too numerous to mention.

To these officers who have retired during the year the Division expresses its appreciation of the good work they have done over the years. We all wish them good health and many happy years of retirement.

The Director thanks the whole staff for their loyal co-operation, help, and good work during the year.

R. G. T. Lewis,
Director, Division of Mental Hygiene.

Table 6—Voluntary Boarders

Year.	First Admission.			Not First Admission.			Total Admissions.			Transferred to Register of Patients.			Died.			Discharged.			Remaining on 31st December.		
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
1913	18	19	37	0	2	2	18	21	39	2	5	7	0	1	1	12	12	24	5	14	19
1914	17	19	36	3	2	5	20	21	41	7	5	12	1	1	2	11	15	26	6	14	20
1915	15	17	32	1	2	3	16	19	35	3	4	7	0	1	1	8	14	22	11	14	25
1916	13	23	36	5	8	13	18	31	49	4	4	8	1	2	3	14	14	28	10	15	25
1917	14	21	35	1	13	14	15	34	49	6	6	12	0	1	1	10	23	33	9	19	28
1918	23	39	61	5	11	16	28	49	77	1	4	5	2	2	4	15	30	45	19	32	51
1919	31	38	70	5	19	24	36	58	94	3	3	6	0	2	2	26	42	68	26	43	69
1920	26	38	64	16	12	28	42	50	92	3	4	7	1	2	3	33	33	66	31	54	85
1921	39	39	78	11	15	26	50	54	104	2	3	5	5	1	6	38	41	79	36	63	99
1922	47	38	85	10	16	26	57	54	111	6	5	11	4	4	8	40	48	88	43	60	103
1923	44	50	94	15	21	36	59	71	130	3	6	9	3	3	6	47	47	94	49	75	124
1924	38	44	82	16	20	36	54	64	118	4	8	12	6	3	9	39	48	87	54	80	134
1925	64	59	123	15	34	49	79	93	172	10	15	25	6	3	9	60	63	123	57	92	149
1926	71	60	131	11	29	40	82	89	171	10	11	21	7	2	9	49	71	120	73	97	170
1927	70	70	140	25	32	57	95	102	197	8	6	14	5	12	17	75	58	133	80	123	203
1928	120	94	214	37	39	76	157	133	290	8	10	18	10	8	18	102	97	199	117	141	258
1929	102	63	165	50	43	93	152	106	258	11	3	14	9	9	18	119	110	229	130	125	255
1930	152	84	236	41	35	76	193	119	312	15	9	24	8	6	14	130	79	209	170	150	320
1931	166	98	264	43	36	79	209	134	343	11	14	25	11	7	18	159	102	261	198	161	359
1932	150	85	235	50	40	90	200	125	325	24	32	56	14	5	19	190	108	298	170	141	311
1933	112	109	221	53	32	85	165	141	306	11	14	25	5	4	9	121	107	228	198	157	355
1934	132	90	221	56	33	89	188	123	311	7	11	18	10	6	16	152	99	251	217	164	381
1935	130	87	217	40	55	95	170	142	312	18	20	38	19	10	29	151	116	267	199	160	359
1936	98	99	197	62	44	106	160	143	303	21	20	41	7	10	17	137	111	248	194	162	356
1937	103	91	194	64	45	109	167	136	303	14	7	21	6	10	16	163	122	285	178	159	337
1938	111	105	216	60	53	113	171	158	329	11	15	26	11	8	19	144	125	269	183	169	352
1939	131	103	234	63	72	135	194	175	369	22	21	43	16	15	31	157	130	287	182	178	360
1940	128	124	252	65	63	128	193	187	380	18	18	36	10	12	22	176	167	343	171	168	339
1941	93	104	197	48	58	106	141	162	303	11	9	20	10	13	23	140	151	291	151	157	308
1942	88	108	196	44	74	118	132	182	314	14	15	29	15	8	23	124	160	284	130	156	286
1943	95	126	221	66	87	153	161	213	374	2	8	10	13	14	27	115	159	274	161	188	349
1944	146	168	314	70	104	174	216	272	488	4	7	11	11	10	21	172	243	415	190	200	390
1945	178	181	359	90	112	202	268	293	561	9	8	17	20	8	28	244	272	516	185	205	390
1946	233	229	462	80	137	217	313	366	679	4	10	14	15	7	22	283	348	631	196	206	402
1947	233	301	534	83	122	205	316	423	739	7	2	9	12	12	24	321	383	704	172	232	404
1948	290	288	578	109	161	270	399	449	848	6	5	11	9	13	22	363	418	781	193	245	438
1949	240	336	576	137	168	305	377	504	881	12	11	23	10	19	29	341	460	801	207	259	466

Table 7—Admissions, Discharges, and Deaths, With the Mean Annual Mortality and Proportion of Recoveries, &c., Per Cent. on the Admissions During the Year 1949

Hospitals.	In Hospitals on 1st January, 1949.			Admissions in 1949.									Total Number of Patients Under Care.		
				Admitted for the First Time.			Not First Admissions.			Transfers.					
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
Auckland ..	723	682	1,405	112	148	260	27	48	75	7	12	19	869	890	1,759
Kingseat ..	447	394	841	29	42	71	10	10	20	4	20	24	490	466	956
Raventhorpe	4	223	227	..	..	..	..	..	..	..	29	29	4	252	256
Tokanui ..	421	370	791	52	56	108	5	5	10	5	4	9	483	435	918
Levin Farm ..	185	65	250	47	17	64	..	..	..	4	1	5	236	83	319
Porirua ..	630	622	1,252	92	159	251	59	70	129	18	12	30	799	863	1,662
Nelson ..	598	444	1,042	28	37	65	5	2	7	3	2	5	634	485	1,119
Hokitika ..	244	261	505	14	4	18	..	4	4	5	5	10	263	274	537
Sunnyside ..	738	718	1,456	80	90	170	13	39	52	8	4	12	839	851	1,690
Seacliff ..	611	423	1,034	58	73	131	20	15	35	5	10	15	694	521	1,215
Ashburn Hall*	11	18	29	2	6	8	1	3	4	2	1	3	16	28	44
Totals ..	4,612	4,220	8,832	514	632	1,146	140	196	336	61	100	161	5,327	5,148	10,475

Hospitals.	Patients Discharged, Transferred, and Died.														
	Discharged Recovered.			Discharged not Recovered.			Transferred.			Died.			Total Discharged, Transferred, and Died.		
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
Auckland	37	42	79	22	36	58	10	34	44	47	45	92	116	157	273
Kingseat	7	17	24	9	6	15	3	15	18	28	27	55	47	65	112
Raventhorpe ..	..	..	..	..	3	3	1	12	13	..	2	2	1	17	18
Tokanui	19	19	38	..	5	5	6	7	13	32	26	58	57	57	114
Levin Farm	..	..	..	8	..	8	..	..	..	6	2	8	14	2	16
Porirua	58	117	175	17	17	34	10	10	20	47	58	105	132	202	334
Nelson	9	20	29	1	2	3	9	1	10	27	21	48	46	44	90
Seaview	1	5	6	1	..	1	5	6	11	17	5	22	24	16	40
Sunnyside	34	46	80	32	37	69	11	13	24	39	44	83	116	140	256
Seacliff	34	38	72	8	16	24	6	..	6	36	36	72	84	90	174
Ashburn Hall* ..	3	5	8		..		..	2	2	1	3	4	4	10	14
Totals ..	202	309	511	98	122	220	61	100	161	280	269	549	641	800	1,441

Hospitals.	In Hospitals on 31st December, 1949.			Average Number Resident During the Year.			Percentage of Recoveries on Admissions During the Year.			Percentage of Deaths on Average Number Resident During the Year.		
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
Auckland ..	753	733	1,486	681	588	1,269	26·61	21·42	23·59	6·90	7·65	7·25
Kingseat ..	443	401	844	429	389	818	17·95	32·69	26·37	6·53	6·94	6·72
Raventhorpe ..	3	235	238	4	224	228	..	..	..	..	0·89	0·88
Tokanui ..	426	378	804	414	355	769	33·33	31·15	32·20	7·73	7·32	7·54
Levin Farm ..	222	81	303	184	61	245	..	..	..	3·26	3·28	3·26
Porirua ..	667	661	1,328	610	578	1,188	49·67	58·52	55·00	7·70	10·03	8·84
Nelson ..	588	441	1,029	573	400	973	27·27	51·28	40·28	4·70	5·25	4·93
Seaview ..	239	258	497	234	254	488	7·14	62·50	27·27	7·27	1·97	4·51
Sunnyside ..	723	711	1,434	670	643	1,313	36·57	35·67	36·36	5·81	6·84	6·32
Seacliff ..	610	431	1,041	579	387	966	43·59	43·17	43·37	6·22	9·04	7·44
Ashburn Hall* ..	12	18	30	11	19	30	100·00	55·56	66·67	9·09	15·79	13·33
Totals..	4,686	4,348	9,034	4,389	3,898	8,287	30·89	37·32	34·48	6·35	6·90	6·64

* Private mental hospital.

Table 8—Countries of Birth of Patients

Countries.	Auckland.			Kingseat.			Raven-thorpe.			Tokanui.			Levin Farm.			Porirua.		
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
England and Wales	80	70	150	58	50	108	..	23	23	40	44	84	1	3	4	68	77	145
Scotland	16	6	22	10	12	22	..	7	7	17	9	26	2	..	2	22	18	40
Ireland	12	20	32	16	11	27	..	8	8	14	17	31		..		19	13	32
New Zealand	502	550	1,052	298	280	578	3	172	175	296	265	561	210	72	282	475	490	965
Australian States	31	19	50	12	12	24	..	12	12	10	11	21	2	1	3	23	16	39
France		..			..			..			..			..		1	1	2
Germany	..	1	1	1	..	1		..		..	1	1		..			..	
Austria	4	..	4	4	..	4		..		6	..	6		..			..	
Norway	1	..	1	5	..	5		..			..			..			..	
Sweden	1	..	1		..			..			..			..			..	
Denmark		..			..			..		2	..	2		..		1	..	1
Italy	2	..	2	1	..	1		..		1	1	2		..		2	..	2
China	3	1	4	1	1	2		..		2	..	2		..		4	2	6
Maoris	27	18	45	9	11	20		..		28	22	50	6	3	9	36	30	66
Other countries	49	22	71	28	24	52	..	6	6	10	8	18	1	..	1	16	14	30
Unknown	25	26	51		..		..	7	7		..		..	2	2		..	
Totals	753	733	1,486	443	401	844	3	235	238	426	378	804	222	81	303	667	661	1,328

Countries.	Nelson.			Seaview.			Sunnyside.			Seacliff.			Ashburn Hall (Private Mental Hospital).			Totals.		
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
England and Wales	41	29	70	19	21	40	29	55	84	28	20	48	1	..	1	365	392	757
Scotland	16	7	23	8	3	11	15	13	28	30	22	52	1	..	1	137	97	234
Ireland	10	4	14	8	4	12	13	6	19	17	8	25		..		109	91	200
New Zealand	458	367	825	172	188	360	643	612	1,255	498	365	863	9	18	27	3,564	3,379	6,943
Australian States	12	9	21	7	7	14	9	16	25	15	5	20	1	..	1	122	108	230
France		..			..			..			..			..		1	1	2
Germany	2	..	2	1	..	1	1	..	1	1	..	1		..		6	2	8
Austria	1	..	1		..			..			..			..		15	..	15
Norway	1	..	1		..			..			..			..		7	..	7
Sweden		..		1	..	1		..		2	..	2		..		4	..	4
Denmark	2	..	2	1	..	1		..		1	..	1		..		7	..	7
Italy	1	1	2	2	..	2		..			..			..		9	2	11
China	1	..	1		..		1	..	1		..			..		12	4	16
Maoris	15	13	28	2	1	3	5	6	11		..			..		128	104	232
Other countries	8	2	10	18	34	52	7	3	10	3	1	4		..		140	114	254
Unknown	20	9	29		..			..		15	10	25		..		60	54	114
Totals	588	441	1,029	239	258	497	723	711	1,434	610	431	1,041	12	18	30	4,686	4,348	9,034

Table 9—Ages of Patients on 31st December, 1949

Ages.	Auckland.			Kingseat.			Raven-thorpe.			Tokanui.			Levin Farm.			Porirua.		
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
From 1 to 5 years ..	..	1	1	..	1	1		..		..	1	1	35	10	45	2	1	3
,, 5 ,, 10 ,, ..	2	2	4	3	..	3		..		3	5	8	39	24	63	1	..	1
,, 10 ,, 15 ,, ..	3	1	4	5	3	8		..		4	6	10	37	13	50	4	8	12
,, 15 ,, 20 ,, ..	24	10	34	26	10	36	..	1	1	16	9	25	43	14	57	14	26	40
,, 20 ,, 30 ,, ..	99	92	191	25	37	62	1	2	3	56	36	92	49	14	63	82	78	160
,, 30 ,, 40 ,, ..	152	137	289	53	47	100	..	18	18	85	66	151	19	5	24	163	106	269
,, 40 ,, 50 ,, ..	157	142	299	67	72	139	..	38	38	76	75	151	..	1	1	122	126	248
,, 50 ,, 60 ,, ..	122	143	265	96	89	185	2	60	62	61	68	120		..		122	109	231
,, 60 ,, 70 ,, ..	107	112	219	93	76	169	..	73	73	58	76	134		..		88	102	190
,, 70 ,, 80 ,, ..	53	65	118	59	50	109	..	34	34	56	26	82		..		51	75	126
,, 80 ,, 90 ,, ..	20	19	39	12	15	27	..	5	5	7	8	15		..		17	28	45
Upwards of 90 years ..	1	..	1	1	..	1		..			..			..		1	2	3
Unknown	13	9	22	3	1	4	..	4	4	4	2	6		..			..	
Totals	753	733	1,486	443	401	844	3	235	238	426	378	804	222	81	303	667	661	1,328

Ages.	Nelson.			Seaview.			Sunnyside.			Seacliff.			Ashburn Hall (Private Mental Hospital).			Totals.		
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
From 1 to 5 years	16	3	19		..		1	4	5	2	..	2		..		56	21	77
,, 5 ,, 10 ,,	46	29	75		..		35	22	57	6	1	7		..		135	83	218
,, 10 ,, 15 ,,	51	37	88	1	1	2	41	26	67	..	3	3		..		146	98	244
,, 15 ,, 20 ,,	34	39	73	1	4	5	67	43	110	6	7	13		..		231	163	394
,, 20 ,, 30 ,,	59	44	103	15	15	30	133	95	228	72	33	105	4	..	4	595	446	1,032
,, 30 ,, 40 ,,	91	44	135	32	28	60	141	112	253	116	71	187	2	..	2	854	634	1,464
,, 40 ,, 50 ,,	82	60	142	43	36	79	106	109	215	139	66	205	..	1	1	792	726	1,508
,, 50 ,, 60 ,,	88	71	159	48	61	109	75	90	165	97	79	176	2	1	3	713	771	1,484
,, 60 ,, 70 ,,	62	69	131	57	66	123	78	112	190	96	84	180	2	9	11	641	779	1,420
,, 70 ,, 80 ,,	45	30	75	34	37	71	36	77	113	55	61	116	1	5	6	390	460	850
,, 80 ,, 90 ,,	12	15	27	6	6	12	10	20	30	21	25	46	1	1	2	106	142	248
Upwards of 90 years	2	..	2		..		..	1	1	..	1	1	..	1	1	5	5	10
Unknown ..	..			2	4	6		..			..			..		22	20	42
Totals ..	588	441	1,029	239	258	497	723	711	1,434	610	431	1,041	12	18	30	4,686	4,348	9,034

Table 10—Length of Residence of Patients Discharged "Recovered" During 1949

Length of Residence.	Auckland.			Kingseat.			Raven-thorpe.			Tokanui.			Levin Farm.			Porirua.		
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
Under 1 month	6	8	14		..			..		..	1	1		..		5	8	13
From 1 to 3 months	6	4	10	..	2	2		..		1	..	1		..		16	43	59
,, 3 ,, 6 ,, ...	4	3	7	3	8	11		..		..	2	2		..		16	32	48
,, 6 ,, 9 ,, ...	8	2	10	1	3	4		..		5	2	7		..		6	10	16
,, 9 ,, 12 ,, ...	3	3	6	..	1	1		..		2	8	10		..		6	8	14
,, 1 ,, 2 years	5	11	16	1	2	3		..		7	5	12		..		7	7	14
,, 2 ,, 3 ,, ...	3	8	11		..			..		3	1	4		..		1	3	4
,, 3 ,, 5 ,, ...	1	2	3	..	1	1		..			..			..		1	3	4
,, 5 ,, 7 ,, ...	1	..	1		..			..			..			..			..	
,, 7 ,, 10 ,, ...	..	1	1	1	..	1		..			..			..		..	2	2
,, 10 ,, 12 ,, ...		..			..			..			..			..		..	1	1
,, 12 ,, 15 ,, ...		..			..			..		1	..	1		..			..	
Over 15 years		..		1	..	1		..			..			..			..	
Totals	37	42	79	7	17	24		..		19	19	38		..		58	117	175

Length of Residence.	Nelson.			Seaview.			Sunnyside.			Seacliff.			Ashburn Hall (Private Mental Hospital).			Totals.		
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
Under 1 month	..	2	2	1	..	1	1	..	1	1	..	1		..		14	19	33
From 1 to 3 months	1	..	1		..		6	6	12	4	12	16	2	4	6	36	71	107
,, 3 ,, 6 ,, ...	..	1	1	..	1	1	6	9	15	7	11	18		..		36	67	103
,, 6 ,, 9 ,, ...	3	1	4		..		10	13	23	4	3	7	1	1	2	38	35	73
,, 9 ,, 12 ,, ...	2	4	6		..		1	8	9	..	1	1		..		14	33	47
,, 1 ,, 2 years	2	5	7	..	4	4	5	7	12	12	7	19		..		39	48	87
,, 2 ,, 3 ,, ...		..			..		1	3	4	2	2	4		..		10	17	27
,, 3 ,, 5 ,, ...	..	1	1		..		1	..	1	1	1	2		..		4	8	12
,, 5 ,, 7 ,, ...	1	4	5		..			..			..			..		2	4	6
,, 7 ,, 10 ,, ...	..	1	1		..			..		2	1	3		..		3	5	8
,, 10 ,, 12 ,, ...		..			..		1	..	1	1	..	1		..		2	1	3
,, 12 ,, 15 ,, ...	..	1	1		..		1	..	1		..			..		2	1	3
Over 15 years		..			..		1	..	1		..			..		2	..	2
Totals	9	20	29	1	5	6	34	46	80	34	38	72	3	5	8	202	309	511

Table 11—Causes of Death, 1949

Causes.	Total.			Causes.	Total.		
I—General Diseases	M.	F.	T.	IV—Diseases of the Circulatory System	M.	F.	T.
Tuberculosis—				Heart-disease	88	64	152
General	2	2	4	Arterio-sclerosis	11	5	16
Lungs	6	12	18				
Cancer	6	6	12	V—Diseases of the Digestive System			
Toxæmia	2	3	5				
Diabetes	1	1	2	Gastric ulcer	..	1	1
Congenital debility	1	..	1	Peritonitis	..	1	1
Hydrocephalus		..		Pancreatitis	1	..	1
Aplastic anæmia	1	..	1	Fatty degeneration of the liver	1	..	1
				Gastro-enteritis	1	2	3
II—Diseases of the Nervous System							
				VI—Diseases of the Urinary System			
Exhaustion	..	1	1				
Exhaustion of mania ..	..	1	1	Uræmia	3	2	5
General paralysis of the insane	4	2	6	Nephritis	..	2	2
Cerebral hæmorrhage ..	7	11	18				
Cerebral thrombosis	3	6	9				
Organic brain-disease ..	3	2	5	VII—Old Age			
Epilepsy	10	4	14	Senile decay	53	64	117
Neuro-syphilis	1	..	1				
				VIII—External Causes			
III—Diseases of the Respiratory System				Suicide	2	1	3
				Head injury	1	..	1
Pneumonia—				Fractured skull	1	..	1
Broncho	26	36	62				
Hypostatic	22	12	34				
Lobar	4	8	12	IX—Died Whilst on Probation	16	12	28
Pulmonary—							
Œdema	..	2	2				
Embolism	1	2	3	Totals	280	269	549
Spontaneous pneumothorax ..	1	..	1				
Bronchitis	1	3	4				

Table 12—Principal Assigned Causes of Insanity, 1949

Causes.	Totals.			Causes.	Totals.		
	M.	F.	T.		M.	F.	T.
Alcohol	10	3	13	Organic brain-disease ..	9	14	23
Arterio-sclerosis	22	33	55	Previous attack	139	196	335
Congenital	115	61	176	Puerperal	..	27	27
Constitutional	163	235	398	Senility	116	138	254
Drug addiction		..		Spastic paralysis		..	
Encephalitis	..	3	3	Syphilis	7	5	12
Epilepsy	14	10	24	Toxic	3	6	9
Heredity	7	6	13	Trauma	2	..	2
Ill health	7	11	18				
Involution	5	33	38	Totals	654	828	1,482
Mental stress	35	47	82				

Table 13—Showing the Admissions, Readmissions, Discharges, and Deaths in Mental Hospitals During the Year 1949

	M.	F.	T.	M.	F.	T.
In mental hospitals, 1st January, 1949				4,612	4,220	8,832
Admitted for the first time	514	632	1,146			
Readmitted	140	196	336			
				654	828	1,482
Total under care during the year				5,266	5,048	10,314
Discharged and died—						
Recovered	202	309	511			
Not recovered	98	122	220			
Died	280	269	549			
				580	700	1,280
(Not including transfers: males, 61; females, 100.)						
Remaining in mental hospitals, 31st December, 1949				4,686	4,348	9,034
Increase on 31st December, 1948				74	128	202
Average number resident during the year				4,389	3,898	8,287

Table 14—Showing the Admissions, Discharges, and Deaths, With the Mean Annual Mortality and Proportion of Recoveries Per Cent. of the Admissions

Year.	Admitted.			Discharged.									Died.			Remaining 31st December in Each Year.			Average Numbers Resident.			Percentage of Recoveries on Admissions.			Percentage of Deaths on Average Numbers Resident.		
				Recovered.			Relieved.			Not Improved																	
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
1920	455	418	873	162	148	310	27	37	64	6	10	16	210	166	376	2,717	2,037	4,754	2,674	1,980	4,654	35·63	35·22	35·51	7·85	8·40	8·08
1925	445	430	875	144	175	319	29	37	66	23	17	40	201	123	324	2,921	2,336	5,257	2,830	2,203	5,033	32·36	40·69	36·45	7·45	5·57	6·43
1930	621	474	1,095	138	128	266	28	34	62	31	23	54	251	172	423	3,572	2,811	6,383	3,342	2,590	5,932	22·22	27·00	24·29	7·51	6·64	7·15
1935	567	502	1,069	117	136	253	72	55	127	..	..	..	229	206	435	4,282	3,405	7,687	4,003	3,111	7,114	20·63	27·09	23·67	5·72	6·62	6·11
1940	553	595	1,148	153	188	341	135	95	230	..	..	..	281	215	496	4,353	3,678	8,031	4,168	3,422	7,590	27·67	31·60	29·70	6·74	6·28	6·53
1941	605	637	1,242	128	186	314	130	130	260	..	..	..	297	260	557	4,404	3,738	8,142	4,192	3,474	7,666	21·12	29·09	25·20	7·08	7·48	7·27
1942	563	648	1,211	146	197	343	126	152	278	..	..	..	313	343	656	4,383	3,693	8,076	4,189	3,498	7,687	25·09	30·56	28·41	7·47	9·81	8·53
1943	550	658	1,208	138	223	361	138	119	257	..	..	..	281	263	544	4,376	3,746	8,122	4,181	3,513	7,694	25·09	33·89	29·88	6·72	7·49	7·07
1944	600	763	1,363	137	218	355	101	90	191	..	..	..	327	249	576	4,411	3,952	8,363	4,231	3,640	7,871	22·83	28·57	26·05	7·73	6·84	7·32
1945	657	715	1,372	165	295	460	106	118	224	..	..	..	327	320	647	4,470	3,934	8,404	4,229	3,689	7,918	25·11	41·26	33·53	7·73	8·67	8·17
1946	645	788	1,433	183	270	453	107	125	232	..	..	..	269	281	550	4,556	4,046	8,602	4,266	3,706	7,972	28·37	34·26	31·61	6·31	7·58	6·90
1947	719	790	1,509	236	325	561	154	123	277	..	..	..	318	247	565	4,567	4,141	8,708	4,309	3,753	8,062	32·82	41·14	37·18	7·38	6·58	7·01
1948	652	780	1,432	210	325	535	118	102	220	..	..	..	279	274	553	4,612	4,220	8,832	4,339	3,806	8,145	32·21	41·67	37·36	6·43	7·20	6·79
1949	654	828	1,482	202	309	511	98	122	220	..	..	..	280	269	549	4,686	4,348	9,034	4,389	3,898	8,287	30·89	37·32	34·48	6·35	6·90	6·64

Table 15—Payments for the Financial Year 1949–50

——	Head Office, Wellington.	Avondale, Auckland.	Sunnyside, Christchurch.	Seaview, Hokitika.	Kingseat, Papakura.	Levin Farm, Levin.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Salaries	12,207 13 2	122,867 12 1	152,587 11 10	54,375 0 8	64,912 11 3	23,973 16 4
Overtime, penal rates, shift, meal, and standby allowances	251 3 6	31,556 6 6	25,701 15 11	9,999 7 11	22,187 17 5	4,538 1 3
Advertising ..	1,900 8 3	77 13 7	11 18 7	10 18 0	142 2 3	50 6 1
Bacteriological research	..	20 6 0	4 4 0	..	1 10 0	..
Bedding and clothing	..	14,832 4 5	14,777 12 2	8,208 0 0	8,426 3 0	5,561 16 7
Buildings, equipment, improvements, repairs, and replacements	64 13 5	3,592 19 3	2,758 19 6	1,856 18 0	1,068 19 1	459 2 10
Compensation under Workers' Compensation Act	..	544 11 5	223 4 2	..	255 10 0	3 2 10
Dental services ..	..	102 8 5	550 16 7	106 8 6	288 18 4	71 3 6
Farms, maintenance of	..	3,837 19 4	5,225 1 3	2,098 17 9	1,639 19 11	1,083 19 1
Fencing, draining, and roading	..	278 5 8	664 8 3	85 8 5	62 4 7	201 1 7
Flower-gardens, lawns, and shrubberies	..	45 19 8	587 16 4	255 4 10	1,172 9 2	532 12 3
Freight, cartage, and transport	..	367 15 2	1,249 10 2	99 8 8	597 5 5	49 9 1
Fuel, light, water, &c.	94 11 6	10,965 12 10	13,474 6 10	3,904 3 2	6,032 9 8	4,063 14 9
Funeral expenses ..	..	42 10 0	35 3 6	76 0 0	147 0 0	..
Furniture and fittings	15 17 6	8,040 0 2	4,949 3 8	3,255 15 9	6,364 1 1	5,024 18 10
Grants to—						
Wellington After-care Association	2,500 0 0	..	..	..	..	..
Widows or relatives of deceased officers	..	..	198 3 0	..	..	..
Laundry	..	637 17 5	486 12 6	251 17 1	90 8 7	39 12 2
Machinery repairs and stores	..	934 7 3	705 7 2	837 5 11	1,774 14 0	307 2 1
Medical fees ..	..	777 18 7	578 12 5	41 19 0	214 3 5	439 11 9
Motor-vehicles—						
Maintenance of ..	..	194 14 3	1,053 0 2	148 8 3	379 3 4	115 2 9
Purchase of ..	..	670 11 2	2,861 5 10	..	1,324 4 1	147 14 7
Nursing staff uniforms	11 4 6	1,523 10 1	787 6 3	238 14 9	736 0 6	148 13 8
Office equipment ..	62 18 5	102 6 11	104 13 11	113 16 11	58 15 6	26 2 11
Patients, expenses connected with—						
Comforts ..	..	7,898 13 7	8,882 0 11	3,101 14 8	4,545 6 2	1,488 11 11
Gratuities ..	..	..	..	..	..	..
Recreation ..	..	1,533 8 10	1,925 6 9	813 10 4	1,021 8 6	317 15 11
Transfers ..	..	32 5 7	39 19 7	91 7 4	2 14 7	..
Payment of monetary equivalent of leave due to deceased officers	..	28 4 0	90 5 8	..	43 1 8	..
Postages, telegrams, &c.	101 5 9	215 5 3	162 14 9	71 2 1	156 18 8	56 14 0
Printing and stationery	117 16 4	573 13 5	432 19 5	277 1 3	305 6 3	186 14 2
Rations	..	33,122 6 5	32,422 2 3	13,539 8 2	23,129 12 0	8,736 3 10
Rents and rates ..	11 7 5	..	520 15 0	..	..	..
Staff training: expenses incidental thereto	8 2 5	9 14 2	..	18 12 8	8 15 5	82 13 0
Stores ..	4 18 0	5,656 16 3	4,963 10 4	1,889 12 11	2,605 11 4	1,390 13 1
Surgery and dispensary	..	3,288 7 3	2,829 17 0	298 1 8	1,677 7 4	782 2 10
Telephone services ..	205 9 1	161 14 0	241 4 5	76 11 4	287 1 4	92 17 1
Transfer and removal expenses	5 17 10	75 4 7	189 18 6	109 10 1	139 13 9	91 2 9
Travelling-allowances	266 0 1	276 8 7	471 4 6	56 2 5	419 17 0	9 6 5
Travelling-expenses ..	247 19 0	515 9 6	131 10 4	78 3 7	103 5 6	98 10 6
Contingencies and miscellaneous	..	166 10 2	191 10 0	12 5 0	110 10 4	46 11 0
Totals ..	18,077 6 2	255,567 11 9	283,071 13 5	106,396 17 1	152,433 0 5	60,217 1 5

Table 15—Payments for the Financial Year 1949–50—continued

— —	Nelson.	Porirua.	Raventhorpe, Papakura.	Seacliff.	Tokanui, Te Awamutu.	Totals.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Salaries	93,514 17 1	130,212 6 2	16,024 14 8	118,398 14 7	66,677 16 0	855,752 13 10
Overtime, penal rates, shift, meal, and standby allowances	21,977 2 5	35,571 9 0	3,233 10 11	27,828 5 8	17,637 0 3	200,482 0 9
Advertising ..	22 13 6	82 12 3	10 17 6	96 6 1	26 2 3	2,431 18 4
Bacteriological research	1 1 0	112 0 6	..	413 1 0	10 2 0	562 4 6
Bedding and clothing	11,226 1 0	20,109 13 5	2,150 2 1	15,580 11 0	7,942 13 5	108,814 17 1
Buildings, equipment, improvements, repairs, and replacements	1,143 0 0	3,342 9 3	381 8 8	2,465 7 3	1,430 17 2	18,564 14 5
Compensation under Workers' Compensation Act	419 15 9	200 13 1	9 19 8	66 0 0	..	1,722 16 11
Dental services ..	72 11 8	161 4 7	48 2 9	1,181 5 2	102 7 6	2,685 7 0
Farms, maintenance of	3,187 7 3	3,740 2 7	63 11 10	6,147 14 7	6,105 6 4	33,129 19 11
Fencing, draining, and roading	44 3 7	426 7 10	157 3 2	70 8 7	129 12 0	2,119 3 8
Flower-gardens, lawns, and shrubberies	108 11 9	296 0 0	47 9 5	247 19 11	196 9 10	3,490 13 2
Freight, cartage, and transport	502 17 3	610 13 8	184 3 4	906 19 2	754 11 11	5,322 13 10
Fuel, light, water, &c.	10,384 4 4	15,332 0 1	1,883 4 5	11,188 12 6	6,685 0 10	84,008 0 11
Funeral expenses ..	140 10 0	59 10 0	..	74 15 6	153 0 0	728 9 0
Furniture and fittings	3,004 19 1	11,754 13 1	1,891 2 5	10,472 4 11	4,574 6 4	59,347 2 10
Grants to—						
Wellington After-care Association	..	..	..	..	..	2,500 0 0
Widows or relatives of deceased officers	137 6 8	..	..	..	..	335 9 8
Laundry	707 10 2	843 8 10	25 15 0	532 3 9	295 18 10	3,911 4 4
Machinery repairs and stores	426 6 1	1,953 11 7	242 9 10	1,179 15 5	751 8 6	9,112 7 10
Medical fees ..	149 6 1	970 4 0	1 9 0	374 0 11	261 10 10	3,808 16 0
Motor-vehicles—						
Maintenance of ..	417 16 0	1,409 16 2	75 13 7	696 10 0	350 12 8	4,840 17 2
Purchase of ..	1,330 8 10	1,587 17 5	612 10 0	..	893 5 5	9,427 17 4
Nursing staff uniforms	885 13 0	1,292 17 7	212 5 0	789 5 6	300 13 6	6,926 4 4
Office equipment ..	131 5 4	130 6 1	0 16 8	80 2 8	24 9 2	835 14 6
Patients, expenses connected with—						
Comforts ..	5,752 4 10	7,370 7 9	1,448 8 9	5,828 6 4	4,041 3 9	50,356 18 8
Gratuities ..	189 0 3	..	..	..	16 9 2	205 9 5
Recreation ..	1,057 0 2	1,786 3 5	118 4 5	1,904 12 10	715 1 7	11,192 12 9
Transfers ..	17 6 7	25 17 3	..	4 1 6	10 16 7	224 9 0
Payment of monetary equivalent of leave due to deceased officers	13 19 4	..	..	..	..	175 10 8
Postages, telegrams, &c.	117 19 0	289 12 11	65 6 2	258 13 11	163 6 4	1,658 18 10
Printing and stationery	417 17 5	597 16 10	160 11 9	453 3 0	359 9 2	3,882 9 0
Rations	23,651 14 0	35,349 12 8	7,363 4 5	29,217 3 6	12,766 17 11	219,298 5 2
Rents and rates ..	..	..	..	4 14 0	..	536 16 5
Staff training: expenses incidental thereto	8 7 0	16 11 9	..	22 2 0	41 10 4	216 8 9
Stores	2,665 3 10	3,663 6 8	959 11 5	2,816 15 10	2,615 19 8	29,231 19 4
Surgery and dispensary	1,747 19 4	3,605 4 7	554 4 5	3,646 19 7	1,080 12 7	19,510 16 7
Telephone services ..	117 12 9	221 16 2	148 0 0	548 6 6	191 5 4	2,291 18 0
Transfer and removal expenses	85 2 7	36 4 10	6 17 0	205 9 3	14 1 8	959 2 10
Travelling-allowances	170 6 2	88 13 2	27 15 8	779 19 1	197 14 7	2,763 7 8
Travelling-expenses ..	57 3 7	382 14 2	25 8 10	588 16 7	55 8 3	2,284 9 10
Contingencies and miscellaneous	77 9 7	173 12 11	..	97 10 7	132 10 5	1,008 10 0
Totals ..	186,081 14 3	283,807 12 3	38,134 2 9	245,166 18 8	137,705 12 1	1,766,659 10 3

Table 16—Receipts for the Financial Year 1949-50

——	Avondale, Auckland.	Kingseat, Papakura.	Raventhorpe, Papakura.	Tokanui, Te Awamutu.	Levin Farm, Levin.	Porirua.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Receipts from maintenance*	130 7 1	200 0 0	..	23 0 0	..	402 7 2
Receipts from farms† ..	2,243 19 4	2,744 7 8	29 6 8	5,389 9 9	14 18 4	2,395 19 8
Miscellaneous ..	21,853 9 5	13,746 8 4	2,511 15 7	12,927 2 0	5,152 2 6	22,872 15 0
Totals ..	24,227 15 10	16,690 16 0	2,540 16 3	18,339 11 9	5,167 0 10	25,671 1 10

——	Nelson.	Seaview, Hokitika.	Sunnyside, Christchurch.	Seacliff.	Head Office, Wellington.	Total.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Receipts from maintenance*	452 15 7	102 0 0	6 2 9	285 13 5	..	1,602 6 0
Receipts from farms† ..	2,682 12 4	1,569 10 7	5,899 18 0	8,386 14 10	..	31,356 11 2
Miscellaneous ..	14,130 17 11	9,831 0 10	24,158 13 1	18,542 13 5	69 0 0	145,795 18 1
Totals ..	17,266 5 10	11,502 11 5	30,064 13 10	27,215 1 8	69 0 0	178,754 15 3

* Outstanding accounts as at 31st March, 1939. † Exclusive of foodstuffs, &c., grown and consumed in hospitals, value £81,272.

Table 17—Average Cash Cost of Each Patient for Financial Year 1949-50

Hospital.	Average Number Resident (Inclusive of Voluntary Boarders).	Salaries.	Overtime, Penal Rates, Shift, Meal, and Standby Allowances.	Bedding and Clothing.	Buildings, Equipment, Improvements, Repairs, and Replacements.	Farm.	Fuel, Light, Power, Water, and Cleaning.	Rations.
		£	£	£	£	£	£	£
Avondale (Auckland) ..	1,365	90·0	23·1	10·9	2·6	2·8	8·0	24·3
Kingseat (Papakura) ..	860	75·5	25·8	9·8	1·2	1·9	7·0	26·9
Raventhorpe (Papakura)	237	67·6	13·7	9·1	1·6	0·3	7·9	31·1
Tokanui (Te Awamutu)	801	83·2	22·0	9·9	1·8	7·6	8·4	15·9
Levin Farm (Levin) ..	253	94·8	17·9	22·0	1·8	4·3	16·1	34·5
Porirua	1,309	99·5	27·2	15·4	2·5	2·9	11·7	27·0
Nelson	995	94·0	22·1	11·3	1·1	3·2	10·4	23·8
Seaview (Hokitika) ..	489	111·2	20·4	16·8	3·8	4·3	8·0	27·7
Sunnyside (Christchurch)	1,400	109·0	18·4	10·5	2·0	3·7	9·6	23·2
Seacliff	992	119·4	28·0	15·7	2·5	6·2	11·3	29·4
Head Office (Wellington)	..	1·4	0·1	..	..	..	..	..
Total average cost	8,701	98·4	23·0	12·5	2·1	3·8	9·7	25·2

——	Surgery and Dispensary.	Miscellaneous.	Total Cost per Patient (*).	Receipts. (†).	Net Cost per Patient (†).	Net Cost previous Year.	Decrease in 1949-50.	Increase in 1949-50.
	£	£	£	£	£	£	£	£
Avondale (Auckland) ..	2·4	23·1	187·2	17·7	169·5	162·4	..	7·1
Kingseat (Papakura) ..	1·9	27·2	177·2	19·2	158·0	150·4	..	7·6
Raventhorpe (Papakura)	2·3	27·3	160·9	10·7	150·2	143·0	..	7·2
Tokanui (Te Awamutu)	1·4	21·7	171·9	22·9	149·0	135·0	..	14·0
Levin Farm (Levin) ..	3·1	43·5	238·0	20·4	217·6	216·6	..	1·0
Porirua	2·7	27·9	216·8	19·3	197·5	188·9	..	8·6
Nelson	1·8	19·3	187·0	16·9	170·1	157·1	..	13·0
Seaview (Hokitika) ..	0·6	24·8	217·6	23·3	194·3	179·0	..	15·3
Sunnyside (Christchurch)	2·0	23·8	202·2	21·5	180·7	159·9	..	20·8
Seacliff	3·7	30·9	247·1	27·1	220·0	195·5	..	24·5
Head Office (Wellington)	..	0·6	2·1	..	2·1	2·0	..	0·1
Total average cost	2·2	26·1	203·0	20·4	182·6	169·2	..	13·4

* Cost does not include interest and depreciation on land, buildings, &c. † Receipts from maintenance in Table 16 not included.

REPORT OF THE DIRECTOR, DIVISION OF HOSPITALS

INTRODUCTORY

The major part of the responsibilities of the Hospitals Division is in relation to the activities of Hospital Boards. The expansion in recent years in these activities, together with the increasingly heavy calls made on the public purse, is focusing a great deal of attention on the work of Hospital Boards and, I am aware, is occasioning no little concern to those confronted with the problem of providing the required finances.

Hospitals the world over are subject to constant change in the range and volume of their work. Their varied functions of providing diagnostic and treatment services, of training nurses and other professional workers, and of research are never static. With all the advances that have been made in preventive and curative medicine there is much that is known that has yet to be exploited, and there is, of course, a vast field still to be explored. Apart from the scientific aspects, the development of hospital services, particularly in countries which provide public hospital services on a large scale, and more so in a young country like New Zealand, is profoundly influenced by changing economic conditions and governmental policies on such matters as social medicine, housing, immigration, and industrial development.

The past decade has witnessed, in this Dominion, a very considerable expansion in the hospitals' services and a very considerable change in the range of those services. It saw the inauguration and full development of hospital and allied benefits under the Social Security Act. Much of the expansion in in-patient services and in out-patient services, including laboratory and x-ray services, as well as in district nursing services, is due to the operation of social security benefits. Extensive housing developments in some of the larger centres have also affected demands on accommodation. The rising birth-rate, coupled with the closing-down of private maternity hospitals, has placed additional obligations on Hospital Boards.

The same period witnessed the building of substantial additional hospital accommodation for the treatment of Service patients of the war. Most of this accommodation was designed for later use for the treatment of civilian patients and is now so used, but its siting and type of construction have in some cases created special problems of maintenance. The intensified campaign against tuberculosis has also had, and will continue to have, its effects on the expansion and disposition of bed accommodation.

One of the special difficulties of our hospitals in recent years has been staffing. Boards are not always in a position to curtail their services according to the technical and professional staff available. They must strive to carry on their service to the people notwithstanding serious shortages of staff, and at the same time to increase the facilities for the training of staff and expend considerable effort in the recruitment of trainees. With the competition of expanding secondary industries, the general post-war shortage of labour, and the attractions of other avenues of employment and private practice, staffing has been, and continues to be, a serious problem.

REVIEW OF CHANGES IN PAST TEN YEARS

With the factors just mentioned and with the difficulties of supply and the effects of inflation on rates of remuneration and prices, no decade in the history of our hospital services has seen quite as many large problems as Boards have had to face in the past decade.

I feel, therefore, that the opportunity of this annual report should be taken to attempt a general review of our hospital services, a stocktaking as it were, that may help in the future development of these services upon orderly and economical lines.

For the purposes of the present survey, reference is made to the latest available statistics affecting hospital services, which, with some exceptions, are those for the year ended 31st March, 1949, extracted from the separately published Appendix to the Director-General's annual report. By way of indicating the general trends, the figures for the year ended 31st March, 1940, are given under various headings.

Even in the relatively short period of ten years there have been so many changes affecting the units of calculation that the statistics are of only limited value for comparative purposes. There is a fairly general appreciation of the changing value of the pound, although this is frequently overlooked when comparing carefully computed costs over a period of years. It is not so well recognized, however, that with changes in the technique of diagnosis and treatment, and under the influence of many other factors, the " average in-patient " of ten years ago was a rather different unit from the " average in-patient " of to-day. Again, changes in nursing technique, in the range of nursing duties, and in the organization of nursing staff make the " average nurse " to-day a different unit from that of ten years ago.

Altered methods of compiling data further add to the difficulty of comparison over a period of years and make the figures no more than rough indications.

In the following survey no account is taken of mental hospitals, which are dealt with in the report of the Mental Hygiene Division.

AVAILABLE BEDS

For the year ended 31st March, 1949, the number of hospital beds available was 16,634 (1940, 12,504), equivalent to 9·0 per 1,000 (1940, 7·7 per 1,000) of the Dominion's mean population of 1,851,291 (1940, 1,633,447).

These beds were provided as follows :—

Table 18

	1948–49.	1939–40.
(*a*) By Hospital Boards	13,743	9,436
(*b*) By Health Department	393	303
(*c*) By licensed private hospitals	2,488	2,765
	16,624	12,504

Not all the beds shown as " available " for 1948–49 are in fact correctly so described. By reason of acute shortages of staff (particularly nursing staff) in certain hospitals, nearly 1,000 general beds in all in our public hospitals were closed for the time being. A more recent survey places the number of beds temporarily closed on account of staff shortages at about 850.

The respective numbers of hospitals were :—

Table 19

	1948–49.	1939–40.
(*a*) Hospital Board hospitals	168	122
(*b*) Health Department hospitals	7	6
(*c*) Private hospitals	205	294
	380	422

The distribution by types of bed was as follows :—

	1948–49.		1939–40.	
General—				
Hospital Boards	9,770		6,603	
Health Department	283		213	
Private hospitals	1,813		1,722	
		11,866		8,538
Maternity—				
Hospital Boards	1,527		598	
Health Department	110		90	
Private hospitals	675		1,043	
		2,312		1,731
Tuberculosis: Hospital Boards..	1,692		1,203	
Infectious diseases: Hospital Boards	754		1,032	
		2,446		2,235
		16,624		12,504

The fact that, in the ten years, the number of general beds in private hospitals has increased by so little and the number of maternity beds in private hospitals has fallen considerably reflects the special problems with which licensees of these hospitals have been confronted during that period. The competition of entirely free treatment in public hospitals, rising wage-rates, rising prices, and inability to make their case for permission to charge increased fees for treatment forced many licensees to give up.

Shortages of building labour and materials further materially affected the position, making it difficult to embark on the erection of new private hospitals or the conversion of existing premises for that purpose. That new hospitals are required to conform to new standards has no doubt accentuated this difficulty.

The disposition of available beds and of occupied beds in Hospital Board institutions of the different classes is shown in the following table, which shows also the number of hospitals in each class. General hospitals are allocated to the several classes according to the average number of occupied beds.

Table 20

	1948–49.			1939–40.		
	Number of Hospitals.	Available Beds.	Occupied Beds.	Number of Hospitals.	Available Beds.	Occupied Beds.
General hospitals—						
Over 400 beds	6	3,692	3,042	3	1,959	1,829
200–400 beds	8	2,720	2,099	3	1,010	892
100–200 beds	11	1,947	1,481	7	1,437	1,068
40–100 beds	20	1,814	1,378	23	2,153	1,491
20–40 beds	10	437	260	12	583	358
10–20 beds	8	234	109	8	213	113
Under 10 beds	7	103	38	10	123	50
	70	10,947	8,407	66	7,478	5,801
Special hospitals (including maternity hospitals)	98	2,796	2,018	56	1,958	1,286
	168	13,743	10,425	122	9,436	7,087*

* 1939–40 figures include 114 available beds and 109 occupied beds for tuberculosis patients in the Auckland Infirmary which was not at that time classed as a hospital.

OUT-PATIENT SERVICES

In this phase of public hospital activities we have also witnessed great changes over the past ten years. Almost throughout the history of our hospitals the out-patient services have continued to expand both in the number of patients and in the range of service. The introduction of social security health benefits influenced the position in various ways. The operation of benefits in respect of general practitioner services tended in some degree to reduce the attendances in out-patient departments of the general medical and the minor casualty types ; but against this the fact that specialist and other services provided at public hospitals became free of charge to patients gave rise to greatly increased demands. The past decade has witnessed the very considerable development of specialist clinics of various kinds (tuberculosis, cancer, rheumatism, eye, ear, nose, and throat, obstetric and gynæcological, orthopædic, neurological, cardiological, &c.) : x-ray diagnostic and treatment services, and physiotherapy services for out-patients have also notably increased.

The total number of out-patients of public hospitals for the year 1948–49 was 535,681 and the attendances 1,264,669. The respective totals for 1939–40 were 172,000 and 569,128.

In addition, dental cases and attendances were respectively 26,777 and 63,537 in 1948–49 and 34,023 and 77,581 in 1939–40.

The introduction in 1946 of benefits in respect of laboratory services has also greatly increased the demands on laboratories attached to public hospitals, which provide the major part of laboratory services. In respect of x-ray, physiotherapy, laboratory services, and certain of the specialist medical services the demands still exceed the capacity of many of the departments concerned.

STAFFING

Although closely comparable figures are not available the changed picture of hospital staffing in the past ten years is broadly indicated in the following figures as to establishment of paid staff of public hospitals :—

Table 21

	At 31st March, 1949.	At 31st March, 1940.
Medical (whole-time and part-time)	820	346*
Nursing	7,463	4,156
Other professional and technical staffs	960	381
Indoor domestic	4,461	2,662
Outdoor and maintenance	1,101	520
Miscellaneous	663	264
	15,468	8,329

* In addition, there were at 31st March, 1940, approximately 190 honorary medical staff who were shortly afterwards placed on a paid basis.

Reference has already been made to the special problems that Hospital Boards have had to contend with in relation to staffing during the war and post-war period.

The position in respect of nursing staff is reviewed in the annual report of the Director of the Division of Nursing.

While an abnormal turnover and acute shortages still persist in various other classes, one of our most serious difficulties has been, and is, in regard to physiotherapy staff. It was most acute following the poliomyelitis epidemic, and it is still unfortunately impossible to provide essential physiotherapy for large numbers of patients. The estimated minimum establishment of physiotherapy staff of Hospital Board and Health Department institutions is 188 whereas the number employed is about 115.

The fundamental cause of the shortage of physiotherapists is no doubt the relatively rapid growth in demands and the unavoidable lag in training. There were, however, several other factors. Training was unavoidably costly, and commencing with 1950 general provision has now been made for the granting of bursaries. With the operation of massage benefits under the Social Security Act, private practice has attracted numbers of physiotherapists from hospital staffs. It is understood that some action is being taken to keep payments from the Social Security Fund on a more reasonable basis. At the same time the scales of remuneration of physiotherapists employed in hospitals have recently been substantially improved.

With these special factors have been associated more general factors, the strong competition from other avenues of employment affecting the age group from which trainees are recruited, the high marriage-rate, the attractions of overseas experience, and the difficulty in some centres of securing board and lodging at reasonable cost or of obtaining other living accommodation. There has been some recruitment from overseas, and with the improved salary scales now in force renewed efforts are being made in that direction.

Next to physiotherapy staff, the shortage of certain medical specialist personnel has been the most serious, notably radiologists and pathologists, who also have been drawn to the more lucrative work of private practice, while hospitals continue to have increasing burdens placed on those remaining in the service.

The smaller hospitals (up to 100 beds) in the rural areas are particularly short of junior medical staff, and there are several instances where a medical superintendent in this type of hospital has to carry on single handed and endeavour to supervise all departments, including the attention to an increasing number of out-patients. One reason for this situation is a tendency for junior qualified men to apply for and remain in positions in the larger hospitals until such time as they proceed overseas or into practice instead of accepting positions in the overworked rural hospitals. It would seem not unreasonable to insist that medical bursars should be called upon to give service wherever they are required in their second and third years after qualification.

There is possibly a long period of adjustment ahead until a better balance as between salaried employment and private practice is effected. Many of the difficulties experienced in recruiting and holding staff have been due to the restrictions imposed by economic stabilization. Substantial improvements have already been made in rates of remuneration for medical officers, nurses, physiotherapists, x-ray and laboratory workers, and dietitians. Further improvements for some of these classes are regarded as necessary.

HOSPITAL DISTRICTS

By the amalgamation as from 1st April, 1950, of the six northern hospital districts (Mangonui, Hokianga, Whangaroa, Bay of Islands, Whangarei, and Kaipara) into one district known as the Northland Hospital District, the Dominion has now thirty-seven hospital districts. They range in size from the smallest, Maniototo, with a population of 2,960 and a total maintenance expenditure in 1948–49 of £8,423, to the largest, Auckland, with a population of 366,040 and a total maintenance expenditure in 1948–49 of £1,446,094.

No two Boards are alike in the scope of their services. Only one or two can claim to be self-contained—that is to say, almost all of them must look to other Boards for some kinds of specialist services. Moreover, many parts of the boundaries of our hospital districts are merely nominal, and for many patients there is readier access to a hospital of a neighbouring Board than to a hospital of the patient's own district.

From time to time it is urged that the number of hospital districts should be reduced with a view to providing more suitable administrative areas. The optimum size is one that, while it gives reasonably rapid communication between the principal hospital of the district and the outlying parts of the district, has sufficient population and a large enough main centre to justify a fairly comprehensive range of hospital services,

including the commoner specialties. It should at the same time be an area that lends itself to the integration of preventive and curative services under a strong local administrative authority. The Dominion, it has been suggested, would be better served with about fourteen hospital districts instead of thirty-seven as at present.

Admittedly the smaller districts have some advantages in flexibility of management and in the closer contact of the administrative body with the medical officers, the nurses, and others affording the services, but these advantages can be adequately retained in the larger districts by the establishment of local committees of management as is now provided for in the new Northland district.

FINANCE

The annual returns of Hospital Boards giving details of annual income and expenditure are not received until some months after the end of the financial year, and their checking and tabulation necessarily occupies a further period. It is therefore not possible to make use of the 1949–50 details for the purpose of the present report. However, the following statement (which must be regarded as an estimate) is made up from information accompanying Boards' estimates. It shows the main sources of receipts and the main headings of payments.

For 1949–50 the receipts for both maintenance and capital purposes, in round figures were as follows :—

	£
Credit balances, 1st April, 1949	60,000
From the Social Security Fund in respect of hospital and other benefits	2,575,000
Levies on local authorities	1,503,000
Subsidies from the Consolidated Fund	5,011,000
From other sources (recoveries on account of relief, including age-benefits, bequests, and miscellaneous receipts)	318,000
Total	£9,467,000

Payments for 1949–50 under their main headings were as follows :—

	£	£
(*a*) For maintenance purposes—		
(i) Hospital maintenance	7,333,000	
(ii) Indoor and outdoor relief	248,000	
(iii) Interest on loans	197,000	
(iv) Administration	228,000	
(v) Other items (District Nursing, grants to ambulance associations, subsidies to private hospitals, rents and rates, contributions to National Provident Fund)	448,000	
		8,454,000
(*b*) For capital purposes (excluding loan works)—		
(i) Buildings and equipment	616,000	
(ii) Loan repayments and Sinking Fund instalments	362,000	
		978,000
Credit balances (net) as at 31st March, 1950		35,000
Total		£9,467,000

Loan indebtedness for capital purposes at 31st March, 1949, was £5,283,578, against which there was an amount of £121,756 accrued sinking funds. Most Hospital Board loans are repayable by instalments, hence the relatively small amount in sinking funds.

In 1939–40 the actual receipts of Hospital Boards for both capital and maintenance purposes were under main headings as follows:—

	£
Credit balance (net) as at 1st April, 1939	35,232
Receipts from hospital and maternity benefits and patients' fees	922,858
Levies on local authorities	1,093,098
Subsidies from the Consolidated Fund	1,042,291
From other sources (recoveries on account of relief, including age-benefits, bequests, and miscellaneous receipts)	158,582
	£3,252,061

The actual payments for 1939–40 under main headings were:—

	£	£
(*a*) For maintenance purposes—		
(i) Hospital maintenance	2,072,231	
(ii) Indoor and outdoor relief	194,207	
(iii) Interest on loans (including overdraft)	66,695	
(iv) Administration	115,478	
(v) Other items (District Nursing, grants, subsidies to private hospitals, rents and rates, superannuation, miscellaneous)	184,245	
		2,632,856
(*b*) For capital purposes—		
(i) Buildings and equipment	200,530	
(ii) Loan repayments and Sinking Fund instalments	92,637	
(iii) Other payments	16,401	
		309,568
(*c*) Closing credit balances (net) at 31st March, 1940		309,637
		£3,252,061

Loan indebtedness as at the 31st March, 1940, stood at £2,015,200, against which there was an amount of £113,729 accrued sinking fund.

The whole financial picture is now vastly different from that in 1939–40. On the receipts side the principal sources of finance are now Government subsidies and payments from the Social Security Fund in respect of hospital benefits. Payments by individuals are chiefly in respect of care in old people's homes, and on the hospital side limited to payments in accident cases where damages are recovered, payments for dental treatment, and other services not subject to hospital benefits. Levies on local authorities, being limited to 0·5d. per pound of the rateable capital value, will in future tend to rise only with revaluations, as all Boards are now levying at the maximum rate.

HOSPITAL MAINTENANCE EXPENDITURE

On the expenditure side the most notable increase over the past ten years is under the heading of "hospital maintenance," the principal sub-headings of which are shown in the following table of expenditure (as distinct from payments) for 1948–49 and for 1939–40.

Table 22—Hospital Maintenance Expenditure of Hospital Boards

	1948–49.	1939–40.
	£	£
Provisions	848,535	302,731
Surgery and dispensary	518,520	132,273
Domestic	1,004,248	289,652
Salaries and wages	3,447,156	944,524
Miscellaneous	110,758	32,496
Establishment	416,711	138,685
Total in-patients	6,345,928	1,840,361
Out-patients	495,372	104,310
Dental	40,526	22,654
Total	£6,881,826	£1,967,325
Average number of occupied beds	10,425	6,978
Average cost per occupied bed	£609	£264

Mention has already been made of the more important factors contributing to the increase in hospital expenditure. They include health benefits with a widening range of treatment, the inflationary processes of the war and post-war period, and improved hours and working conditions for nurses and other staff.

We are now experiencing further increases in rates of remuneration and prices, pointing inevitably to further demands on the public funds in respect of the services provided by Hospital Boards.

Under the present system all additional expenditure is borne out of general taxation, and there is no longer the restraining influence of local district or individual responsibility for meeting the cost. It is natural enough that a Board will seek to provide at least as good services for its district and as good conditions and amenities for its staff as any other Board provides. Also of peculiar influence on hospital expenditure is the provision of free treatment so far as patients are concerned. In very many cases the degree of necessity for this or that x-ray, laboratory, or other examination procedure, or for this or that treatment, is a most uncertain quantity. Apart from the uncertainties of professional diagnosis, there are extraneous factors, such as home and family conditions, which have a direct bearing on the course and duration of treatment, but to a degree which in many cases is difficult of assessment.

It is to these uncertainties in the medical and the medico-social field that we may attribute under present conditions much of the growth in demands on medical, hospital, and allied services. So long as these services are devoid of financial responsibility of a direct nature, the continued upward spiralling of the expenditure will be difficult to check.

While the principle of compulsory insurance against the financial hazards of illness is now popularly established, one cannot but feel that, as with other forms of insurance, an element of "franchise" should be retained as a safeguard and that the "insured" should be required to carry some of the risk. If the limitations of hospital administration are adequately recognized, there may, for instance, be a case for imposing a moderate "maintenance" charge on patients for board and lodging in hospital. If the great advantages of local administrative responsibility are to be preserved and dangers of

bureaucratic central control avoided, there may also be a case for requiring local hospital areas to bear a proportion of all the costs, though it does not follow that the old basis of hospital rating with its several inequalities would be reverted to.

CAPITAL EXPENDITURE

Reference was made in the Division's annual report for 1948–49 to the great range and magnitude of the capital expenditure programmes of Hospital Boards, which continue to make heavy calls on the Division's staff in the examination of proposals and plans. It has been for some time recognized that much of the efforts of Boards and their officers, as well as of the Department's staff, in the preparation of proposals for extensive new building and in planning is being undertaken prematurely in the face of the difficult building situation that exists.

Estimates of capital expenditure from year to year have been far above the expenditure actually incurred, as the following figures show :—

Table 23—Capital Expenditure of Hospital Boards

	Out of Loan Moneys.		Out of Moneys Other Than Loan.	
	Estimated at Beginning of Year.	Actual.	Estimated at Beginning of Year.	Actual.
	£	£	£	£
1945–46	1,720,000	659,189	705,073	437,299
1946–47	1,867,517	409,757	731,911	506,524
1947–48	3,248,389	969,670	1,054,284	554,507
1948–49	2,548,014	568,460	1,291,868	678,605
1949–50	2,235,191	537,000*	1,556,647	616,000*

*Provisional.

The increase in 1948–49 in the actual expenditure out of moneys other than loan is mainly accounted for by the modified policy adopted in 1948 of financing out of levy and subsidy (instead of out of loan) any new works up to as high as £15,000 for a metropolitan Board and up to £10,000 for any other Board.

Of the total capital expenditure of £1,153,000 for 1949–50, it is estimated that £800,000 represents expenditure on buildings, the remainder being mainly plant, equipment, and land. Of that £800,000, about £180,000 was in respect of works completed during the year and £620,000 in respect of works still under construction at the end of the year.

In reviewing capital expenditure over recent years, one is impressed with its relatively steady outflow as compared with maintenance expenditure. Having regard to the increase in building costs, the annual additions to the actual fabric of our hospital buildings shows a decline, though an improvement in the supply position for equipment, particularly from overseas, is allowing some of our accumulated shortages in that category to be overtaken.

The fact that gives the most cause for concern is that Hospital Boards as a whole already have a considerable volume of approvals for capital expenditure which will be undertaken as circumstances allow. The amount shown above as estimated to be spent is mostly in respect of works for which the necessary approvals have been given. A recent survey shows that there are hospital buildings of the estimated cost of £4,100,000 for which sketch plans are being prepared. Other hospital buildings for which working

drawings are being prepared involve a further £4,500,000. The list of proposals consented to is being steadily augmented. For 1949–50, consents issued in respect of buildings covered an estimated expenditure of £1,400,000. Beyond that again is a list of projects involving about £20,000,000 of expenditure, some of it absolutely essential, and most of it unquestionably desirable, but impossible of completion for many years even if the architectural, building, and supply positions show marked improvement.

The whole situation calls for review, which the Department has already commenced. A review of many of the proposals which have been approved but in respect of which commitments have not been made is also being undertaken. Considerable progress has already been made towards rational programming and planning. A number of districts have already been visited by officers of the Division for the purpose of settling with Boards concerned a definite plan of development. These plans are intended not only to provide a guide to the future development within any given hospital, but also to relate that development to other hospitals within the regional area.

LEGISLATION

No amendments were made to the Hospitals Act during the year under review. The Hospital Boards' Association had urged the consolidation of the Act in view of the many amendments that have been made since the principal Act was passed in 1926, and this request has received approval. It is hoped that the legislative programme will permit the consolidation to be made during the current parliamentary session.

HOSPITAL EMPLOYMENT REGULATIONS

The only regulations issued during the past year which affected the remuneration and conditions of employment of Hospital Board employees were those dealing with whole-time clerical officers. They are contained in the Hospital Employment Regulations 1948, Amendment No. 8 (Serial number 1949/161).

Considerable progress was also made in a review of the remuneration and conditions of employment of nurses, physiotherapists, and whole-time medical officers. The remuneration and conditions of employment of part-time medical superintendents, who up to this time had not been brought within the ambit of the Hospital Employment Regulations, were also considered in detail. Amendments to the principal regulations dealing with these matters have been enacted since 31st March, 1950.

INSPECTIONS

It is unfortunately again necessary to report that during the year regular inspections on the medical, engineering, architectural, and administrative sides were not possible on a sufficient scale, though in recent months there has been a definite improvement. The Division has recently been strengthened by the appointment of an Assistant Director (Dr. G. L. McLeod), and the appointment of another medical officer is contemplated. Additions on the architectural and executive sides are also imminent.

On the nursing side, as will be seen from the report of the Nursing Division, the inspectional work continues to be carried out on a comprehensive scale. Similarly, the dietetic side of hospitals is reasonably adequately inspected. The three officers on this work have additional advisory duties in relation to food services of other Government institutions and also in relation to nutrition, education, and publicity.

CONCLUSION

From the substance of this report it should be obvious that the particular concern of the Department and of Hospital Boards is the increasing expenditure on public hospitals. An expenditure of £8,500,000 a year for maintenance and £1,000,000 for capital purposes represents a heavy demand on our relatively small population. While

most of this expenditure is unavoidable, there is, it must be recognized, a good deal of emotion and sentiment that is inseparable from the development and management of hospitals. Under a system of easy finance, therefore, the control of expenditure presents recurring problems of great difficulty. It calls for concerted efforts on the part of all to arouse and maintain adequate "cost consciousness."

In the past there has been, with the best of intentions, a vast amount of time and money spent on preparing plans to develop hospitals in a manner consistent with modern standards and in keeping with modern advances in medical knowledge. For various reasons many of these plans have never been brought to fruition, and in consequence Hospital Boards have felt frustrated in their efforts. It is only natural for a Board and its officers to want to develop their institution so that it will be able to give the best possible service to the patients who seek its assistance, and the Department has every sympathy with that aim, but all must join in avoiding waste and overlapping.

The Hospitals Division of the Department has now embarked upon a survey of the activities of all hospitals in the Dominion with a view to differentiating between what is absolutely essential and urgent and what might be described as "ideal." It hopes to obtain the necessary information by having a much closer contact with hospitals than has been possible in the past, and for this reason alone the recent and proposed additions to the Divisional staff, both medical and lay, are particularly welcome.

With the establishment of the Medical Statistics Branch of the Department, it is hoped to present statistics from year to year showing the results in our hospitals of treatment of the more common diseases. Thus a picture of what is being achieved on the curative side in our hospitals can be reconciled with the work of the preventive side of the Department's activities.

As the newly appointed Director of the Hospitals Division, I look forward to pleasant associations with all Hospital Boards and hospital officers. My thanks are particularly due to that small band of long-experienced officers of the Division, without whose help the preparation of the material for this report would not have been possible.

C. A. Taylor,
Director, Division of Hospitals.

REPORT OF THE DIRECTOR, DIVISION OF NURSING

APPOINTMENTS

With the retirement of Miss Lambie at the end of 1949, the present writer took up duty as Director of the Division, while Miss F. Cameron, who for ten years had been Instructor in Public Health Nursing and Social Work at the Post-graduate School, was appointed to the newly created position of Deputy Director.

The writer was granted four months' leave in 1949 for the purpose of attending as a delegate the Interim Conference of the International Council of Nurses in Stockholm. During this time she observed hospitals and public health nursing in Finland, Denmark, Belgium, England, Scotland, and Australia. Matters connected with registration of nurses and reciprocity were also discussed in Australia.

The same problems are affecting nursing in all countries: the chief of these are (1) the determination of the proper task of a nurse, (2) improved methods and content of nurses' training, and (3) meeting the demand for nurses. Research and discussions are taking place in many countries on these matters, and much of the time of the Conference at Stockholm was devoted to them.

The control and organization of nursing under a Division of the Department of Health is a matter of much interest to many overseas countries, where similar appointments are now being made. The co-ordination which exists in New Zealand between the training, registration, nursing service, and supervision of hospitals is closer and more

satisfactory than in any country with the exception perhaps of Sweden and Finland. The organization in New Zealand is good, and is a means of ensuring good standards of training and service which have been a feature of New Zealand nursing in the past.

STAFFING OF HOSPITALS

Increasing difficulty is being experienced in regard to the staffing of some of the training-schools and many of the small country hospitals and sanatoria. Relatively, nursing is understaffed in no greater degree than other occupations, while if we take block and study day systems of training and other factors into consideration, it has attracted more than a fair share of girls during this period of extreme shortage of woman-power. Because of the urgent needs of patients and preventive work, however, it is imperative that the nursing strength be kept as high as possible, and that every means be employed of recruiting pupil-nurses to all branches of nursing work.

The following table of statistics covering the institutions which are training-schools in general nursing shows the relation between nursing staff and occupied beds :—

Table 24

Year.	Average Occupied Bed Rate.	Total Nursing Staff.	Ratio of Nursing Staff to Average Occupied Bed Rate.	Registered Nurses.	Student Nurses.	Ratio of Registered Nursing Staff to Students.
1926	3,691	1,573	1 : 2·3	400	1,173	1 : 2·9
1933	4,059·3	1,967	1 : 2	555	1,412	1 : 2·5
1938	4,911·2	2,710	1 : 1·8	725	1,985	1 : 2·7
1943	6,808·5	4,146	1 : 1·6	1,172	2,974	1 : 2·5
1944	7,603·2	4,490	1 : 1·7	1,366	3,124	1 : 2·28
1945	8,493	4,890	1 : 1·7	1,500	3,390	1 : 2·26
1946	8,550	4,627	1 : 1·8	1,347	2,280	1 : 2·4
1947	7,812	4,402	1 : 1·7	1,199	3,203	1 : 2·6
1948	7,352·5	4,359	1 : 1·6	1,221	3,138	1 : 2·5
1949	7,667·6	4,745	1 : 1·6	1,428	3,317	1 : 2·3
1950	7,804·3	4,788	1 : 1·6	1,451	3,337	1 : 2·3

When we compare the figures for 1950 with those for 1926, it is seen that (1) the average occupied bed rate has more than doubled, while the total nursing staff has more than trebled ; (2) the proportion of nursing staff to occupied beds has increased from a ratio of 1 : 2·3 to a ratio of 1 : 1·6 ; and (3) the proportion of registered nurses to students has increased from a ratio of 1 : 2·9 to a ratio of 1 : 2·3.

The greater demand for nurses arises not only from the increase in the number of occupied hospital beds ; other factors are an increase in the public health nursing services, an increase in the proportion of the population aged sixty and over (27·95 per 1,000 population in 1946, as against 7·84 in 1926), the adoption of shorter working-hours for nurses, and the demands of the block and study day systems of training. At the same time there is an increase in the demand for the services of young women in other occupations, while the entrants to the nursing profession to-day are being drawn from an age group which corresponds with the years when the birth-rate was low. From the birth-rate figures the proportion of persons who attain the age of eighteen may be expected to be lowest from 1952 to 1954, after which there should be a steady increase. Since the war a considerable number of New-Zealand-trained nurses have proceeded overseas, and the number known to have left New Zealand exceeds by some hundreds the number of overseas-trained nurses who have registered in this country during the same years.

While the present shortage of nurses persists it is important to ensure that every registered nurse who can do so is encouraged to continue practising nursing, even if in a part-time capacity. It is also incumbent upon all concerned in the administrative side of hospital work to give consideration to every possible means for the better use of available "nurse-power," as by measures to reduce time lost through minor ailments, the simplification of elaborate procedures, improvements in equipment, and the reduction to a minimum of the demands upon the nursing staff for the performance of miscellaneous duties which are not strictly nursing.

IMMIGRATION

The allocation of immigrants is still being carried out by the Division, and this entails considerable time because of the many requests for transfer.

During the year ended 31st March, 1950, 133 registered nurses, 46 pupil-nurses, and 22 maternity trainees have come out to New Zealand under the Government immigration scheme. Several of the registered nurses married immediately after arrival, some carrying on with part-time nursing duties, whilst others repaid their fares and have not continued with nursing.

A number of registered nurses appear to have no desire to nurse in one particular hospital or continue in a special branch of nursing, but want to travel from one hospital to another seeing the country. As a result, they are not very satisfactory in our training-schools.

The majority of these nurses, however, have worked conscientiously and well and have helped considerably in the staffing of our hospitals.

Of the untrained staff, approximately 35 pupil-nurses and 14 maternity nurses have continued with their training, the remainder going to other employment, such as domestic or factory work.

RECRUITMENT OF NURSES

The recruitment campaign organized by the combined committee of the Hospital Boards' Association and the Department of Health was continued during the year.

Press advertisements in the leading newspapers brought in the usual inquiries for nursing literature. Over 4,000 letters and booklets have now been sent out in response to these inquiries, with a wide distribution of nursing knowledge throughout the country. Matrons of training-schools are sent regular lists of names and addresses of inquirers from their own areas for follow-up action, girls are invited to visit the hospital or to attend nursing functions with their parents, and are given talks by members of the nursing staff in their schools.

A new film was prepared to follow the one on the nurse in training; this outlined the various fields of nursing work available for the registered nurse, and included district nursing, industrial nursing, tropical nursing, and obstetrics, as well as the various openings for the qualified nurse in hospitals. The booklet "What Nursing Holds for You" was revised and reprinted with attractive illustrations.

It is felt that, considering the limited number of girls available in the 18–20 age group to-day, the recruitment campaign brings a fair share of these girls into the nursing service.

PRE-NURSING COURSE

During 1949 seven hospitals gave this course to groups of school-girls. Since its initiation approximately 50 girls have successfully completed the course, with an endorsed School Certificate to this effect. Of these, 15 have commenced training with a concession permitting them to sit the Preliminary State Examination at an earlier date than is usual for pupil-nurses entering hospital. More girls will commence training as they become old enough.

The interest and enthusiasm engendered in the schools where pupils are taking the course has not only stimulated recruitment, but has also brought about a better understanding of nursing as a career in the minds of teachers as well as pupils.

HEALTH OF NURSES

The work of the special Medical Research Officer has continued. There has been a marked reduction in the number of tuberculosis cases notified, to which the more intensive supervision and interest in each hospital have certainly contributed. Vaccination of nurses with B.C.G. has been successfully introduced into several hospitals, and will be extended as a greater number of approved vaccinators become available for the work. Vaccination has not been in operation for a sufficient length of time to have contributed to the lowered incidence quoted above. Factors affecting nurses' health which must still be given attention are (1) the sequence of duties, (2) efficient aseptic techniques, (3) attention to convalescence from minor ailments and investigation of the cause, and (4) reduction of preventable ailments and injuries. The Nursing Education Committee of the New Zealand Registered Nurses' Association carried out research during the year into preventable injuries, and 432 were listed. When the total number of nursing days lost in this way is calculated, the value of a campaign for prevention is realized.

POST-GRADUATE SCHOOL

Miss Barbara Sumner has been appointed Principal of the school and will be in charge of the public health course. Miss Alice Reid has been appointed Nurse Instructor, and will be in charge of the courses in hospital and nursing school administration.

The number of students attending the Post-graduate School was 54, the decrease from the previous year being due to fewer nurses applying for rehabilitation grants. There was 1 student from India and 1 from Australia.

The New Zealand Registered Nurses' Association granted a bursary for a nurse to take the industrial nursing course at the Post-graduate School.

At the end of 1949 a hostel was purchased which will house 26 students and which will prove a boon, as students in the past have had difficulty in obtaining board.

PUBLIC HEALTH NURSING

Staff changes have been frequent during the year, as many district health nurses have been granted leave of absence in order to further their experience overseas. With the general shortage of registered nurses, the resources have been taxed at times to enable an adequate district nursing staff to be maintained.

There have also been some changes in the Nurse Inspector staff, due to retirements.

A promising development during the past year has been the establishment in certain rural areas of a system whereby a neighbouring medical practitioner holds regular diagnostic clinics in co-operation with the public health nurse concerned. Not only have the areas concerned been benefited by bringing to them medical advice which formerly was difficult to obtain, but the nurse herself has also been assisted in her duties in that she has available more complete and more accurate information on which to work. As part of this system the public health nurse "screens" the majority of the patients attending the clinic, attending to the minor cases herself, and only referring those which are doubtful or which are beyond her ability to treat.

There has been an increase in the work carried out by district health nurses during the year. The following table gives details of this work, but owing to an alteration in the method of recording this data these figures are not directly comparable with those for the previous year. It is apparent that, especially in rural areas, a completely generalized nursing service is the one which is most suitable in this country.

Table 25—Work of District Health Nurses

	Year Ended 31st March, 1950.	
	Maori.	European.
School work—		
Schools visited with S.M.O.	80	1,988
Schools visited without S.M.O.	3,244	13,836
Children prepared for examination	9,034	62,092
Children examined by nurse	85,431	129,395
Children taken to clinic	925	580
Visits to homes of school-children	27,675	26,882
Pre-school children seen at home	31,248	16,152
Pre-school children seen at clinic	2,189	3,357
Children seen in institutions and orphanages	827	7,250
Tuberculosis control—		
New cases seen (first time only)	455	1,101
Homes visited	15,917	18,225
Contacts seen—		
Adults	15,523	12,341
Children	22,737	10,749
Cases taken to clinics	4,373	2,112
Maternal and infant welfare—		
Ante-natal cases seen for first time during pregnancy	2,212	568
Visits to ante-natal cases	6,960	2,121
Confinements attended	96	17
Puerperium—		
Cases	671	165
Visits	1,309	138
Post-natal cases seen (2–8 weeks)	3,208	936
Infants seen up to one year (first time only)	6,209	2,180
Visits to homes of infants	48,132	31,749
Total infants seen at home	53,314	24,514
Total infants seen at clinics	5,315	19,728
Homes visited for any purpose	111,955	104,623
Cases: Social Welfare	3,747	2,336
Social hygiene visits	1,892	1,298
Health talks given—		
To school-children	1,223	4,881
To other groups (including clinics)	313	642
Domiciliary nursing—		
Total new cases referred from—		
Hospital	1,339	
Private practitioner	3,211	
Patient's own home	21,252	
Total cases seen—		
At nurse's centre	33,652	
At patient's home	53,210	
Diphtheria immunization—		
Injections given by nurse	28,186	
Cases completed by nurse	17,972	
Total N.A.B. injections given	1,145	
Total bismuth injections given	913	
Total T.A.B. injections given	25,950	

DISTRICT NURSING

The number of District Nurses employed by Hospital Boards shows a slight increase in comparison with last year. Though the number of patients attended is fewer by about 1,000, the number of visits to patients' homes is increased by 14,000.

The following table gives a summary of the year's work and compares it with that of the previous year:

Table 26

	Year Ended 31st March, 1950.	Year Ended 31st March, 1949.
Number of nurses—		
North Island	76	78
South Island	50	45
Total	126	123
Total number of new cases referred from—		
Hospital	3,466	3,378
Private practitioners	7,600	6,996
Patient's own home	9,053	11,999
Total number of cases, including old and new cases—		
Nurses' centre	8,184	9,366
Patients' own home	46,778	46,660
Total number of visits (includes new and old cases)—		
Nurses' centre	17,178	20,292
Patients' own home	295,699	281,633

SOUTH PACIFIC ISLANDS NURSING SERVICE

In June a visit to the islands was made by the former Director of the Division, who also attended a meeting of the South Pacific Health Board.

This Service is feeling the repercussions of the general shortage of nurses, and it is not easy to maintain staffs at the optimum level. There is an invaluable opportunity for additional experience to be gained from a period of service in the islands, but this fact is not appreciated to its full extent by the majority of our nurses.

DECORATIONS

During the past year His Majesty the King was graciously pleased to confer the following honours on members of the nursing profession:—

Miss M. I. Lambie was promoted from O.B.E. to C.B.E.
Miss M. E. Anderson, O.B.E.
Miss M. E. O'Shea, M.B.E.
Miss C. Smedley, M.B.E.
Mrs. E. W. Pritchard, M.B.E.
Mrs. I. C. Wilkie, M.B.E.
Miss I. G. Owen, M.B.E.
Miss S. M. Beresford, M.B.E.
Miss P. I. Johnston, A.R.R.C.

E. R. Bridges,
Director, Division of Nursing.

REPORT OF THE DIRECTOR, DIVISION OF CHILD HYGIENE

The programme for the health supervision of children was carried out by Medical Officers and District Nurses during the year, and though the work of the Division is handicapped by shortage of medical staff, 89,521 European primary-school children were examined and 8,859 Maori primary-school children. This represents approximately 32 per cent. of the European primary-school children and 48 per cent. of the Maori primary-school children. In addition, 12,405 pre-school children were examined and 3,127 secondary-school children, 274 of whom were Maoris. A large proportion also of the Correspondence School children were examined in their homes.

MEDICAL EXAMINATION OF PRIMARY-SCHOOL CHILDREN

The record of the medical examination of primary-school children is given in the following table. As little change is shown under most headings as compared with figures recorded in previous years, there is no need to comment in most cases.

An improvement in the nutrition of primary-school children was noted last year, and it is pleasing to record again a further improvement this year. During the war years there had been a quite definite deterioration in the nutritional state of school-children. The percentage showing subnormal nutrition rose from 4·37 European and 3·41 Maori in 1939 to 9·49 European and 7·94 Maori in 1945. There has been a steady improvement since then, especially marked over the past two years, and the percentages of children showing subnormal nutrition is now 4·59 in Europeans and 5·71 in Maoris. Apart from the recorded figures, Medical Officers of Health in their reports have remarked on the improved nutritional state of school-children.

The figures in relation to posture, on the other hand, give rise to definite cause for concern. Whilst gross postural defects have remained at a constant level of approximately 3 per cent., slight postural defects have shown a steady increase from 27·51 per cent. in 1945 to 41·60 per cent. in 1949, and a number of Medical Officers have remarked on this feature in their annual reports. The position, I think, justifies a doubt as to whether all is well with the physical training of school-children, and is of sufficient concern, I think, to call for a special effort from parents, teachers, and physical instructors.

The incidence of goitre calls for special mention, as it indicates a gratifying improvement on the previous position. In 1921 Hercus and Baker showed that of 14,916 children examined in Canterbury, 61 per cent. had some evidence of goitre. In 1925, of 97,561 school-children examined throughout New Zealand in the ordinary course of school medical examinations, 24·15 per cent. were affected. In 1924 iodized salt was introduced in New Zealand containing potassium iodide in the proportion of 1 in 250,000. In the first five years goitre incidence showed a considerable improvement, a reduction from 24·15 per cent. to 13·97 per cent. in 1929. During the next ten years there was no improvement. Indeed, in 1935 there were 19·86 per cent. of the school-children examined showing evidence of goitre, and in 1939 the figure was 13·28 per cent. In October, 1939, the proportion of potassium iodide was increased to 1 in 20,000, and, in addition, the educational campaign stressed the need for using iodized salt. Since then there has been a marked improvement. Figures for the war years are not available, but in the past four years there has been a steady and marked improvement from 11·09 per cent. in 1945 to 2·45 per cent., the best figure for goitre yet recorded in New Zealand, and of this 2·45 per cent., 2·14 per cent. are classified as incipient, 0·30 per cent. as small, and 0·01 per cent. as medium or large. This presents a very pleasing picture when compared with that which obtained fifteen years ago, when, even to the casual observer, in some of our schools a great proportion of children had visible enlargement of the thyroid gland. These figures, taken from the whole of New Zealand, tend, of course, to mask the position in goitrous areas, and there is evidence that in some of these areas the position, though vastly improved, is not yet entirely satisfactory. The success that has rewarded past efforts, however, gives promise that the answer to this question is the exhibition of iodine in the proper quantity, and this can surely be achieved.

Table 27.—The Medical State of Primary-school Children

	European.		Maori.	
	Number.	Percentage.	Number.	Percentage.
Number of children examined	89,521	..	8,859	..
Number of children found to have defects	28,239	31·54	3,478	39·26
Number with defects other than dental	24,094	26·91	2,689	30·35
Children showing evidence of—				
Subnormal nutrition	4,089	4·59	507	5·71
Skin-diseases	1,621	1·81	902	10·18
Heart and lungs (European, 56,503; Maori, 2,726)—				
Heart—				
Organic disease	201	0·35	19	0·06
Functional disease	666	1·17	45	0·16
Respiratory disease	411	0·72	83	0·30
Posture—				
Slight impairment	37,238	41·60	2,586	29·19
Gross defect	2,772	3·09	181	2·04
Deformities of trunk and chest	1,215	1·36	124	1·4
Mouth—				
Defect of jaw or palate	671	0·75	26	0·29
Dental caries	6,595	7·37	1,233	13·91
Extractions of permanent teeth	528	0·59	42	0·47
Fillings	72,765	81·28	5,976	67·45
Perfect sets of teeth	4,693	5·24	851	9·6
Gums: Gingivitis or pyorrhœa	413	0·46	143	1·6
Nose and throat—				
Nasal obstruction	3,280	3·66	215	2·42
Enlarged tonsils	8,872	9·91	885	9·98
Goitre—				
Incipient	1,922	2·14	155	1·74
Small	272	0·30	11	0·12
Medium to large	8	0·008	1	0·01
Total amount of goitre	2,202	2·45	167	1·87
Eye—				
External eye-disease	449	0·50	30	0·33
Squints	307	0·34	22	0·24
Defective vision—				
Uncorrected	1,928	2·15	230	2·59
Corrected	1,555	1·74	56	0·63
Ear—				
Otorrhœa	142	0·16	114	1·28
Defective hearing	437	0·47	85	0·96
Defective speech	411	0·45	18	0·20
Mental—				
Retardate	152	0·17	19	0·21
Feeblemindedness	17	0·01	2	0·02
Epilepsy	17	0·01	2	0·02
Nervous defects	185	0·21	13	0·14
Phimosis	53	0·06	8	0·90
Undescended testicles	280	0·31	31	0·35
Number of parents present at medical examination	28,558	..	980	..

MEDICAL EXAMINATION OF PRE-SCHOOL CHILDREN

The medical examination of pre-school children has been still further extended, and 12,405 children were examined during the year. Although this represents a decided improvement, there are still only a small percentage of the total pre-school population receiving this service. Medical Officers report that mothers are showing an increasing interest in these examinations and are attentive listeners to anything concerning the welfare of their children. That there is need for dissemination of knowledge is shown

by the high percentage of bad food habits, which is reflected in the high percentage of children suffering from subnormal nutrition, 10·76 per cent. There is also reported an increase in deformities of the feet and legs, chiefly flat feet and knock knees. Nearly 13 per cent. of the pre-school children examined show some degree of flat feet. Though this deformity does not appear to persist, it is a matter requiring further careful investigation. Apart from these two factors, Medical Officers of Health report that the state of health of pre-school children is, on the whole, good. There is a definite improvement in noses, throats, teeth, gums, and skin. It is recognized, however, that in this particular field a great deal can be accomplished, and it is hoped that sufficient medical staff will soon become available so that this service may be extended to as many pre-school children as possible. It is considered that at this age defects and deformities can be best corrected, and good habits substituted for bad. "As the twig is bent, so is the tree inclined."

I wish to record the Department's appreciation of the co-operation received from the Plunket Society in connection with the pre-school clinics held at Plunket rooms. A great many Medical Officers of Health speak highly of the happy relationship that exists between Plunket nurses and themselves. Figures relating to pre-school examinations are given in the following table:—

Table 28—The Medical State of Pre-school Children

	Number.	Per Cent.
Number of children seen	12,405	..
Defects—		
Uncleanliness	193	1·5
Subnormal nutrition	1,336	10·76
Protuberant abdomen	25	0·20
Posture defective	378	3·05
Deformities—		
Chest	167	1·35
Legs	1,063	8·56
Feet	1,602	12·91
Skin-disease	469	3·78
Heart	176	1·42
Lungs	105	0·85
Dental—		
Gums and soft tissue	56	0·45
Dental caries	989	7·97
Nose and throat—		
Adenoids	403	3·25
Tonsils	536	4·08
Goitre	89	0·72
Eyes—		
External disease	154	1·24
Defective vision	53	0·43
Ears—		
Otorrhœa	3	0·02
Deafness	32	0·26
Phimosis	59	0·48
Undescended testicles	160	1·29
Hernia	72	0·58
Habit abnormalities—		
Bad food habits	1,183	9·54
Other bad habits	575	4·64
Bowel action abnormality	162	1·31
Enuresis	654	5·27
Insufficient daytime rest	376	3·03
Insufficient sleep	449	3·62

THE MEDICAL STATE OF SECONDARY-SCHOOL CHILDREN

The medical examination of secondary-school children is now well established. Principals and staffs of colleges, and parents of children, speak highly of the value of this service. Children themselves are also appreciative and show a keen interest in their physical condition. The general standard of health is good, and it is possible in these examinations to do a great deal of good by correcting minor defects which, if not remedied, might lead to more serious trouble in later years. Children of the School Certificate year only are examined at present, but it is hoped to extend this service to children of the other years as staff becomes available. During the past year, 3,127 secondary-school children were examined, of whom 274 were Maoris.

Mantoux testing was carried out for a number of secondary-school children; all positive reactors were x-rayed, and a minority referred to the chest clinic for serial x-rays and specialist supervision. The age of children tested was between twelve and nineteen years, and the positive reactors averaged 17 per cent.

IMMUNIZATION AGAINST DISEASE

Whooping-cough.—Departmental Medical Officers immunize on request only babies between the ages of three months and two years. During the year 5,452 complete courses of whooping-cough vaccine were given.

Typhoid Fever.—Maori children attending primary schools were vaccinated early in the year with triple vaccine against typhoid and paratyphoid fevers. During the year 18,059 of these vaccinations were done by District Nurses.

Diphtheria.—Departmental nurses and Medical Officers carried out anti-diphtheria immunizations to a total of 17,796 complete courses of prophylactic.

Table 29—Diphtheria Immunization

Health District.	Babies, 3 Months. to 1 Year.	Pre-school, 1 up to 5 Years.	School, 5 up to 10 Years.	School, 10 up to 15 Years.	Total.
North Auckland	1,437	363	82	1	1,883
Central Auckland and Thames-Tauranga	872	403	63	..	1,338
South Auckland	866	888	171	13	1,938
East Cape	428	787	149	..	1,364
Taranaki	770	900	112	1	1,783
Wellington - Hawke's Bay ..	672	388	40	24	1,124
Central Wellington	1,517	946	487	4	2,954
Nelson-Marlborough	294	224	28	..	546
Christchurch - West Coast ..	569	1,147	640	3	2,359
Timaru	383	166	8	5	562
Dunedin	688	129	58	1	876
Southland	239	663	167	..	1,069
Totals	7,935	7,004	2,005	52	17,796

This table does not give a complete picture of the state of artificial immunity in New Zealand, as private practitioners are doing an increasing amount of this work and are failing as a body to keep the Department fully informed of numbers immunized. From those returns submitted to the Department, however, the number of immunizations carried out by private practitioners was 12,335; thus 30,131 complete immunizations are recorded as having been carried out during the period under review.

CORRESPONDENCE SCHOOL PUPILS

School-children who for health reasons are unable to attend established schools and are enrolled with the Correspondence School were visited and inspected by Medical Officers during the year, a service which has been much appreciated by mothers and guardians of such children. In many cases it was found possible to recommend the return of such children to school, thus ensuring that fit children were not unnecessarily kept from resuming normal school work.

MILK-IN-SCHOOLS SCHEME

The Milk-in-schools Scheme continued to operate to the same extent as in the previous year.

Unfortunately one major distribution scheme, that in Invercargill, is still out of operation because of continued contract difficulties.

L. S. Davis,
Director, Division of Child Hygiene.

REPORT OF THE DIRECTOR, DIVISION OF DENTAL HYGIENE

INTRODUCTION

Notable events occurring during the year were the visits to New Zealand of a Dental Mission from the United Kingdom Government, and also of a representative of the American Dental Association for the purpose of studying the school dental nurse system. In addition, another American visited this country on a World Health Organization fellowship for the same purpose. These visits, following so closely on that of the Australian Government delegation the previous year, are noteworthy as showing the interest that is taken overseas in the unique dental services in operation in this country.

Staffing continues to remain a very pressing problem. Not only are the field and administrative staffs short in numbers, but resignations have left the teaching establishment in Wellington sadly depleted, particularly at the dental officer level. The position, generally, is serious. At the dental nurse level, the staffing difficulties are due to the unprecedented increase in the school population as the result of the high birth-rate. Welcome assistance has been forthcoming from ex dental nurses who responded to an appeal to rejoin the Service for either full- or part-time work.

With the willing and much appreciated co-operation of the dental profession, it has been possible to arrange for the older patients at school dental clinics to be transferred to private dental practitioners to have their treatment continued under social security. This arrangement has enabled the school dental nurses to concentrate on the younger age groups. This, however, can only be a temporary measure of relief for the field staff, as the school population is continuing its upward trend, and more dental nurses must be obtained to keep pace with the volume of work.

To assist in lowering the amount of operative treatment required, a full programme of dental health education is maintained, as the success of the clinical side of dental care is only assured through adequate home care. During the year preparations have been made for the introduction into the school dental service of sodium fluoride treatment. This is a public health measure from which, after a priod of years when all patients have been included, success is expected. Experiments both in New Zealand and abroad have shown that when applied at certain specified ages, as much as 40 per cent. reduction in new dental decay may result, and should this prove to be the case when applied on a Dominion-wide basis, the results will reflect themselves not only in a bettering of the nation's dental health, but also in a lowering of the cost for operative treatment.

STAFF

As at the 31st March, 1950, the staff of the Dental Division numbered 818, comprising 47 dental officers, 2 matrons, 23 dental nurse inspectors and dental tutor sisters, 514 school dental nurses (including 32 part-time and 28 on extended leave), 203 student dental nurses, 28 dental attendants, and 1 technician.

Although there is a slight increase on last year's figure actually the shortage of trained personnel is acute.

It has been estimated that by 1954 an increase of some 300 dental nurses will be required to cope with the increased school population and restore normal treatment. As the output from the existing Training School is limited, additional training facilities must be created if this number is to be attained. There is also a serious shortage of experienced dental officers for administrative and teaching duties.

An advertising campaign was undertaken during the year, one phase being conducted through the press, and the other through personal visits by selected school dental nurses to girls' secondary schools. The campaign met with fair success only, and it is clear that if increased student dental nurses are to be found, a continued intensive campaign will be necessary.

February, 1950, marked the retirement of Miss C. Hooper from the position of Matron of the Dominion Training School for Dental Nurses after thirteen years' service in that capacity. Miss Hooper filled the position with distinction and ability.

There has been a very gratifying response from ex dental nurses to the Department's appeal to them to rejoin the Service, and their assistance during this difficult period is most valuable.

SCHOOL DENTAL SERVICE

The following are the statistics relating to the work of the Service for the year ending 31st March, 1950. The previous year's figures are in parentheses :—

Table 30

Additional treatment centres	48	(32)
Total number of treatment centres	556	(508)
Staff (this number includes 203 student dental nurses in training)	818	(759)
Number of children under regular treatment	226,636	(235,746)
Number of schools receiving treatment	2,270	(2,333)
Total number of operations	1,910,139	(1,674,125)
Reparative fillings in both permanent and deciduous teeth (included in above figure)	1,239,379	(1,045,191)
Preventive fillings in both permanent and deciduous teeth (included in above figure)	62,461	(94,538)

As a result of the arrears of treatment that arose from there being insufficient dental nurses to cope with the rapidly increasing school population, an arrangement was made with the dental profession whereby they assumed responsibility for the older classes of school-children, who thereupon became eligible for enrolment under social security. This accounts for the reduction in the total number of children under treatment by the School Dental Service. It will be observed, however, that the amount of treatment performed shows a substantial increase.

The total number of fillings, amounting to 1,301,840, represents approximately the number of teeth preserved for useful service. With the referring out of school-children to private dental practitioners for special types of treatment under social security, it has not been possible to ascertain the exact number of teeth removed as unsaveable (or in some cases for relief of overcrowding), but the approximate figure shows a ratio of 7 extractions to every 100 fillings, which is a slight increase on last year's figure of 6·12.

ADOLESCENT DENTAL SERVICE

Organized dental care for adolescents has now been in operation for three years, and State dental clinics for adolescents are now in operation at Whangarei, Gisborne, Palmerston North, Lower Hutt, Timaru, and Invercargill. Others are in course of preparation at Kaitaia, Avondale, Hawera, Wanganui, Nelson, Christchurch, and Oamaru.

As a matter of expediency, both State dental clinics and private practitioners are treating upper classes of primary-school children, as well as post-primary children up to age sixteen, in order that the school dental nurses will be free to concentrate on the lower classes and pre-school children.

The great bulk of the dental treatment for adolescents (and for upper primary-school classes) is done by private practitioners under social security. Following are the statistics under this heading for the year under review :—

Number of persons enrolled under the Social Security (Dental Benefits) Regulations as at 31st March, 1950—			
For general dental benefits			86,719
For special dental benefits			6,166
			92,885
Number of persons who during the year under review ceased to be enrolled for dental benefits—			
General dental benefits: Patients who attained the age of sixteen years prior to 31st March, 1950			13,098
Special dental benefit: Patients whose treatment was completed prior to 31st March, 1950			11,237
Amounts paid for dental benefits for the year ended 31st March, 1950—	£	s.	d.
For general dental benefit patients	296,326	18	10
For special dental benefit patients	26,403	5	0
Total	£322,730	3	10
Number of completed treatments in respect of which the above sums were paid—			
General dental benefit patients			101,221
Special dental benefit patients			11,345
Average cost per completed treatment—	£	s.	d.
General dental benefit patients	2	18	$6\frac{1}{2}$
Special dental benefit patients	2	6	$6\frac{1}{2}$

NOTE.—The aim is to give a complete treatment every six months to every person enrolled for general dental benefits.

Owing to the time lag that occurs in calling up patients and in rendering and meeting claims for treatment, it is found in practice that two payments are not necessarily made in respect of every enrolled person within the financial year. The average cost of general dental benefits per person is therefore shown as the average per completed treatment. The cost per year per person would be approximately twice this figure.

Of the 676 private dental practitioners holding annual practising certificates as at the 31st March, 502 had contracted to provide treatment under the dental benefits system. The latter figure does not include dentists who are employed by contracting dentists as assistants, and therefore the figure 502 does not represent the total number of dentists engaged in providing dental benefits.

DENTAL RESEARCH

The study on a Dominion-wide scale of regional variations in the incidence of dental caries in New Zealand has been continued under the auspices of the Medical Research Council by the Field Dental Research Officer attached to the Dental Division.

The provision of laboratory equipment at the Wellington Dental Clinic has made it possible to undertake some bacteriological and chemical tests on saliva for research as well as clinical purposes.

Short-term studies have been made, or have been initiated, in connection with specific aspects of the problem of dental caries control.

Reports on completed studies are published from time to time.

DENTAL HEALTH EDUCATION

The importance of home care in connection with the control of dental disease has been recognized ever since the early days of the School Dental Service, and through the years dental health teaching has come to play a major role in the application of the principles of preventive dentistry. That the Department's continued emphasis on dental health education is well founded is confirmed by the fact that during the past year there has been a great revival of dental health teaching in other countries. In the United States, for instance, wide attention has been directed to the subject by the official inauguration of an annual National Children's Dental Health Day. Other countries are reported to be launching dental health education projects on a national basis.

Within the Division of Dental Hygiene there has been increased activity during the year, and no less than 45,842 separate activities for the year have been recorded. New posters and film strips have been prepared by the health education staff, and sets of demonstration models for the use of dental nurses in the field are in course of preparation.

An exhibit of unusual interest was produced during the year, in the form of an animated illuminated layered tooth prepared in perspex, and showing the complete detailed structure in appropriate colours. The new model is an important teaching aid, and opens up a new field in demonstrating technical subjects to the lay public.

The *School Dental Service Gazette*, issued bi-monthly, is the vehicle used for conveying information and instructions to the field staff. Its production is in the hands of the health education staff.

DENTAL BURSARIES

The award of new bursaries to dental students as at the beginning of 1950 was 21. Of the bursaries granted in previous years, 57 were renewed, 8 were suspended temporarily, 4 were terminated, and 1 transferred to the medical course. As at 31st March, 1950, the total number of bursaries (including those temporarily suspended) was 86. In 1949, 20 bursary holders graduated, and of these, 10 are now on the staff of the Dental Division, 5 on hospital staffs, 3 are serving with the Royal New Zealand Dental Corps, 1 is attached to the Mental Hygiene Division, and 1 was appointed as a demonstrator at the Otago University Dental School.

DENTAL SERVICES IN THE ISLAND TERRITORIES

During the year, at the request of the Department of Island Territories, the Dental Division undertook a survey of the dental services in the Island Territories and Western Samoa. This mission was entrusted to Mr. F. B. Rice, B.D.S. (N.Z.), Assistant Director (Training), who had had previous experience of service in the islands. Mr. Rice examined and reported on the existing dental services in these areas and submitted recommendations in regard to their future development.

DENTAL NURSE HONOURED BY THE KING

In the 1949 list of King's Birthday Honours appeared the name of Miss E. M. Haines, who was created an Officer of the Most Excellent Order of the British Empire in recognition of her long service of twenty-five years as Matron, first of the old Training School for Dental Nurses at Government Buildings, and latterly of the Tinakori Road Annexe. Miss Haines was one of the original draft of dental nurses, and this tribute to her personal qualities, and through her to the work of dental nurses as a body, was gratifying and encouraging to all members of the Service.

ACKNOWLEDGMENTS

I wish to take this opportunity to acknowledge the loyal support and co-operation that have been given by officers of all grades in this Division during a time of particular difficulty, resulting from shortage of staff. These difficulties have affected all departments of the work of the Division, administrative, clinical, and training, but the high sense of duty of all officers and the work they have accomplished under difficult conditions have made it possible to record some measure of achievement in this report.

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

REPORT ON MATERNAL WELFARE

The number of births recorded for 1949 (Europeans, 43,999; Maori, 4,917) is slightly less than for 1948 (European, 44,193; Maori, 4,956). The birth-rate per 1,000 of mean population was 24·89 for Europeans and 43·09 for Maoris, giving a combined figure of 25·99.

The total number of maternity beds available was 2,339, a figure which shows an increase of 12 on that for the previous year. The number of maternity beds in private hospitals has, however, decreased from 942 in 1946 to 690 in 1949.

The statistical tables which follow are presented in the same form as in last year's report, with the addition, however, of certain details concerning Maori deaths in Table 33.

Table 31—Number of Births Per Annum, Birth-rates, Neo-natal Death, Still-birth and Maternal Death-rates

(Average rates for each year from 1945 to 1949 inclusive)

—		1945.	1946.	1947.	1948.	1949.
Number of live births per annum	E.	37,007	41,871	44,816	44,193	43,999
	M.	4,644	5,776	4,988	4,956	4,917
Live-birth rate	E.	23·22	25·24	26·42	25·52	24·89
	M.	46·09	56·49	46·86	45·09	43·09
Total		24·58	27·05	27·63	26·69	25·99
Still-birth rate per 1,000 total births	E.	22·84	21·75	19·92	18·52	17·66
Neo-natal death-rate per 1,000 live births	E.	19·59	19·08	18·08	15·77	17·00
	M.	26·05	18·35	25·46	28·85	22·91
Still-birth rate and neo-natal death-rate combined, per 1,000 total births	E.	41·98	40·42	37·63	34·00	34·36
Maternal-mortality rate (including septic abortion) per 1,000 live births	E.	2·24	2·05	1·07	1·26	1·02
Maternal-mortality rate (excluding septic abortion) per 1,000 live births	E.	1·94	1·76	0·85	1·06	0·95

E. = European; M. = Maori.

Table 32—Puerperal Mortality, 1949 (European), Showing Number of Deaths and Their Proportion to Live Births

Causes of Death.	Number of Deaths.	Death-rate Per 1,000 Live Births.
Puerperal sepsis following childbirth	..	..
Accidents of labour—		
Placenta prævia	3	
Post-partum hæmorrhage	3	
Puerperal embolism and thrombosis, pyelitis without puerperal sepsis	8	
	18	0·41
Other—		
Obstetrical shock and heart-failure	4	
Ruptured uterus	..	
Toxæmia of pregnancy—		
Eclampsia	4	
Puerperal toxæmia (pre-eclamptic)	5	
	12	0·27
Acute yellow atrophy of liver	3	
Accidents of pregnancy—		
Abortion (non-septic)	1	
Ectopic gestation	5	
	11	0·25
Ante-partum hæmorrhage, without delivery	5	
Parturition (unspecified)	1	0·02
Total maternal deaths (excluding septic abortion)	42	0·95

Table 33—Maori Puerperal Deaths and Death-rates for the Ten Years 1940 to 1949 Inclusive

Causes of Death.	1940.		1941.		1942.		1943.		1944.	
	No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.
Puerperal sepsis following childbirth	6	1·41	3	0·73	3	0·70	..	..	3	0·67
Accidents of labour (hæmorrhage, thrombosis, phlegmasia, embolism, and following childbirth, not otherwise defined)	7	1·64	9	2·18	7	1·62	6	1·35	6	1·33
Toxæmia, albuminuria, and eclampsia	1	0·23	1	0·24	4	0·93	3	0·68	2	0·44
Accidents of pregnancy	3	0·70	1	0·24	1	0·25	..	..	2	0·44
Total maternal causes (excluding septic abortion)	17	3·99	14	3·39	15	3·48	9	2·03	13	2·88
Septic abortion	3	0·70	2	0·48	5	1·16	1	0·23	2	0·44

Causes of Death.	1945.		1946.		1947.		1948.		1949.	
	No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.
Puerperal sepsis following childbirth	4	0·86	1	0·17	..	..	2	0·40	..	..
Accidents of labour (hæmorrhage, thrombosis, phlegmasia, embolism, and following childbirth, not otherwise defined)	3	0·65	15	2·60	8	1·61	7	1·41	8	1·63
Toxæmia, albuminuria, and eclampsia	..	..	3	0·52	1	0·20	..	..	6	1·22
Accidents of pregnancy	2	0·43	3	0·52	2	0·40	..	..	1	0·20
Total maternal causes (excluding septic abortion)	9	1·94	22	3·81	11	2·21	9	1·82	15	3·05
Septic abortion	..	..	1	0·17	..	..	..	..	..	..

Table 34—Maternity Hospital Statistics, 1949

——	Private Hospitals.	Public Hospitals.	St. Helens Hospitals.	Alexandra Home, Wellington.	Totals.
Number of hospitals	100	132	4	1	237
Number of beds	690	1,520	110	19	2,339
Admissions for ante-natal treatment	615	2,808	101	8	3,532
Admissions for delivery	13,534	30,335	2,322	435	46,626
Confined at full term	13,000	28,735	2,132	425	44,292
Confined between seventh month and full term	477	1,240	107	7	1,831
Total confinements	13,477	29,975	2,239	432	46,123
Abortions	23	139	..	1	163
Instrumental delivery	1,870	3,389	134	79	5,472
Induction—					
Medical	955	2,676	174	9	3,814
Surgical	703	1,421	44	41	2,209
Combined	295	675	73	16	1,059
Manual removal of placenta	105	271	27	4	407
Hæmorrhage—					
Accidental	37	180	9	5	231
Unavoidable (placenta prævia)	32	205	11	3	251
Post-partum	95	553	44	1	693
Eclampsia	21	67	2	1	91
Deaths of infants born alive	96	444	20	4	564
Still-births	185	518	43	4	750
Morbidity—					
Not notifiable (mild)	187	1,017	68	5	1,277
Notifiable (puerperal pyrexia)	68	713	90	17	888
Maternal deaths—					
Non-puerperal	..	1	1	..	2
Puerperal	8	22	5	..	35
Total	8	23	6	..	37

Table 35—Deaths From Diseases and Accidents of Pregnancy, Childbirth, and the Puerperal State, 1948 and 1949

Causes of Death.	Number of Deaths.		Rate Per 1,000 Live Births.	
	1948.	1949.	1948.	1949.
A. EUROPEANS				
140. Post-abortive infection—				
(*b*) Spontaneous, therapeutic, or of unspecified origin without mention of pyelitis	3	1	0·07	0·02
(*c*) Self-induced abortion	2	2	0·05	0·05
(*d*) Induced by persons unknown	4	..	0·09	..
	9	3	0·20	0·07
141. Abortion without mention of septic conditions—				
(*a*) Spontaneous, therapeutic, or of unspecified origin	3	..	0·07	..
(*c*) Induced by persons unknown	..	1	..	0·02
	3	1	0·07	0·02
142. Ectopic gestation—				
(*a*) With mention of infection	..	1	..	0·02
(*b*) Without mention of infection	3	4	0·07	0·09
	3	5	0·07	0·11
143. Hæmorrhage of pregnancy (deaths before delivery)—				
(*a*) Placenta prævia	..	2	..	0·05
(*c*) Ante-partum hæmorrhage	1	1	0·02	0·02
	1	3	0·02	0·07
144. Toxæmias of pregnancy (deaths before delivery)—				
(*a*) Eclampsia of pregnancy	2	4	0·05	0·09
(*b*) Albuminuria and nephritis of pregnancy ..	1	..	0·02	..
(*c*) Acute yellow atrophy of liver	..	3	..	0·07
(*d*) Other toxæmias of pregnancy	8	5	0·18	0·11
	11	12	0·25	0·27
145. Other diseases and accidents of pregnancy (deaths before delivery)—	..	2	..	0·05
146. Hæmorrhage of childbirth and the puerperium—				
(*a*) Placenta prævia during childbirth	..	3	..	0·07
(*c*) Other and unspecified hæmorrhages of childbirth	5	3	0·11	0·07
	5	6	0·11	0·14
147. Infection during childbirth and the puerperium—				
(*a*) Puerperal pyelitis and pyelonephritis	1	..	0·02	..
(*b*) General or local puerperal infections	4	..	0·09	..
(*c*) Puerperal thrombophlebitis	..	2	..	0·05
(*d*) Puerperal embolism and sudden death	2	6	0·05	0·14
	7	8	0·16	0·18
148. Puerperal toxæmias—				
(*a*) Puerperal eclampsia	3	..	0·07	..

Table 35—Deaths from Diseases and Accidents of Pregnancy, Childbirth, and the Puerperal State, 1948 and 1949—continued

Causes of Death.	Number of Deaths.		Rate Per 1,000 Live Births.	
	1948.	1949.	1948.	1949.
A. EUROPEANS—*continued*				
149. Other accidents of childbirth—				
(*a*) Laceration, rupture, or other trauma of pelvic organs	4	..	0·09	..
(*b*) Other accidents of childbirth	6	4	0·14	0·09
	10	4	0·23	0·09
150. Other or unspecified diseases of childbirth	4	1	0·09	0·02
Totals, including septic abortion	56	45	1·26	1·02
Totals, excluding septic abortion	47	42	1·06	0·95
B. MAORIS				
141. Abortion without mention of septic conditions ..	1	1	0·20	0·20
144. Toxæmias of pregnancy (deaths before delivery)—				
(*a*) Eclampsia of pregnancy	..	2	..	0·41
(*d*) Other toxæmias of pregnancy	..	4	..	0·81
	..	6	..	1·22
146. Hæmorrhage of childbirth and the puerperium—				
(*a*) Placenta prævia during childbirth	1	..	0·20	..
(*c*) Other and unspecified hæmorrhages of childbirth	3	2	0·61	0·41
	4	2	0·81	0·41
147. Infection during childbirth and the puerperium—				
(*b*) General or local puerperal infections	2	..	0·40	..
(*d*) Puerperal embolism and sudden death	..	1	..	0·20
	2	1	0·40	0·20
149. Other accidents of childbirth	2	3	0·40	0·61
150. Other or unspecified diseases of childbirth	..	2	..	0·41
Totals, including septic abortion	9	15	1·82	3·05
Totals, excluding septic abortion	9	15	1·82	3·05

REPORT OF THE DIRECTOR, DIVISION OF TUBERCULOSIS

The general activities of the Division were continued during the year under difficulties, brought about mainly by the Director having to assume control of the Hospital Division through the resignation of the Director of that Division.

The Tuberculosis Act, 1948, was supplemented in 1949 by the enactment of the Tuberculosis Regulations, the main object of these regulations being to control the use of B.C.G. vaccine.

The visible record system of recording all cases of tuberculosis which was instituted at the beginning of 1949 was not fully operative until late in the year because of delays in obtaining the necessary record cards. For this reason it is too early to judge its effectiveness. All reports, however, are to the effect that it will prove to be more accurate than the old system. Constant checking and inspection will be necessary.

The B.C.G. vaccination programme instituted in two provincial hospitals has been extended throughout the Dominion. The classes of people to whom the vaccination was originally offered have been extended from hospital staff to all those who desire it, particular preference being given to contacts and infants of known infectious cases.

In addition to the Taranaki mobile x-ray unit, a mass miniature x-ray unit is now operating in Christchurch. Arrangements are being made for the provision of similar units at Dunedin, Wellington, and Auckland, and it is hoped that other units may be made available at other places in the Dominion.

The available accommodation in hospitals and sanatoria for the treatment of active cases of tuberculosis is still insufficient to meet all the demands made on it.

MORTALITY

The mortality returns for tuberculosis, as supplied by the Government Statistician, are as follows :—

Table 36—Deaths from Tuberculosis, by Years, Race, Respiratory Forms, Non-respiratory Forms, and Crude Death-rates (Worked on Mean Population), for the Years 1948–49

Year.	Respiratory.			Non-respiratory.			All Forms.			On Mean Population Crude Death-rates, All Forms, per 10,000.		
	European.	Maori.	Both Races.	European.	Maori.	Both Races.	European.	Maori.	Both Races.	European.	Maori.	Both Races.
1944	485	285	770	106	87	193	591	372	963	3·81	37·40	5·96
1945	496	292	788	105	81	186	601	373	974	3·77	37·02	5·76
1946	459	292	751	102	103	205	561	395	956	3·38	39·04	5·42
1947	440	275	715	84	75	159	524	350	874	3·09	32·88	4·85
1948	408	207	615	61	68	129	469	275	744	2·71	25·01	4·04
1949	362	203	565	65	64	129	427	267	694	2·46	23·71	3·74

The picture obtained from the table shows a steady decline in death-rates in all categories and for both races from 1944 onwards. On mortality figures alone it would appear that the general over-all control exercised in New Zealand remains satisfactory. The figures for 1949 show a further marked decrease over the previous year and should give some cause for satisfaction but not complacency.

Table 37—Comparison of Deaths from Tuberculosis (1947 and 1949), by Race, Sex, Respiratory, Non-respiratory: Crude Death-rates, by Race and Sex, Per 10,000 of Mean Population

Year.	Respiratory Forms.						Non-respiratory Forms.						Total Deaths, All Forms.					
	European.		Maori.		Both Races.		European.		Maori.		Both Races.		European.		Maori.		Both Races.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
1947 ..	261	179	125	150	386	329	42	42	36	39	78	81	303	221	161	189	464	410
1948 ..	253	155	85	122	338	277	33	28	42	26	75	68	286	183	127	148	413	331
1949 ..	241	124	87	117	328	241	39	31	31	34	70	65	280	155	118	151	398	306
Death-rates on mean population, 1947 ..							..	..	..	..	..	..	3·56	2·6	29·41	36·54	5·14	4·5
Death-rates on mean population, 1948 ..							..	..	..	..	..	..	3·30	2·1	22·46	27·7	4·47	3·6
Death-rates on mean population, 1949 ..							..	..	..	..	..	..	3·16	1·75	20·20	27·43	4·21	3·26

MEAN POPULATION

Europeans.		*Maoris.*		*Both Races.*	
Males	886,020	Males	58,400	Males	944,420
Females	881,654	Females	55,044	Females	936,698
Total ..	1,767,674	Total ..	113,444	Total ..	1,881,118

A drop in the male and female death-rates for both European and Maori is noted, and in combined races the reduction is more noticeable in males. These rates are subject to further checking, but if proved accurate should give some cause for encouragement to workers in the New Zealand Tuberculosis Service. There is some significance in the fact that, although the death-rate in female Europeans is less than in males, in the Maori the death-rate in females is greater than in the males.

Table 38—Deaths from Tuberculosis, by Years, All Forms, Both Races, North and South Islands, and Crude Death Rates (Worked on Estimated Population) for the Years 1945–1949

Year.	Crude Death-rates Per 10,000 Estimated Population.					
	North Island.			South Island.		
	European.	Maori.	Total.	European.	Maori.	Total.
1945	3·58	37·98	6·44	4·29	43·66	**4·53**
1946	3·19	39·26	6·17	3·74	31·48	3·91
1947	2·84	32·79	5·38	3·59	42·30	3·83
1948	2·64	25·33	4·57	2·87	27·96	3·02
1949	2·51	23·93	4·35	2·39	16·60	2·47

The death-rates for combined races in the North Island is still higher than in the South Island.

Table 39—Deaths from Tuberculous Meningitis, 1947–49

Year.	Maori.	European.	Total.
1947	28	16	44
1948	26	18	44
1949	27	30	57

The table shows an increase in the number of cases of death arising from tuberculous meningitis, in spite of the increased use of streptomycin and P.A.S. (para aminosalicylic acid).

The above figures still further support the statement made last year that increased control measures augmented by B.C.G. vaccine are required.

It should be noted that—

(1) The crude death-rate for the combined races (3·74) is the lowest on record for the last seven years and is lower than that for England and Wales.

(2) For 1949 a record low death-rate for Europeans has been achieved. Of the 435 deaths (exclusive of Maoris) due to tuberculosis, 321 (75 per cent.) occurred in hospitals or sanatoria, including 17 in mental hospitals.

(3) The crude death-rate for Maoris is still high and is approximately nine times the death-rate for Europeans.

(4) Of the 129 deaths listed for non-respiratory forms, 57 (Europeans, 30; Maoris, 27) were due to tuberculous meningitis.

Table 40—The Ratio of Deaths to Registered Cases at 31st December, 1946–49

——	1946.	1947.	1948.	1949.
European	1 : 12	1 : 14	1 : 15	1 : 17·4
Maori	1 : 6·5	1 : 7	1 : 9·3	1 : 9·7
Combined races	1 : 10	1 : 11·2	1 : 13·3	1 : 14

The improved position in this ratio as noticed last year was maintained in 1949. Undoubtedly intense efforts in case-finding are responsible for bringing to light relatively more cases in an early stage of the disease which have responded to treatment.

MORBIDITY

The returns for 1944–49, as shown on the register, disclose the total numbers of known cases alive at 31st December each year as under :—

Table 41

Year.	North Island.			South Island.			New Zealand Total.
	Resbiratory.	Non-Respiratory.	Totals.	Respiratory.	Non-Respiratory.	Totals.	
1944 ..	5,083	507	5,545	1,722	259	1,981	7,526
1945 ..	6,116	546	6,662	2,055	360	2,415	9,077
1946 ..	6,356	531	6,887	2,315	415	2,730	9,617
1947 ..	6,196	673	6,869	2,479	473	2,952	9,821
1948 ..	6,482	505	6,987	2,554	456	3,010	9,997
1949 ..	6,603	730	7,333	2,498	524	3,022	10,048*

* This total comprises Maoris, 2,597 ; Europeans, 7,451.

The above respiratory totals include a total of 307 cases with associated non-pulmonary lesions (232 in the North Island and 75 in the South Island).

The general increase in known cases in the respiratory forms is held to be due more to continued efforts in case-finding rather than to any actual increase in the incidence of infection. It is suspected that there are still many untraced cases which will eventually be found as the result of extended case-finding surveys of the general population.

Table 42—New Cases Notified to Medical Officers of Health as Tuberculous During Calendar Years 1944–49, by Types and Race

Year.	North Island.							South Island.							New Zealand Totals.
	Respiratory.		Non-Respiratory.		Totals.		Both Races.	Respiratory.		Non-respiratory.		Totals.		Both Races	
	E.	M.	E.	M.	E.	M.		E.	M.	E.	M.	E.	M.		
1944 ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2,254
1945 ..	..	..	..	..	..	..	1,841	..	..	..	..	..	..	731	2,572
1946 ..	985	432	156	50	1,141	482	1,623	545	11	134	7	679	18	697	2,320
1947 ..	915	402	138	63	1,053	465	1,528	482	10	158	6	640	16	656	2,174
1948 ..	913	392	118	58	1,031	450	1,481	443	12	144	4	587	16	603	2,084
1949 ..	800	449	132	58	932	507	1,439	417	27	123	3	540	30	570	2,009*

* Maoris, 537 ; Europeans, 1,472.

The total new cases notified as tuberculosis to Medical Officers of Health show a steady decline from 2,254 in 1944 to 2,009 in 1949.

Table 43—Disposition of Registered Cases, All Forms, Both Races, by Years, at 31st December, 1944–49

Year.	Supervised in Institutions.			Supervised Outside Institutions.				Total Under Supervision.	Residence Unknown.
	In Hospital.	In Sanatoria.	Total.	In Home.	In Huts.	Boarding-house and Nomadic.	Total.		
1944 ..	1,114	661	1,775	5,308	182	466	5,956	7,731	..
1945 ..	1,116	706	1,822	6,535	181	539	7,255	9,077	..
1946 ..	1,055	688	1,743	7,067	207	600	7,874	9,617	..
1947 ..	1,072	648	1,720	7,403	163	535	8,101	9,821	..
1948 ..	1,023	630	1,653	7,635	196	513	8,344	9,997	..
1949 ..	1,170	609	1,779	7,576	199	364	8,139	9,918	130

It is pleasing to see that a greater number this year were being supervised on 31st December in institutions and a lesser number outside institutions than in previous years. The increase in the number being treated in hospitals can be accounted for by the tendency to resort to surgery for a greater number of cases.

Patients being supervised in huts, all of whom are Maoris, show a slight increase.

The nomadic and boardinghouse group, however, shows a further pleasing decrease. The co-operation of other State Departments in this connection is appreciated.

Table 44—Classification of Registered Cases, All Forms, Both Races, by Years, at 31st December, 1944–49

Year.	Active.			Inactive.		Recovered (*e*).	Unknown.	Believed Well.
	Deteriorating and Stationary (*a*).	Improving (*b*).	Totals, (*a*) and (*b*).	Quiescent and Arrested (*c*).	Apparently Cured (*d*).			
1944 ..	1,445	1,321	2,766	2,374	381	..	2,201	..
1945 ..	1,065	1,253	2,321	3,654	488	..	2,614	..
1946 ..	1,293	2,011	3,304	4,610	645	..	1,058	..
1947 ..	1,296	1,965	3,261	4,762	705	..	1,093	..
1948 ..	1,422	1,904	3,326	5,094	762	..	815	..
1949 ..	1,486	2,054	3,540	5,530	..	722	576	401

The increase in the number of active cases is an unpleasant feature of the statistics and is higher than ever it has been. This can be accounted for, however, by more assiduous and complete investigations of pulmonary secretions and clinical state, by many cases with an unknown classification last year being more accurately assessed, and by more up-to-date information being received from hospitals. It will be seen that the cases classified as unknown have decreased by over 200.

The number showing definite stabilizing of their condition has risen by over 400 to 5,530.

Two new classifications are included this year, being "Recovered" and "Believed Well." The first classification gives actual figures, while the corresponding category last year, "Apparently Cured," was only an assessment.

The category "Believed Well" was introduced to account for many cases which are not assessed during the year because of their condition being such that annual supervision is not necessary. Information in the hands of the Department is sufficient to place them in this category in the absence of medical assessment.

Table 45—Bacteriological Status of Registered Cases, All Forms, Both Races, by Years at 31st December, 1944–49

Year.	Tubercle Bacilli in Sputum or Discharge.		No Sputum or Discharge.	Not Investigated. Previous Year.	Total.
	T.B.+	T.B.−			
1944 ..	708	1,323	..	4,729	6,760
1945 ..	1,045	1,504	3,099	3,429	9,077
1946 ..	1,306	2,324	4,405	1,581	9,617
1947 ..	1,227	2,371	4,731	1,492	9,821
1948 ..	1,283	2,305	5,344	1,065	9,997
1949 ..	1,383	2,702	4,339	1,625	10,048

The figures for 1944 relate to respiratory cases only, while the figures for the remaining five years represent all registered cases.

The increase in those showing the positive and negative sputa can be accounted for by a general investigation of those previously not investigated and by the increase in the number of cases on the register.

The number of cases with no sputum or discharge has decreased by nearly 1,000. Some of these may have been absorbed in the figures for those not investigated during the year. It is obvious that greater efforts must be made to have all cases assessed accurately.

Table 46—Sex Distribution: Sex of Registered Cases, All Forms, Both Races, by Years at 31st December, 1944–49

Year.	Males.	Females.
1944	4,230	3,501
1945	4,951	4,126
1946	5,231	4,386
1947	5,238	4,583
1948	5,220	4,777
1949	5,180	4,868

The female incidence has decreased and is still below that for males.

Table 47—Analysis of District Nurses' Work in Relation to Chest Clinics for Year 1949

Supervision of tuberculous households—	
Total number of tuberculous households under control	9,687
Number of new contacts brought under supervision during year ..	5,423
Total number of contacts under surveillance during year—	
(*a*) Found to be tuberculous	272
(*b*) Remaining under supervision	23,103
(*c*) Removed from list	3,238
Total	26,613

The alteration in the method of recording statistics and in the information recorded has resulted in information relating to certain detailed examinations being eliminated.

It is worthy of note that of the 2,009 new notifications registered in 1949, 272 are due to the efforts of the District Nurses in the "contact gathering scheme," but "Total households under supervision" are greater than figures reported in 1948 by 404 households.

A total number of 26,613 contacts were under surveillance during the year, representing an increase of 2,452 over last year's return.

MASS RADIOGRAPHY

(1) *Taranaki Mobile X-ray Unit.*—The medical Director reports that for 1949 a total of 13,116 examinations were made, as compared with 17,985 for the previous year.

A total number of 527 persons (177 Maoris) were recalled for large films, and of this number 348 (86 Maoris) actually reported. These figures indicate that 75 per cent. of Europeans and approximately 50 per cent. of Maoris presented themselves for re-examination. This can be regarded as highly satisfactory and to some extent an indication of the effect of intensified educational programmes preceding examinations as well as a greater awareness in that district of the nature of tuberculosis coupled with a greater knowledge of the work of the unit.

An interesting comment is made on the examination of the displaced persons at Pahiatua Camp. Of the 884 examined, 84, or less than 1 per cent. were required to be recalled for large films. Only 1 case of active tuberculosis was discovered.

The unit is performing a most useful work in its sphere of activity and the Division's congratulations are extended to the whole team, without whose whole-hearted co-operation the unit could not function so successfully.

(2) *North Canterbury Hospital Board Unit (Armagh Street Clinic, Christchurch).*—This unit commenced its work on 5th September, and by April, 1950, had examined 5,271 persons. These were composed of 1,048 contacts and 4,223 non-contacts. The non-contact group comprised mainly students, members of the Police Force, and eighteen-year-old recruits.

It was to be expected that the contact group would reveal a higher percentage of abnormalities than the non-contact group. The two figures respectively are 5·7 per cent. and 2·6 per cent., with a total abnormality percentage of 3·1 per cent. of total examinations.

Amongst the contacts 7 cases of active tuberculosis were discovered, and 5 cases amongst the non-contacts. A total of 119 cases (48 amongst contacts) of inactive tuberculosis were discovered.

The unit plans to examine 25,000 persons this year selected mainly from factory workers.

The Division awaits the result of this project with interest.

TUBERCULOSIS RESEARCH COMMITTEE

The Division continued its representation on the Committee, which met on four occasions during the year.

The Committee hopes that typing of baccilli will be undertaken at the Bacteriological Laboratory in Christchurch during the coming year. This has been delayed because of projected alterations to the Laboratory.

Investigations related to the biological diagnosis of pulmonary tuberculosis will be undertaken at Napier this year.

HEALTH EDUCATION OF THE PUBLIC AND PATIENTS IN TUBERCULOSIS CONTROL

The Division is actively associated in assisting in the preparation of a film for Maoris on tuberculosis.

Filming of part of it is now taking place in the Wairoa area, and it is hoped that it will be ready for public screening before the end of 1950.

The Department is indebted to Dr. R. S. R. Francis, O.B.E., for his excellent book, "The Control and Treatment of Tuberculosis." Over 10,000 copies of this brochure have already been issued.

The tuberculosis associations continue to do excellent work for sufferers from tuberculosis and are contributing in no small measure to an intensified control and to a greater understanding of the problem.

TUBERCULOSIS IN NURSES

Notification of tuberculosis in nurses, by years, all forms, and incidence rates, worked on population in nursing community at 31st March, 1950 :—

Table 48

Year.	Number of Cases.	Staff in General Hospitals.	Incidence Per 1,000.
1942–43	47	5,299	8·9
1943–44	88	5,489	16·0
1944–45	96	6,103	15·7
1945–46	94	5,869	16·0
1946–47	119	5,853	20·3
1947–48	112	5,647	19·8
1948–49	112	6,088	18·3
1949–50	83	6,253	13·2

There has been an appreciable decrease in the number of cases of tuberculosis notified during the past year from general hospitals in New Zealand. Since the revision of the form and system of notification and since additional checks on the accuracy of notifications have been made, a decrease in incidence in the face of more accurate notification would appear to indicate better control of infection in hospital communities.

B.C.G. vaccination has been commenced in nurses during this past year, but an insufficient number have been vaccinated to materially affect the incidence of tuberculosis. It is hoped that a further decrease in incidence will occcur in the future from more widespread use of B.C.G. vaccine and from improved control of tuberculous infection within the hospitals.

CONCLUSION

The report, in general, shows that the position concerning tuberculosis disclosed by the statistics has improved by way of a reduction in new cases notified each year since 1943 and a remarkable reduction both in Europeans and Maoris in the crude death-rate. Many facts could be said to contribute to this favourable trend. No single one can, however, be given full credit. Undoubtedly general improvement in standards of living, better housing, and more detailed understanding of the disease have helped.

C. A. TAYLOR,
Director, Division of Tuberculosis.

REPORT OF THE DIRECTOR, DIVISION OF CLINICAL SERVICES

Appended is a table of expenditure on the various classes of service since the inception of the social security scheme in 1939. Again it is to be noted that there is an increase in expenditure in practically all services, but particularly with general medical services and pharmaceutical services.

General medical services alone account for an expenditure of £2,328,154, which represents 6,208,410 individual services by medical practitioners during the year to less than 2,000,000 people or an average of more than three attendances per head of the population.

Pharmaceutical services cost £2,043,843, an increase of £250,684 over last year's expenditure. For this sum 7,240,000 prescriptions were dispensed at an average cost of 5s. 7½d., which amounts to approximately 21s. per head of the population. The rise in cost of pharmaceutical supplies has been due to many factors, one of which is that during the last ten years many new drugs which are extremely costly have been introduced, to the great benefit of the community. Without social security the majority of citizens would not have been able to pay for these expensive drugs. A reasonable increase in the amount and costs of medical and pharmaceutical services was to be expected with the development of the social security system in New Zealand, as there is no doubt that many people did not receive sufficient medical services and were unable to pay for needed medicines in the days prior to 1938.

However, the increases in the cost of general medical services and pharmaceutical supplies have been of such magnitude as to lead to serious misgivings as to whether State medical insurance against sickness is practicable or whether the best method of payment for services has been adopted. In this connection the method of payment of practitioners should neither encourage quantity rather than quality of service, nor should it encourage the people to make unnecessary demands on practitioners for their services. Private insurance companies in the past have experienced the same phenomena with accident and sickness policies and have protected themselves against financial loss by limitation of policies both regarding the nature of the illness and its duration.

For some time in New Zealand reform of the social security medical services has been desirable. Methods of reform were propounded in the report of the Medical Services Committee dated 11th June, 1948, which was submitted to Parliament that same year. Most of the findings of this Committee were implemented by amendments to the Social Security Act and the Medical Practitioners Act passed during last session of Parliament.

This legislation has paved the way for co-operation between the medical profession and the Government in the general administration of Part III of the Social Security Act. Among other things, the amendment to the Social Security Act provides for a reduction in the usual fee charged for medical services of a minor nature (charges which have been largely responsible for the ever-increasing cost of the scheme), and it also institutes a new system of claim procedure which will considerably reduce the present high costs of administration. The amendment to the Medical Practitioners Act, which was introduced at the request of the British Medical Association, provides for the setting-up of a disciplinary committee whose function will be to investigate complaints either from patients or from the Health Department in matters concerning the administration of the general medical services scheme. This committee has the necessary authority to conduct investigations and to make orders, recommendations, or reports. It should be instrumental in bringing about many desirable improvements.

The British Medical Association is also proposing to co-operate with the Health Department in future by establishing advisory bodies to assist the Department in administering the various services.

This report comes at a critical stage in the development of social security medicine in New Zealand. It is obvious that unless the desired reforms made possible by the new legislation of last session provide satisfactory remedies, the present system of social medicine in New Zealand will have to be either modified considerably or replaced by a system more readily controllable.

DUNCAN COOK,
Director, Division of Clinical Services.

Table 49—Social Security Fund Medical Benefits: Statement Showing Expenditure Since Commencement of Benefits

——	1940–41.	1941–42.	1942–43.	1943–44.	1944–45.	1945–46.	1946–47.	1947–48.	1948–49.	1949–50.
Subdivision I—Maternity Benefits (commenced 15th May, 1939)										
	£	£	£	£	£	£	£	£	£	£
Public hospital fees	106,834	113,276	110,217	114,930	133,946	160,870	223,914	301,293	389,416	400,334
Private-hospital fees	216,086	227,315	207,575	209,841	210,675	222,669	202,928	214,963	221,061	188,739
Medical practitioners' fees	161,638	176,973	158,208	162,227	158,409	201,633	232,088	269,265	291,246	268,166
Medical practitioners' mileage fees	5,663	6,215	5,089	5,044	5,647	4,572	4,825	5,997	7,715	7,986
Obstetric nurses' fees	21,101	18,940	15,089	12,027	11,117	10,465	9,234	8,512	6,682	6,161
St. Helens Hospital fees	7,653	7,151	9,046	9,870	10,940		Contribution now abolished			
	518,975	549,870	505,224	513,939	530,734	600,209	672,989	800,030	916,120	871,386
Subdivision II—Medical Benefits (capitation scheme introduced 1st March, 1941; general medical services scheme introduced 1st November, 1941)										
Capitation fees	..	114,608	71,149	55,610	42,400	38,084	31,187	22,945	16,818	12,002
Capitation and general medical services mileage	..	21,166	64,039	60,392	59,442	68,965	90,289	109,522	123,768	131,995
General medical services	..	69,898	831,397	1,026,073	1,161,326	1,291,448	1,600,601	1,993,806	2,112,304	2,328,154
Special arrangements under section 82	..	..	49,468	37,256	23,855	27,495	35,428	37,714	45,286	47,406
Purchase of sites and erection of residences for Medical Officers appointed under section 82	..	..	..	..	..	..	2,673	3,839	8,660	4,733
Remuneration, allowances, and expenses of medical practitioners in areas other than those covered by section 82	..	..	..	..	..	1,317	396	..	45	..
	..	205,672	1,016,053	1,179,331	1,287,023	1,427,309	1,760,574	2,167,826	2,306,881	2,524,290
Subdivision III—Hospital Benefits (commenced 1st July, 1939); *Out-patients Benefits* (commenced 1st March, 1941)										
Treatment in approved institutions includes Ashburn Hall, Knox Home, Auckland, and Karitane Hospitals, payments to latter being introduced in 1940, but dated back to 1st November, 1939										
Treatment in public hospitals	893,251	953,794	1,020,319	1,564,315	1,689,233	1,767,874	1,593,367	1,536,417	1,560,483	1,566,824
Out-patient treatment	..	47,162	70,720	73,137	83,412	98,972	97,287	117,385	141,530	147,505
Treatment in private hospitals	141,737	146,953	191,647	238,772	259,489	264,865	251,581	252,850	245,000	249,085
Treatment in approved institutions	37,873	28,155	38,819	43,908	56,504	41,749	44,053	42,837	50,362	48,235
Contribution to Consolidated Fund for—										
Mental hospitals	171,000	181,451	181,869	182,830	187,942					
Queen Mary Hospital	10,060	11,705	22,872	28,691	28,032	Contribution now abolished				
Rotorua Sanatorium	4,712	4,985	4,563	5,932	6,425					
Rotorua Soldiers' Hospital	..	..	10,150	20,561	19,663					
	1,258,633	1,374,205	1,540,959	2,158,146	2,330,700	2,173,460	1,986,288	1,949,489	1,997,375	2,011,649

Subdivision IV—Pharmaceutical Benefits (commenced 5th May, 1941)

Drugs supplied by—										
Chemists	..	261,845	530,695	716,080	933,490	1,082,342	1,389,638	1,507,521	1,727,556	1,991,350
Medical practitioners	..	1,527	5,891	6,092	6,231	6,030	5,879	5,973	8,262	11,266
Institutions	..	16,326	26,661	40,026	40,516	44,994	44,169	44,856	57,341	41,227
	..	279,968	563,247	762,198	980,237	1,133,366	1,439,686	1,558,350	1,793,159	2,043,843

Subdivision V—Supplementary Benefits

Radiological services (commenced 11th August, 1941)	..	27,962	88,588	109,426	128,842	132,806	175,420	209,059	249,461	276,999
Laboratory services (commenced 1st April, 1946)	..	..	..	..	..	..	61,453	90,306	117,173	118,447
Massage services (commenced 1st September, 1942)	..	..	8,836	27,331	32,152	35,569	43,028	47,510	57,088	63,840
Specialist services (neuro surgery)	..	..	..	1,066	1,324	2,260	1,485	121	4,072	6,553
District nursing services (commenced 1st September, 1944)	..	..	..	..	7,717	58,880	68,614	82,756	111,289	116,007
Dental services	..	..	..	..	..	..	..	105,109	223,186	324,933
Domestic assistance (commenced 20th December, 1944)	..	..	..	..	..	456	2,043	2,865	3,258	3,082
Ambulance benefits	..	..	..	..	..	..	..	..	324	303
Artificial-aids benefits (commenced 1st July, 1947), (artificial limbs, hearing-aids, contact lenses)	..	..	..	..	..	..	..	8,067	96,062	99,777
	..	27,962	97,424	137,823	170,035	229,971	352,043	545,793	861,913	1,009,941
Grand totals	1,777,608	2,437,407	3,722,907	4,751,437	5,298,729	5,564,315	6,211,580	7,021,488	7,875,448	8,461,109
Recoveries*	923	1,819	1,728	24,757	64,015	27,751†	20,384	47,630	31,814	..
Net totals	1,776,685	2,435,588	3,721,179	4,726,680	5,234,714	5,536,564	6,191,196	6,973,858	7,843,634	..

* These are mainly in respect of hospital benefits. † Prior to 1st April, 1945, these recoveries were treated as credits in reduction of expenditure. For 1945–46 they are included in Miscellaneous Receipts, Social Security Fund. This should be taken into account when comparing published figures relating to Social Security Fund expenditure.

REPORT OF THE DIRECTOR, DIVISION OF OCCUPATIONAL HEALTH

Since the previous annual report the name of the Division has been changed from Industrial Hygiene to Occupational Health. The new title gives a better indication of the scope of the work that the Division might well eventually cover. However, the first call on the staff is still industrial hygiene, and in particular to assist the Factory Inspectors of the Department of Labour and Employment to implement the health and welfare sections of the Factories Act, 1946.

STAFF

Medical Officers.—During 1949, District Industrial Medical Officers for Wellington, Auckland, and Dunedin respectively commenced duty and are accommodated in the district offices of the Department of Labour and Employment. The District Industrial Medical Officer in Christchurch also acts as Deputy Medical Officer of Health for that area and is accommodated in the district office of the Department of Health. The accommodation provided by the Department of Labour and Employment is much appreciated, as are the help and co-operation of its Inspectors and senior officers. It can certainly have been no easy matter to admit relatively senior officers of another Department to work alongside them in the way they have done.

Industrial Nurses.—Four industrial nurses have now been appointed to work with the District Industrial Medical Officers, and an additional four nurses will be available to take up positions early in 1950. There is also a Nurse Inspector at Head Office, a proportion of whose time is occupied as a tutor at the Nurses' Post-graduate School. Three nurses obtained their Diploma in Industrial Nursing at the school during the year.

The Nurse Inspector also visits all nurses employed by private firms and certain Government Departments, with the object of assisting the development of their work and keeping them in touch with their professional colleagues. The Division issues an *Industrial Nurses' Bulletin* every quarter containing articles and items of interest to these nurses.

An important development in regard to the supervision of the health of workers in heavy and hazardous industries has been the appointment during the year of trained nurses to the railway workshops at Hillside (Dunedin) and Addington (Christchurch). The numbers of employees at these works are approximately 1,300 and 1,100 respectively. The Post and Telegraph Department, employing a staff of approximately 1,500 people in varying occupations scattered over a wide area of Wellington, has also appointed a trained industrial nurse to supervise the health of its staff.

TREATMENT AND PREVENTION OF ACCIDENTS

Oddly enough, the Factories Act, 1946, gives the officers of the Department of Health no legal standing in relation to the provisions for safety. The lost time caused by accidents, however, demands more preventive work, in which medical men and nurses with an industrial training should play a part.

The District Industrial Medical Officer for Christchurch and his nurse investigated 100 minor injuries attending the casualty department of the Christchurch Hospital from factories. Forty-six of these injuries were to the eye and 54 to other parts of the body. None of these was sufficiently serious to require notification under the Factories Act—that is to say, the lost time appears in no records. Yet the eye cases lost on an average three hours and the remainder two and a quarter hours from work, and there are many thousands of such cases a year.

Industrial Health Centres.—It is suggested that the most satisfactory way of dealing with industrial minor injuries would be by setting up in certain areas industrial health centres staffed by an industrial nurse responsible to the District Industrial Medical Officer. It is not economic in New Zealand in any but a very few individual establishments to employ a trained nurse, but there are a number of areas where more than

1,000 workers, in half a dozen or more factories, are occupied within half a mile or so of one another where a central clinic would be valuable. A great deal of time would be saved by providing an efficient first-aid service near to the place of work, but, more important, the clinic would act as a centre for the preventive work which is the main objective of an industrial health service. There is no opportunity for education of management and worker like that immediately following an accident. Education would be an important function of the staff of an industrial health centre.

It is worth mentioning that while an industrial health centre of this character may appear at first sight an extra charge on the health service, there is little doubt that there will be very considerable saving in the expenditure that would otherwise fall on the Social Security Fund, while a reduction in loss of working-time and earnings and in compensation payments should in the long-run result from an improved prevention and treatment service.

The Penrose district of Auckland and the Woolston district of Christchurch are two areas where industrial health centres might usefully be established. The latter district was the subject of a detailed survey by the local Industrial Medical Officer, who recommended setting up such a centre there.

It was with this type of centre in mind that the industrial health clinics were opened on the Wellington waterfront in 1948 and the Lyttelton waterfront in 1949. While prevention may not have gone far as yet, there is no doubt of the quick and efficient treatment given. An analysis of cases attending for the first time at the Wellington centre between 1st June, 1948, and 31st May, 1949, shows that there were 2,465 cases, made up of the following injuries :—

Fractures and crushes	148
Bruises, &c.	175
Cuts, abrasions, lacerations	965
Punctures	135
Sprains and strains, &c.	133
Foreign body in eye	273
Foreign body in finger and hand	112
Boils, styes, stings, &c.	198
Skin conditions	75
Burns	48
Miscellaneous conditions	203

Many of these attended for a number of redressings and only a very few were referred to hospital.

Forty-nine per cent. of the above injuries occurred to the hands or fingers, demonstrating the need for protective gloves, and similar high figures of injuries to the glove area are shown on the records of cases treated at the Lyttelton Industrial Health Centre. The Waterfront Industry Commission now makes available to workers protective gloves at a cheap rate.

Fifteen per cent. of the injuries listed above were to the eyes. They, too, often need protection, and there is an excellent cheap plastic eye-shield now available which is light, gives good all-round vision, and does not steam up.

INDUSTRIAL DISEASES

Dermatitis.—During the year arrangements were made with the State Fire and Accident Insurance Department to notify the District Industrial Medical Officers of any claims, other than accidents, that were received arising out of the claimant's work. The only condition occurring commonly is industrial dermatitis, and each of these cases is now made the occasion for a visit to the establishment concerned by the Industrial Medical Officer or an industrial nurse. It is possible in many instances to advise a procedure likely to prevent further trouble. For example, several cases in a factory in

Auckland proved to be due to contamination with very small quantities of arsenic dust occurring from a mixing process. This mixing is now undertaken in a separate building, with an extraction system applied at all points where arsenic dust is likely to be evolved.

At the request of the Department of Labour and Employment, the Division undertook a survey of tanneries and woollen-mills in order to ascertain whether cases of dermatitis were occurring from the use of chromates in these industries. Visits were made to a number of tanneries and dyeing departments of woollen-mills throughout the country, such records as existed were consulted, and information obtained in discussions with management and workers. In addition, local doctors and hospital staffs were able to provide some details of cases seen by them, and a number of theses written by students of the Otago Medical School in the past proved of assistance.

In general, it was found that, whilst a number of cases of dermatitis occurred in tanneries and woollen-mills, only a small proportion of these could definitely be stated to be caused by handling chrome salts. The wet nature of the processes and the various substances handled, such as lime, acids, dyes, &c., were likely causes of skin trouble. There appeared to be a little greater risk of dermatitis occurring in the tanning industry than in woollen dyeing. Where chrome dermatitis had occurred, it was usually in firms which reduced their own chromate and used the two-bath method of tanning. It was generally considered that fully reduced chrome did not cause trouble.

Recommendations for the prevention of dermatitis in these industries included provision of better washing facilities, first-aid treatment for minor cuts and scratches, and periodic inspection of the hands of workers handling substances likely to cause irritation. It was also recommended that consideration be given to the best design for dye-houses, in order to reduce the steam problem.

Lead Absorption.—The major risk of poisoning from lead is becoming well controlled, though there were 3 cases of lead poisoning notified in Wellington during the year. In two of these cases the men were working on metal-reclaiming furnaces, and the third was a mixer in a battery-manufacturing plant. A few other men working at battery-manufacture, and an occasional one at a paint or printing works, have been found to be absorbing an unhealthy amount of lead, as revealed by regular blood examinations. These men, by arrangement with the management, have usually had their work adjusted to ensure less contact with lead until elimination has occurred. Undue absorption was shown by several men in a fertilizer-works, where a considerable amount of lead burning was done in confined spaces. Advice was given to this firm with regard to improved exhaust ventilation. Managements on the whole are co-operative in adopting measures to control lead fume and to reduce lead dust in the air. One firm in Auckland where dust is now cleaned up with a vacuum cleaner found that the value of the lead reclaimed more than paid for the cleaner in the first year. It is not always so easy to prove that industrial hygiene pays.

The bulk of the routine work of supervising workers at risk from lead is now undertaken by the industrial nurses, and very well they do it. The following is a summary of the work done by the nurses in the Wellington, Auckland, and Christchurch areas during the past year. Pending the appointment of a nurse, supervision of lead workers has not yet commenced in the Dunedin area :—

In Wellington and Lower Hutt the number of establishments visited by the two nurses was 19, employing a total of 143 workers. One thousand and seventy-seven clinical and blood examinations were made, compared with 924 in 1948.

In Auckland a total of 12 factories was visited regularly each month by the industrial nurse. The number of workers having monthly blood tests grew from 57 in March to 166 in November.

In Christchurch and Ashburton 31 firms, employing a total of 133 workers, were investigated in relation to the use of lead. During the year 50 visits were made to these factories and 327 blood slides examined.

Silicosis.—The risk to workers of breathing an atmosphere in which there are dust particles of free silica is probably more common than is appreciated. For instance, sand-blasting, which is illegal in Great Britain on account of its danger, is still practised in this country, though there are perfectly good substitutes for sand available. A post-mortem on a man who died suddenly in Dunedin recently, and who had been employed for a number of years sand-blasting, revealed that he had developed advanced silicosis. But for the fact that he was the subject of a post-mortem examination, the condition would probably have passed undiagnosed.

Silicosis and pneumoconiosis will be the subject of further comment in the next annual report, following the International Labour Organization Conference on Pneumoconiosis in Sydney in 1950.

Electroplating Hazards.—During the year the industrial nurse in Christchurch undertook a survey of electroplating establishments. Sixteen factories in all were inspected, and of these factories the general environment was stated to be good or excellent in 8, fair in 5, and poor or bad in 3. The 10 chrome baths inspected were stated to be good or excellent, but conditions in 14 polishing-rooms were good or excellent in 5 only, fair in 5, and poor or bad in 4. Four cases of chrome or cyanide ulcers were found out of a total of 43 persons at risk.

Other specific dangers that have been investigated in factories include the use of chlorinated diphenyl as an impregnating wax in electrical condensers, the acid content of gases vented from plant manufacturing sulphuric acid in fertilizer-works in the Auckland area, the use of methyl bromide as a fumigant, the manufacture of phosphorized pollard for rabbit poison, and a number of ventilation problems in connection with the control of fumes and dusts.

GENERAL HOUSEKEEPING

Of overriding importance compared with any specific hazard is the need for general improvement in housekeeping standards. In the great majority of cases there is no need to work in dirty, ill-lit, and poorly maintained premises. Numerous able and conscientious managements demonstrate this, yet there is still a long way to go before the working environment in factories as a whole meets with the requirements of the Factories Act.

The brunt of this housekeeping drive falls upon the Inspectors of the Department of Health and the Department of Labour and Employment, and very tough work it is if done conscientiously. Far more kicks than halfpence come their way (the first Factory Inspectors appointed in Great Britain in 1833 received £1,000 a year). To obtain a good understanding of local industry requires many years in any large town, and one of the great handicaps under which Factory Inspectors work is that they rarely stay put in one area for long.

EXAMINATION OF JUVENILES

The following table shows the numbers of young persons under sixteen years examined by the Factory Certifying Medical Officers during the year under section 37 of the Factories Act, 1946, compared with the figures for 1948 and part of 1947 :—

Table 50

—	Number Examined.	Number Passed as Fit.	Number Rejected.	Percentage Rejections.
1947 (April–December) ..	2,129	2,099	30	1·4
1948	2,971	2,934	37	1·2
1949	3,285	3,263	22	0·67

It will be seen that the number of applicants certified as unfit for the proposed employment is very small. Included among the 22 rejected were 8 cases of defective vision, 4 with abnormal urine, and 3 with disease of the lungs. The main value of these examinations is in connection with the minor defects revealed in those passed as fit for employment. Parents and guardians are notified of such defects, either by the Certifying Medical Officer or through the District Office of the Department of Health, and where possible a follow-up visit is paid by the industrial nurse. Nevertheless, the present application of section 37 hardly achieves much for the annual expenditure of some £5,000 which it probably costs. The decision as to whether a juvenile is fit to enter industry might well be left to the School Medical Officer when making his examination during the child's final year at school. In doubtful cases he could pass the card on to the District Industrial Medical Officer for a follow up later.

The re-examination, designed to check up on juveniles after the impact of industry upon them, now takes place, if at all, far too soon after the first one. A much better estimation could be made at age eighteen, and with men the opportunity now occurs with the medical examination for compulsory military training. An extension of this examination to include all girls of eighteen in industry would provide a far better opportunity for supervising the health of young people in relation to their work than the present arrangements under section 37 of the Factories Act. Moreover, it would bring this country more into line with the International Labour Convention of 1946 concerning Medical Examination for Fitness of Young Persons for Employment, and with the 1948 Factories Act in Great Britain.

OCCUPATIONAL HAZARDS OUTSIDE FACTORIES

Despite its primary concern with conditions in factories, the Division also interests itself in other aspects of health at work. Invitations from other Departments to undertake investigations and to give advice on health conditions in industries not covered by the Factories Act are welcomed.

Bush Workers.—At the beginning of 1949, following an invitation from the Senior Bush Working Inspector, a ten-day visit was paid by the Director to bush workings and sawmills in the King-country. A report on accidents in the industry, based on this visit, is appended to the Department's report. The five Bush Working Inspectors, who also supervise sawmills, are making excellent headway on their difficult and important task.

Rabbiters.—In September a rabbiter working near Masterton died from chloropicrin poisoning. This rapidly vaporizing fluid is now widely used as a soil fumigant and for killing insects and vermin. No fatal accident from its use had previously been reported. It is acutely irritant to the eyes, and this acts as a safeguard, causing any one using it to move out of any dangerous concentration. In the case at Masterton the man spilled a quantity on his clothes, and then, presumably, slept with them near him in his whare, so exposing himself to a small concentration of the vapour over a long period.

It has been recommended to Rabbit Boards that only guns that do not leak and so are unlikely to contaminate clothes should be used, and that individual rabbiters should be informed of the dangers of wearing or sleeping near contaminated clothing. It is not considered necessary to ask rabbiters to wear masks when using chloropicrin.

EDUCATION AND PROPAGANDA

In February, 1949, a training scheme for Inspectors was commenced at the Wellington Technical College. This course comprises lectures and demonstrations, covering an academic year, followed by six months practical training in the field. Specially selected officers from the Department of Health, the Department of Labour and Employment, the Army Department, and three local authorities attended the course, which,

besides covering industrial hygiene, will qualify them to sit for the certificate of the Royal Sanitary Institute. In time these courses should do much to improve the standard of Inspectors employed by these organizations.

In the districts, the Industrial Medical Officers have also done much to train Inspectors by regular lectures, joint visits on specific problems, and by distribution of notes and other information.

All Industrial Medical Officers have given a number of lectures to such organizations as St. John Ambulance Brigade, Red Cross Society, Rotary Clubs, British Medical Association, trade-union bodies, schools for apprentices, Institute of Industrial Management, &c.

The Health Education Committee of the Health Department now includes in its scope matters covering occupational risks and requirements, and intends to publish material in conjunction with the Department of Labour and Employment. The Department's exhibit at the Industries Fair at Christchurch in 1949 dealt exclusively with industrial hygiene. In addition, film shows have been given, illustrating occupational health subjects, in more than a dozen centres.

T. O. Garland,
Director, Division of Occupational Health.

REPORT OF THE DIRECTOR, DIVISION OF PHYSICAL MEDICINE

During the year the work of the Division of Physical Medicine has been concerned principally with the development of facilities for the diagnosis and treatment of the chronic rheumatic diseases.

A few of the public hospitals have been able to set up rheumatism clinics, staffed by medical men who are interested and experienced in the diagnosis and treatment of these diseases. It is one of the aims of the Division to ensure the establishment of such clinics at all the larger public hospitals.

Among the chronic diseases from which mankind suffers, the rheumatic diseases, with their associated disabilities, present a real problem. With the increasing proportion of older people among the population, the proportion of chronically disabled will increase, and the economic burden of sustaining these unfortunate people will become proportionately greater.

The policy of the Department in general terms is to prevent the chronically disabled person from becoming a heavy and an inert weight, and to convert him into a useful unit in the economic life of the country.

There are certain wide classes into which most of these cases fall :—

(1) Those cases which require treatment in the acute and sub-acute phase, and for whom something can be done.
(2) Those cases which have recovered from the acute phase and remain partially disabled, and are not yet adjusted to a way of life.
(3) Those cases which are intermittently disabled, which account for a great proportion of absenteeism, &c.
(4) Those cases which are hopelessly crippled, and in which age is often an added factor.

There remains a class which gives the key to the whole picture of rehabilitation, and that is :—

(5) Those cases which are partially disabled, but nevertheless resolutely pursue some gainful occupation and live above their handicap.

Each of these classes has to be considered. Each is equally important. The problem is a national one, akin to that of tuberculosis or maternal and infant welfare. No one who has seen what has been accomplished in these matters in twenty years, and has been conscious of the raised level of approach of the people to the issues involved, can fail to be deeply impressed. The same process must be applied to the problem of rheumatic diseases. The medical profession must be taught to diagnose the conditions in their early stages; the public must be educated in the matter of seeking early treatment; and adequate facilities must be made available for diagnosis, treatment, and after-care.

The establishment of a national hospital, such as the Queen Elizabeth Hospital, for the active treatment of rheumatic diseases constitutes the first step. It is essential that the hospital should concentrate on the treatment of rheumatic disorders in their earliest stages, the very stages when they are most likely to benefit from treatment, and when deformities can be prevented. There is no doubt that efficient and active treatment, given during the early stages of these diseases, offers the best hope of curing them or of restricting the damage they cause. The recent discovery in the United States of America of the beneficial effects of an extract of the cortex of the adrenal glands, known as compound E or cortisone, shows that at last we are in sight of a remedy for some of these diseases. Unfortunately, as with so many previous therapeutic discoveries, early optimism has had to give way to caution. It is now known that cortisone can produce very unpleasant side effects, and in order to maintain its effect it has to be injected for an indefinite period. Nor do the discoverers, Hench and Kendall, claim for it anything more than an experimental substance. The discovery of the activity of cortisone, however, is of great importance in indicating the direction in which further research should proceed.

PHYSIOTHERAPY

The appointment of a whole-time Inspector of Physiotherapy has justified itself, and has enabled a more efficient observation to be made of the work of the physical medicine departments of public hospitals. The reports of the Inspector reveal that the public hospitals are seriously short of staff, while in some instances there is also need for improvement in accommodation and equipment.

The best results can be obtained from physiotherapy only when there is available not only the supervision but also the active interest of doctors who are qualified by training and experience in these particular methods of treatment. Without such supervision there is danger of the physiotherapy department of a hospital becoming embarrassed by an increasing proportion of patients with chronic ailments who attend for indefinite periods without making any real progress. While the number of available specialists in this field is as yet relatively small, it is felt that we should aim to reach the stage where every hospital of sufficient size should have the services of a specialist in physical medicine supervising the work of the physiotherapy department, while in the case of the smaller hospitals one such specialist might supervise the work in a group of institutions.

With a view to overcoming the shortage of physiotherapists, a system of bursaries for students at the School of Physiotherapy in Dunedin has been established. A condition of the bursary is that the bursar shall work for at least one year in hospital following qualification. The advantages of this extra hospital experience are obvious.

OCCUPATIONAL THERAPY

This branch of physical medicine is gradually assuming a more important place in the treatment of disease in New Zealand. Having been started in the mental hospitals, and having proved itself a very valuable method of treatment there, its use is being gradually extended into the general hospitals. The syllabus of training of students has been revised during the year to make the training as suitable for practice in general hospitals as it is for practice in mental hospitals. The Occupational Therapy Act came into force on 1st January, 1950, and, with the appointment of a statutory Board dealing with the training and registration, occupational therapists acquire a status on a hospital staff which they have not hitherto enjoyed in the Dominion.

In order to stimulate the supply of occupational therapists, bursaries are awarded to suitable students on application.

CEREBRAL PALSY

Further clinics for the examination and provisional diagnosis of patients suffering from cerebral palsy have been held by the Director during the year at the Wellington Hospital and the Cook Hospital, Gisborne. In addition, consultations have been given by him at Rotorua and at other centres which he has visited, when advice as to management at home has been given to the parents until such time as institutional treatment can be obtained. The Division has also been acting in an advisory capacity to the Department of Education with regard to the setting-up of a non-residential school and training centre in Wellington. Further work in this direction awaits the completion of alterations to the Queen Elizabeth Hospital and the provision of staff with the necessary qualifications and experience.

QUEEN ELIZABETH HOSPITAL

In spite of staffing difficulties, useful work has been carried out. Of special interest is the study of the effects of lactic acid injections on osteo-arthritic joints, and the effect of desoxycorticosterone (a synthetic adrenal extract) on rheumatoid arthritis. In conjunction with the Rotorua Public Hospital, a blood transfusion service has been started, and this has enabled a large number of patients suffering from rheumatoid arthritis to benefit from this form of treatment. Special efforts have been directed towards the prevention and correction of deformities, and patients have been taught the principles of treatment so that they can continue to look after themselves at home.

In conclusion, I should like to pay a tribute to the help and co-operation I have received from my colleagues, medical and lay, both at Rotorua and at Head Office.

G. A. Q. Lennane,
Director, Division of Physical Medicine.

REPORT OF THE MEDICAL STATISTICIAN

As from 4th March, 1949, a Medical Statistics Branch of the Department has been established. The compilation and analysis of the official statistics of New Zealand as regards causes of death, morbidity, infant mortality, and still-births is now the function of this Branch, which has taken over these statistics from the Census and Statistics Department.

Although this report is principally concerned with medical statistics, certain basic vital statistics are also given to enable a general picture of population trends to be obtained.

POPULATION

The mean population of New Zealand for the year ended 31st December, 1949, was 1,881,118 (Europeans, 1,767,674; Maoris, 113,444). This represents an increase of 39,587 (Europeans, 36,091; Maoris, 3,496) over the figures for 1948. Population figures for the last ten years are as follows:—

Table 51—Mean Population, by Race and Sex, 1940–49

Year.	Europeans.			Maoris.			Total.		
	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.
1940 ..	775,879	770,433	1,546,312	46,936	44,057	90,993	822,815	814,490	1,637,305
1941 ..	757,588	781,032	1,538,620	47,093	45,235	92,328	804,681	826,267	1,630,948
1942 ..	753,718	791,394	1,545,112	48,018	46,442	94,460	801,735	837,837	1,639,572
1943 ..	739,733	798,918	1,538,651	49,217	47,767	96,984	788,950	846,685	1,635,635
1944 ..	748,726	807,592	1,556,318	50,291	49,186	99,477	799,017	856,778	1,655,795
1945 ..	775,856	818,091	1,593,947	51,078	49,689	100,767	826,934	867,780	1,694,714
1946 ..	827,212	831,933	1,659,145	52,519	49,735	102,254	879,731	881,668	1,761,399
1947 ..	847,788	848,400	1,696,188	54,729	51,720	106,449	902,517	900,120	1,802,637
1948 ..	866,478	865,105	1,731,583	56,525	53,423	109,948	923,003	918,528	1,841,531
1949 ..	886,020	881,654	1,767,674	58,400	55,044	113,444	944,420	936,698	1,881,118

The numbers of European and Maori live births, still-births, deaths, and infant deaths (under one year of age) registered during the last ten years are given in the next table. Statistics of Maori still-births are not at present obtainable, and it should be noted that the standard of Maori vital statistics is not as high as that of the European figures. This is due mainly to the incompleteness of the records of Maori registrations.

Table 52—Live Births, Still-births, Deaths, and Infant Deaths, by Race, 1940–49

Year.	Live Births.			Still-births.	Deaths.			Infant Deaths.		
	European.	Maori.	Total.	European.	European.	Maori.	Total.	European.	Maori.	Total.
					NUMBERS					
1940 ..	32,771	4,265	37,036	965	14,282	1,593	15,875	990	372	1,362
1941 ..	35,100	4,134	39,234	971	15,146	1,901	17,047	1,045	517	1,562
1942 ..	33,574	4,330	37,904	891	16,385	1,732	18,117	964	424	1,388
1943 ..	30,311	4,440	34,751	817	15,447	1,675	17,122	951	399	1,350
1944 ..	33,599	4,508	38,107	799	15,363	1,686	17,049	1,012	461	1,473
1945 ..	37,007	4,644	41,651	865	16,051	1,635	17,686	1,036	413	1,449
1946 ..	41,871	5,776	47,647	931	16,093	1,627	17,720	1,093	431	1,524
1947 ..	44,816	4,988	49,804	911	15,904	1,538	17,442	1,122	365	1,487
1948 ..	44,193	4,956	49,149	834	15,812	1,473	17,285	970	380	1,350
1949 ..	43,988	4,917	48,905	796	16,012	1,566	17,578	1,046	422	1,468
					RATES*					
1940 ..	21·19	46·87	22·62	28·60	9·24	17·51	9·70	30·21	87·22	36·78
1941 ..	22·81	44·77	24·06	26·92	9·84	20·59	10·45	29·77	125·06	39·81
1942 ..	21·73	45·84	23·12	25·85	10·60	18·34	11·05	28·71	97·92	36·62
1943 ..	19·70	45·78	21·25	26·25	10·04	17·27	10·47	31·37	89·86	38·85
1944 ..	21·59	45·32	23·01	23·23	9·87	16·95	10·30	30·12	102·26	38·65
1945 ..	23·22	46·09	24·58	22·84	10·07	16·23	10·44	27·99	88·93	34·77
1946 ..	25·24	56·49	27·05	21·75	9·70	15·91	10·06	26·10	74·62	31·99
1947 ..	26·42	46·86	27·63	19·92	9·38	14·45	9·68	25·04	73·18	29·86
1948 ..	25·52	45·09	26·69	18·52	9·13	13·40	9·39	21·95	76·67	27·47
1949 ..	24·88	43·34	26·00	17·77	9·06	13·80	9·34	23·78	85·82	30·02

* Live births and deaths per 1,000 mean population; still-births per 1,000 total births; infant deaths per 1,000 live births.

LIVE BIRTHS

The numbers of European live births registered maintained a high level through the war years, and in the post-war years reached extraordinarily high figures. Although a slight decline appears to have set in, the 1949 total of 43,988 is still only 828 below

the peak year of 1947. Maori births have also maintained their numbers. The European birth-rate for 1949 of 24·88, although lower than the three previous years, was still well above the average for the last decade of 23·23. The Maori birth-rate, which is consistently much higher than the European rate, also shows a downward trend.

STILL-BIRTHS

Statistics of Maori still-births are not obtainable at present. The European rate is remarkable for the consistent decline recorded during the ten years shown in the above table. The 1949 figure of 17·77 per 1,000 total births is the lowest rate on record in New Zealand. This is the third year in succession when the still-birth rate has been below 20 per 1,000 total births.

DEATHS

Death-rates, both European and Maori, have been maintained at a reasonably low level in recent years, the former having registered a decline for each of the last four years. The Maori death-rate, although appreciably higher than the European, has shown a declining trend since 1941. With the exception of the year 1945, the death-rate for the total population has decreased since 1942.

INFANT MORTALITY

The European infant-mortality rate for 1949 of 23·78 per 1,000 live births, although higher than the figure for 1948 (21·95), is still the second lowest rate recorded in the history of New Zealand. The extremely low rates of recent years have been partly due to the unusually large annual increases in the numbers of births registered, as the infant-mortality rate is computed by relating the number of infant deaths occurring in any one year to the number of live births registered during the same year. The Maori infant-mortality rate is still a matter of some concern, and shows a rising trend over the last two years.

Until recent years, New Zealand has always had the lowest infant-mortality rate (European) in the world, and still maintains this position in conjunction with Sweden, which on occasions has recorded a slightly lower rate. This position has been achieved during the period after the first month of life up to the end of the first year. The Maori infant-mortality rate, however, has always been extremely high in comparison. This has been due to the failure to reduce mortality in the corresponding period of infant-life, as illustrated in the next table.

Table 53—European and Maori Infant-mortality Rates Per 1,000 Live Births, 1930–49

Period.	Europeans.			Maoris.		
	Under One Month.	One and Under Twelve Months.	Total Under One Year.	Under One Month.	One and Under Twelve Months.	Total Under One Year.
1930–34	22·74	9·58	32·32	20·32	72·83	93·15
1935–39	22·51	9·73	32·24	26·13	89·76	115·89
1940–44	20·53	9·51	30·04	21·68	78·79	100·46
1945–49	17·91	7·06	24·97	24·30	55·55	79·84
1945	19·59	8·40	27·99	26·05	62·88	88·93
1946	19·08	7·02	26·10	18·35	56·27	74·62
1947	18·08	6·96	25·04	25·46	47·72	73·18
1948	15·80	6·15	21·95	28·85	47·82	76·67
1949	17·01	6·77	23·78	22·78	63·04	85·82

The significant features of the above table are as follows:—The European neo-nata rate (deaths under one month) now shows a definite downward trend. At the beginning of the present century the neo-natal rate was 31·50 per 1,000 live births, while the rate for the age group one and under twelve months was 49·60. Thus, although the neo-natal mortality has been reduced to a little more than one-half, the post-natal rate has declined to approximately one-seventh. Similar figures for the Maori race are available only from 1930 onwards, and it is seen that the Maori neo-natal mortality was very close to the European for the whole of this time, with the exception of the latest quinquennium. On the other hand, the Maori post-natal mortality has over this period always been approximately eight times as high as the European.

The causes of deaths of European infants in the neo-natal (under one month) age-group are given in the next table for the year 1949:—

Table 54—Causes of Deaths of Infants Under One Month, 1949

(Europeans only)

Causes 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 Under One Month.
Infectious diseases ..	..	1	..	..	..	1
Syphilis	2	..	..	..	..	2
Pneumonia and broncho-pneumonia	..	4	8	3	4	19
Diarrhœa and enteritis	..	1	1	..	1	3
Congenital malformations	18	41	13	8	4	84
Congenital debility ..	1	2	..	..	..	3
Injury at birth ..	64	61	5	2	2	134
Premature birth ..	239	128	9	2	..	378
Other diseases of early infancy	29	58	4	1	2	94
Accidents	3	4	..	3	1	11
Other causes ..	5	8	4	1	1	19
Totals ..	361	308	44	20	15	748

Fifty per cent. of the total deaths of infants under one month of age were due to premature birth. Injury at birth was responsible for 18 per cent., congenital malformation for 11 per cent., and other diseases of early infancy a further 13 per cent. Thus 92 per cent. of neo-natal deaths arose out of factors that come within the category of ante-natal or immediate post-natal causes. Of the remaining 8 per cent., the only significant causes were accidents (1·5 per cent.) and pneumonia (2·5 per cent.).

The other important feature of the above table is the fact that 89 per cent. of the deaths occurred within the first week of life, 48 per cent. within the first day, and 41 per cent. between the first day and the first week.

MATERNAL MORTALITY

For Europeans the maternal-mortality rate, including septic abortion, for 1949 was 1·02 per 1,000 live births (1·26 in 1948). Excluding septic abortion, the rate was 0·95 (1·06 in 1948). The Maori figure was 3·05 (1·82 in 1948). There were no deaths of Maoris from septic abortion in either 1948 or 1949.

Table 55—Maternal Mortality Rates Per 1,000 Live Births, 1940–49

	1940.	1941.	1942.	1943.	1944.	1945.	1946.	1947.	1948.	1949.
European	2·93	3·36	2·53	2·21	2·71	2·24	2·05	1·07	1·26	1·02
Maori	4·69	3·87	4·64	2·26	3·32	1·94	3·98	2·21	1·82	3·05
Combined	3·13	3·42	2·77	2·22	2·78	2·21	2·29	1·18	1·30	1·23

The European rate for 1949 is the lowest ever recorded in this country. The Maori rate, however, rose considerably in 1949, but this effect on the combined rate was not sufficient to raise the figure above the low level attained in recent years, the combined figure for 1949 being the second lowest on record. It is worthy of note that there were no deaths from puerperal sepsis following childbirth (either European or Maori) recorded in 1949, and only 3 European deaths from septic abortion, as against 9 in 1948.

PRINCIPAL CAUSES OF DEATH

The following table gives, for the past ten years, and for Europeans and Maoris separately and combined, the death-rates per 10,000 of mean population for certain important causes of death :

Table 56—European (E), Maori (M), and Combined (C) Death-rates Per 10,000 of Mean Population From Various Causes, 1940–49

Causes of Death.		1940.	1941.	1942.	1943.	1944.	1945.	1946.	1947.	1948.	1949.
Typhoid fever ..	E	0·04	0·05	0·05	0·02	0·02	0·02	0·04	0·05	0·02	0·02
	M	1·32	0·76	1·06	0·93	0·91	0·69	0·68	1·13	0·36	0·35
	C	0·11	0·09	0·11	0·07	0·07	0·06	0·08	0·12	0·04	0·04
Measles	E	0·01	0·03	0·20	0·05	..	0·06	0·10	0·01	0·02	0·14
	M	..	0·11	1·59	1·24	..	0·40	2·64	0·09	0·18	2·56
	C	..	0·03	0·28	0·12	..	0·08	0·24	0·01	0·03	0·28
Whooping-cough ..	E	0·15	0·44	0·03	0·11	0·29	0·05	0·01	0·20	0·03	0·12
	M	0·11	11·05	3·91	..	4·73	0·79	..	1·41	2·55	2·73
	C	0·15	1·04	0·25	0·10	0·55	0·09	0·01	0·27	0·18	0·28
Diphtheria	E	0·10	0·11	0·16	0·21	0·19	0·26	0·30	0·12	0·02	0·03
	M	0·22	0·22	0·85	0·62	0·70	2·08	0·98	0·75	0·27	0·44
	C	0·10	0·12	0·20	0·23	0·22	0·37	0·33	0·15	0·03	0·05
Influenza	E	0·77	0·49	1·61	0·42	0·40	0·33	0·67	0·19	0·29	0·25
	M	4·18	3·14	4·76	2·78	2·92	2·08	3·62	1·41	2·00	1·06
	C	0·96	0·64	1·79	0·56	0·55	0·44	0·84	0·27	0·40	0·30
Pulmonary tuberculosis	E	3·24	3·19	3·19	3·09	3·12	3·12	2·77	2·60	2·36	2·06
	M	31·87	32·60	33·56	27·53	29·15	28·98	28·65	25·93	18·92	17·98
	C	4·83	4·86	4·94	4·54	4·68	4·66	4·28	3·98	3·35	3·02
Other forms of tuber-	E	0·64	0·69	0·75	0·63	0·69	0·67	0·60	0·48	0·35	0·40
culosis	M	9·45	11·37	10·48	9·38	9·15	8·44	9·98	6·95	6·28	5·73
	C	1·13	1·29	1·31	1·15	1·20	1·13	1·15	0·87	0·71	0·72
Cancer	E	12·02	13·18	13·13	13·85	14·02	13·88	13·67	13·65	14·17	13·98
	M	5·27	5·85	5·93	8·04	4·93	5·46	5·67	6·86	6·28	6·61
	C	11·64	12·76	12·72	13·50	13·47	13·38	13·21	13·25	13·70	13·54
Intra-cranial lesions of	E	8·45	8·95	9·90	9·79	9·28	10·26	9·63	9·77	9·67	9·18
vascular origin ..	M	4·29	2·60	1·91	4·23	2·51	3·27	1·37	3·38	2·09	2·82
	C	8·22	8·59	9·45	9·46	8·90	9·86	9·16	9·40	9·22	8·80

Table 56—European (E), Maori (M), and Combined (C) Death-rates Per 10,000 of Mean Poulation From Various Causes, 1940–49—continued

Causes of Death.		1940.	1941.	1942.	1943.	1944.	1945.	1946.	1947.	1948.	1949.
Heart-diseases ..	E	29·52	31·55	36·41	33·68	33·49	35·48	34·86	33·91	32·73	33·95
	M	20·55	22·31	24·88	24·02	23·02	26·70	22·69	23·95	24·65	24·77
	C	29·02	31·02	35·74	33·11	32·87	34·95	34·14	33·33	32·25	33·40
Bronchitis	E	1·12	0·94	1·36	1·40	1·14	1·14	0·92	1·00	0·76	0·72
	M	4·50	4·77	3·49	3·92	4·42	2·68	2·35	2·91	2·82	2·03
	C	1·31	1·16	1·48	1·55	1·33	1·23	1·00	1·12	0·88	0·80
Broncho-pneumonia and pneumonia	E	3·39	3·46	3·63	3·08	3·14	3·17	3·38	3·21	3·49	3·24
	M	25·94	35·96	32·39	29·80	26·85	21·34	27·29	19·26	18·92	22·48
	C	4·64	5·30	5·29	4·66	4·56	4·25	4·77	4·16	4·41	4·40
Diarrhœa and enteritis..	E	0·50	0·54	0·50	0·58	0·64	0·78	0·44	0·34	0·32	0·40
	M	6·37	7·37	5·72	6·70	7·74	11·31	8·41	6·67	4·91	6·26
	C	0·82	0·93	0·81	0·94	1·06	1·41	0·90	0·70	0·60	0·75
Nephritis	E	3·19	3·66	3·19	2·83	2·80	2·62	2·72	2·36	2·14	2·12
	M	2·87	2·92	2·75	1·55	2·61	2·48	2·35	1·32	1·36	2·12
	C	3·17	3·62	3·17	2·75	2·78	2·61	2·70	2·30	2·09	2·12
Senility	E	2·63	3·13	3·02	3·17	2·94	2·90	1·95	1·79	1·21	1·17
	M	8·79	10·94	7·20	6·29	6·33	4·96	4·50	3·76	2·91	2·03
	C	2·97	3·57	3·26	3·36	3·15	3·03	2·09	1·90	1·31	1·22
Suicide	E	1·09	0·93	1·09	0·86	1·00	1·10	1·00	0·80	1·05	0·97
	M	1·10	0·54	0·32	0·21	0·30	0·69	0·68	0·47	0·55	0·44
	C	1·09	0·91	1·04	0·82	0·95	1·07	0·98	0·78	1·02	0·94
Accident	E	4·55	4·61	4·61	5·08	4·27	3·68	4·15	4·15	4·61	4·20
	M	9·23	9·31	8·79	8·04	6·63	6·45	8·12	8·74	8·09	8·29
	C	4·81	4·88	4·86	5·26	4·43	3·85	4·39	4·42	4·82	4·44
Homicide	E	0·05	0·10	0·06	0·12	0·10	0·16	0·09	0·06	0·11	0·11
	M	0·33	0·11	0·53	..	0·50	0·20	0·29	0·28	0·09	0·71
	C	0·06	0·10	0·09	0·12	0·13	0·16	0·10	0·07	0·11	0·15
Ill-defined or unspecified	E	0·05	0·08	0·08	0·07	0·03	0·05	0·02	..	0·02	0·01
	M	3·85	5·52	1·80	6·29	1·21	1·09	0·39	1·50	1·09	1·59
	C	0·26	0·39	0·18	0·43	0·10	0·11	0·05	0·09	0·08	0·11
Other causes	E	20·85	22·31	23·07	21·35	21·15	20·97	19·68	19·07	17·95	17·51
	M	34·83	38·45	31·43	31·14	34·88	32·17	28·45	27·71	29·65	27·04
	C	21·67	23·22	23·53	21·95	21·97	21·62	20·18	19·57	18·63	18·08

Diseases for which the Maori death-rate is markedly and consistently higher than the European rate are typhoid fever, diphtheria, influenza, tuberculosis (all forms), bronchitis, pneumonia, diarrhœa and enteritis, senility, accidents, and ill-defined causes. Of these the most marked are tuberculosis (nearly ten times the European rate), pneumonia, bronchitis, and influenza. On the other hand, Europeans have an appreciably higher death-rate from such diseases as cancer (twice as high as Maoris), heart-diseases, and nephritis.

In the Department's report for the year 1948–49 a fifty-year statistical survey of tuberculosis mortality in New Zealand was included. A similar review of cancer mortality is given in the next table.

Table 57—Cancer Mortality in New Zealand: Numbers, Crude Death-rates, and Standardized Death-rates (M), Females (F), and Persons (P), 1900–49

(Europeans)

Year.	Number of Deaths.			Crude Death-rate Per 10,000 of Mean Population.			Standardized Death-rate Per 10,000 of Mean Population.*		
	M.	F.	P.	M.	F.	P.	M.	F.	P.
1900	246	184	430	6·12	5·09	5·63	6·12	6·53	6·31
1901	265	250	515	6·48	6·77	6·62	6·42	8·48	7·47
1902	296	240	536	7·05	6·35	6·72	6·97	8·06	7·55
1903	325	257	582	7·51	6·63	7·10	7·45	8·38	7·90
1904	323	248	571	7·23	6·23	6·76	7·08	7·38	7·21
1905	313	253	566	6·79	6·18	6·51	6·59	7·24	6·90
1906	337	286	623	7·10	6·79	6·96	6·96	8·09	7·49
1907	361	313	674	7·41	7·25	7·33	7·31	8·51	7·91
1908	363	294	657	7·24	6·63	6·95	7·07	7·96	7·52
1909	383	328	711	7·43	7·19	7·32	7·24	7·97	7·60
1910	399	343	742	7·60	7·33	7·47	7·36	8·32	7·85
1911	448	361	809	8·38	7·52	7·97	8·12	8·43	8·28
1912	418	394	812	7·65	8·00	7·82	7·43	9·01	8·27
1913	446	410	856	7·95	8·08	8·01	7·72	9·04	8·43
1914	510	394	904	8·97	7·55	8·29	8·72	8·53	8·60
1915	460	440	900	8·13	8·25	8·19	7·63	9·28	8·48
1916	480	429	909	8·70	7·83	8·27	7·48	8·22	7·98
1917	511	446	957	9·40	8·03	8·71	8·09	8·37	8·17
1918	471	465	936	8·73	8·26	8·49	7·43	8·67	8·05
1919	543	488	1,031	9·49	8·55	9·02	8·48	8·91	8·67
1920	502	527	1,029	8·23	9·04	8·63	7·85	9·36	8·65
1921	523	521	1,044	8·37	8·71	8·53	7·94	9·03	8·51
1922	562	504	1,066	8·80	8·22	8·52	7·87	7·96	7·89
1923	569	546	1,115	8·76	8·75	8·76	7·78	8·31	8·04
1924	658	587	1,245	9·95	9·23	9·60	8·79	8·70	8·71
1925	612	595	1,207	9·03	9·16	9·09	7·94	8·42	8·13
1926	720	621	1,341	10·43	9·39	9·92	9·13	8·56	8·76
1927	675	649	1,324	9·63	9·64	9·64	8·22	8·46	8·30
1928	704	670	1,374	9·94	9·83	9·89	8·34	8·52	8·38
1929	744	723	1,467	10·39	10·48	10·44	8·66	8·92	8·76
1930	741	711	1,452	10·23	10·18	10·20	8·35	8·49	8·39
1931	772	721	1,493	10·51	10·18	10·35	8·42	8·38	8·38
1932	770	702	1,472	10·41	9·83	10·13	8·21	7·84	7·98
1933	832	792	1,624	11·19	11·00	11·09	8·58	8·64	8·58
1934	855	844	1,699	11·43	11·63	11·53	8·65	8·89	8·73
1935	866	790	1,656	11·52	10·82	11·18	8·45	8·10	8·23
1936	855	907	1,762	11·30	12·33	11·81	8·09	8·84	8·44
1937	902	876	1,778	11·81	11·81	11·82	8·26	8·32	8·25
1938	921	866	1,787	11·95	11·56	11·76	8·28	8·03	8·08
1939	948	867	1,815	12·15	11·42	11·79	8·31	7·84	7·99
1940	954	904	1,858	12·30	11·73	12·02	8·26	7·89	8·04
1941	1,024	1,004	2,028	13·52	12·65	13·18	8·70	8·49	8·56
1942	1,005	1,024	2,029	13·33	12·94	13·13	8·26	8·46	8·31
1943	1,069	1,062	2,131	14·45	13·29	13·85	8·82	8·61	8·67
1944	1,126	1,056	2,182	15·04	13·08	14·02	8·93	8·40	8·58
1945	1,129	1,084	2,213	14·55	13·25	13·88	8·70	8·36	8·42
1946	1,136	1,132	2,268	13·73	13·61	13·67	8·54	8·52	8·48
1947	1,234	1,081	2,315	14·56	12·74	13·65	8·96	7·82	8·30
1948	1,284	1,169	2,453	14·82	13·51	14·17	9·24	8·22	8·65
1949	1,237	1,235	2,472	13·96	14·01	13·98	†	†	†

* Standard population used for standardized rates—England and Wales, 1901: Male and female rates calculated on "persons" distribution; "persons" rates calculated on male and female distribution. † Not available.

Cancer is essentially a disease of older people. Indeed, in recent years, of all persons who died in New Zealand over the age of forty, one in every seven died of cancer. An appreciable proportion of the rising crude cancer death-rate must be attributed to the ageing constitution of the population. This is evident from a study of the standardized cancer death-rate, which eliminates the effect of changes in age-grouping. The highest peak in the standardized rate was reached in 1926 and 1929, when a rate of 8·76 per 10,000 of population was reached. Since then the level of the standardized cancer death-rate has remained fairly constant.

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POLIOMYELITIS IN NEW ZEALAND, 1947–49

By F. S. Maclean, M.D., D.P.H., Director, Division of Public Hygiene

During this century New Zealand has experienced four major epidemics of poliomyelitis at approximately ten-year intervals. The third of these epidemics began in the early summer of 1936–37, and although rather more drawn out than the two earlier outbreaks of 1916 and 1925, began to die away as autumn merged into winter. The incidence of the disease remained low for the ensuing ten years, except for minor increases in the autumn of 1943 and the summer of 1946; and when in December, 1947, the incidence mounted rapidly, it soon became evident that another major epidemic had begun. Contrary to expectations, however, the outbreak continued with undiminished intensity throughout the whole of 1948 and only died down in the middle of 1949. For the purposes of this survey, the outbreak is considered to have extended from November, 1947, to July, 1949, inclusive, after which date the monthly notifications failed to reach double figures for the first time in twenty-one months. During this period a total of 1,720 cases and suspected cases were notified. All notifications were carefully checked, and all those not considered to show clinical or pathological evidence of poliomyelitis were rejected. The final figures included a total of 1,406 positive cases, of which 805 showed evidence of paralysis or paresis. These figures include both European and Maori cases.

The yearly incidence of the disease in New Zealand from 1915 to 1949 is shown in Table 1 and Fig. 1. Prior to 1916 nothing more than sporadic cases had been recorded in this country.

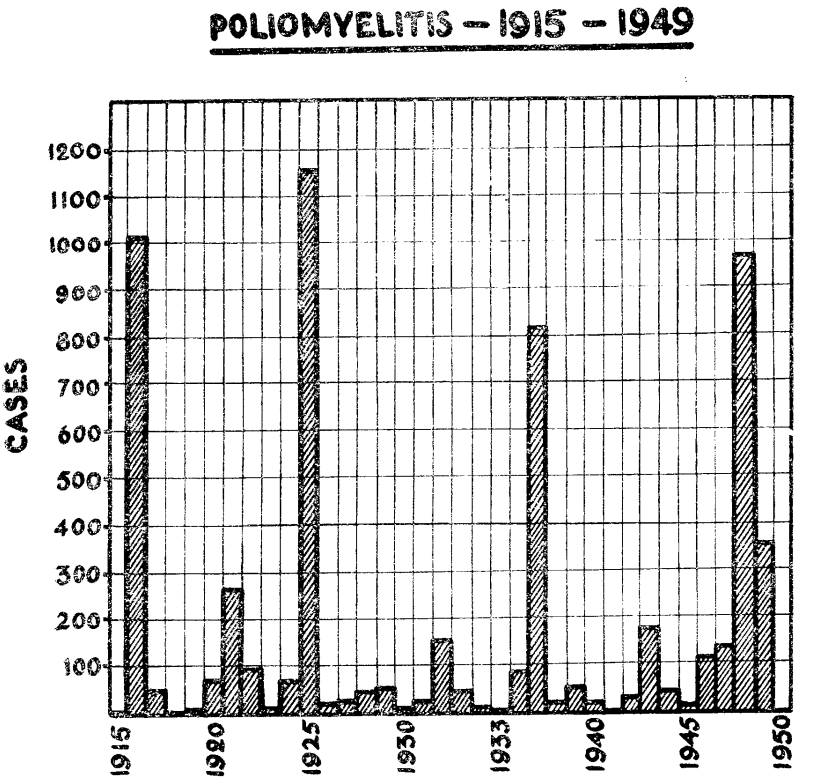


FIG. 1.

Table I—Poliomyelitis, 1915–49: Distribution by Months

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	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	60	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
1938	9	1	3	8	1	..	..	..	..	..	..	..	22
1939	3	2	2	11	7	9	4	2	1	2	3	4	50
1940	5	5	3	..	1	..	2	2	1	4	..	..	23
1941	..	1	1	..	..	1	..	1	..	..	..	..	4
1942	..	1	4	3	4	5	1	..	3	3	5	2	31
1943	..	10	38	59	23	7	2	3	15	14	4	4	179
1944	19	8	11	5	1	..	..	..	..	..	..	1	45
1945	..	1	2	..	1	2	1	..	2	1	2	4	16
1946	26	23	9	22	14	8	6	4	..	1	..	..	113
1947	3	1	2	..	1	..	1	..	..	1	17	109	135
1948	55	43	76	96	117	64*	85	85	117	77	80	69	964
1949	94	66	84	33	18	10	11	7	5	8	9	10	355

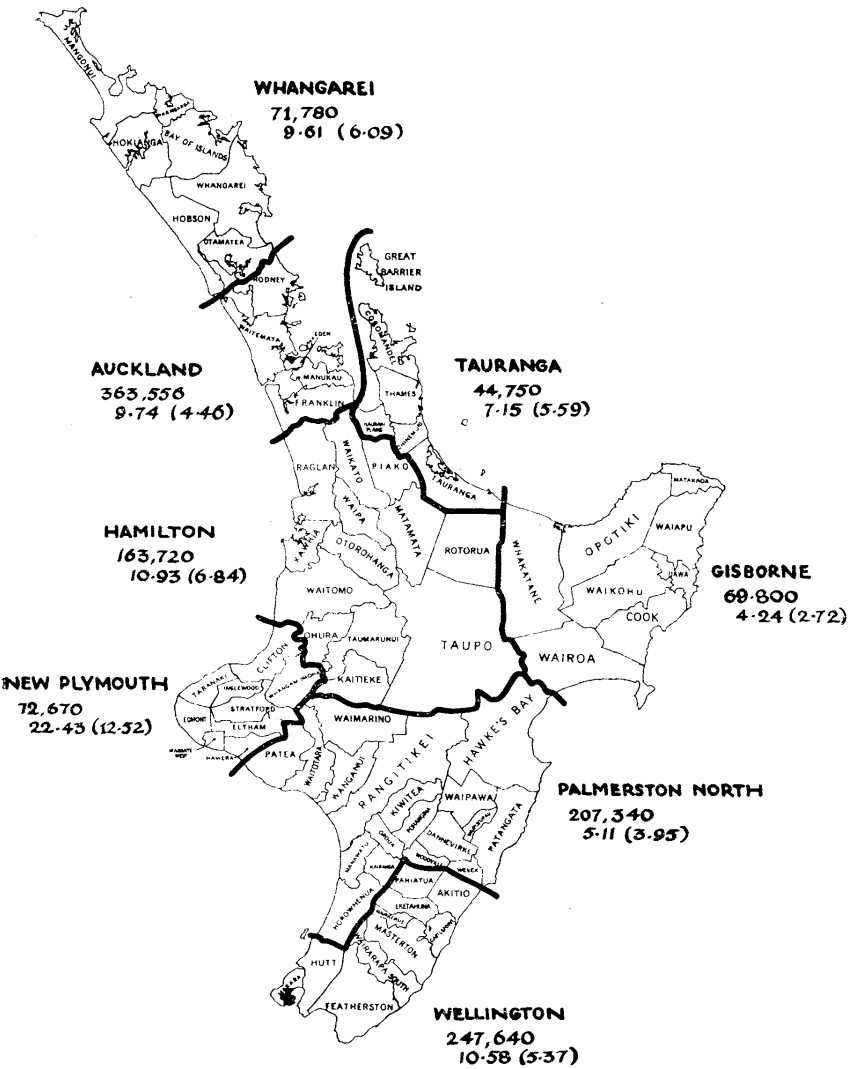
* Corrected return.

The deaths from poliomyelitis for the years 1908 to 1949 are shown in Table 2. These figures refer to Europeans only, as accurate Maori figures for the earlier years are not available.

Table 2—Deaths From Poliomyelitis (Europeans), 1908–49

Year.	Number of Deaths.			Year.	Number of Deaths.		
	M.	F.	Totals		M.	F.	Totals
1908	1	2	3	1929	5	2	7
1909	1	2	3	1930	2	3	5
1910	3	1	4	1931	4	1	5
1911	1	..	1	1932	12	7	19
1912	..	2	2	1933	6	2	8
1913	..	2	2	1934	..	2	2
1914	16	9	25	1935	..	1	1
1915	2	2	4	1936	3	2	5
1916	76	47	123	1937	12	27	39
1917	6	4	10	1938	2	2	4
1918	2	2	4	1939	2	2	4
1919	1	..	1	1940	3	..	3
1920	1	1	2	1941	2	..	2
1921	8	3	11	1942	1	3	4
1922	6	3	9	1943	18	6	24
1923	2	..	2	1944	2	3	5
1924	8	14	22	1945	..	1	1
1925	91	82	173	1946	2	2	4
1926	7	4	11	1947	6	3	9
1927	6	1	7	1948	25	27	52
1928	10	7	17	1949	7	6	13

POLIOMYELITIS IN NEW ZEALAND
Nov. 1947 to July 1949

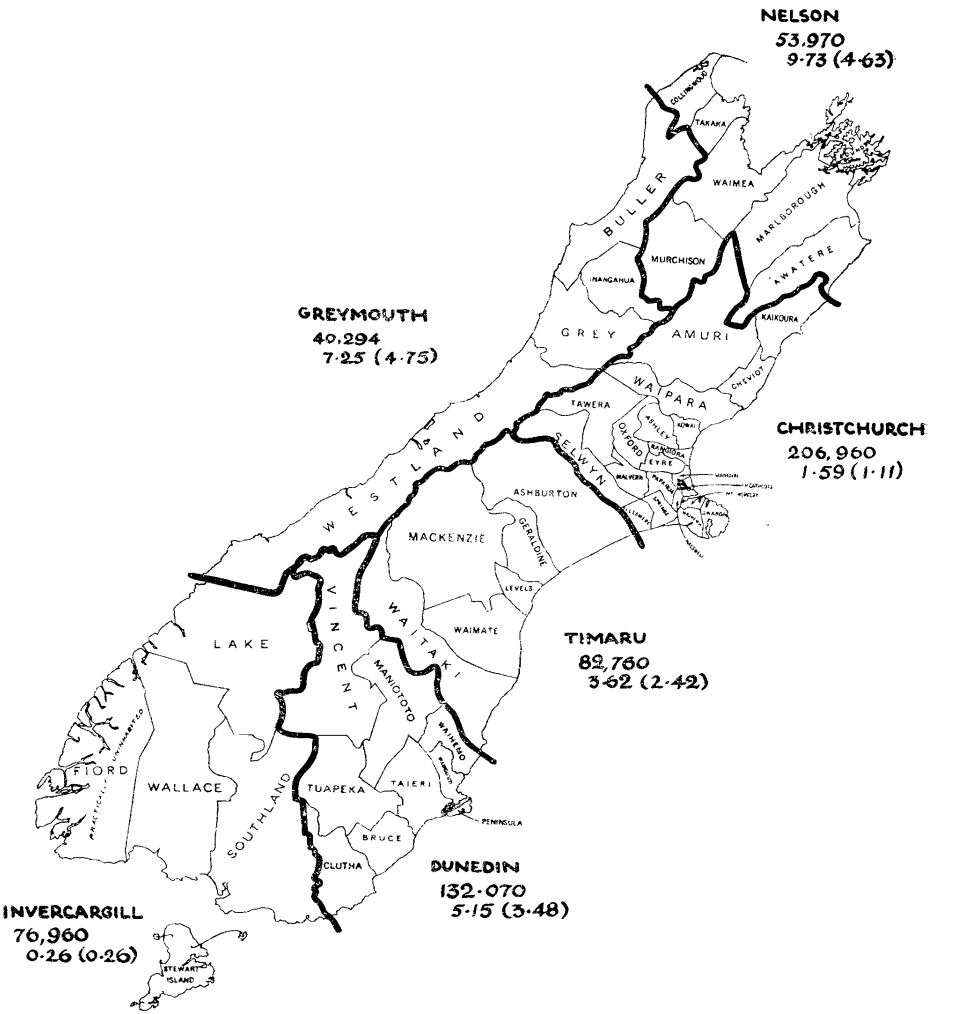


BOUNDARIES AND POPULATIONS OF HEALTH DISTRICTS

Figures show rates per 10,000, population, all cases.

Figures in brackets show rates per 10,000 population paralysed cases

POLIOMYELITIS IN NEW ZEALAND
Nov. 1947 to July 1949



BOUNDARIES AND POPULATIONS OF HEALTH DISTRICTS

Figures show rates per 10,000 population, all cases.
Figures in brackets show rates per 10,000 population, paralysed cases

Table 3 gives the death-rates for these four outbreaks and shows clearly the greater severity of those of 1916 and 1925.

Table 3—Death-rates From Poliomyelitis: Rates Per 10,000 Population

Year.	Europeans.	Maoris.	Combined.
1916	1·12	..	..
1925	1·30	0·88	1·29
1937	0·26	0·47	0·27
1948	0·30	0·27	0·30

The rates for 1948 are for that year only and do not include the deaths in 1947 and 1949.

Further reference will be made below to the characteristic features of the four major epidemics of poliomyelitis.

PROGRESS OF THE OUTBREAK

The first cases occurred in the Auckland District about the middle of November, 1947, followed a week later by cases in the Hamilton and New Plymouth Districts. By the middle of December isolated cases began to occur in other parts of the North Island, but for some time cases were occurring mainly in the Auckland, Hamilton, and New Plymouth Districts. By April the disease was fairly general throughout the North Island and four cases had been notified in the South Island. The Wellington District remained relatively free until May.

During the winter and spring of 1948 (June to October) the incidence in the northern districts lessened considerably and larger numbers of cases were reported from the southern portion of the North Island, and from Wellington District in particular. By the end of 1948 the outbreak in Wellington virtually ceased, and cases were occurring freely in the South Island, particularly in the Dunedin District. By the end of July, 1949, only sporadic cases were being notified—mostly from Auckland. The Invercargill District remained almost free from the disease, only two cases in all being notified.

Figure 2 shows the weekly case incidence in the various health districts, calculated by dates of onset.

The Wellington outbreak is of interest in that, whereas cases occurred more or less evenly throughout the northern districts with perhaps some slight recession during the winter months, the Wellington outbreak was almost entirely confined to the winter and early spring. Few cases occurred before May, 1948, and about 80 per cent. of all cases occurred in the seven months May to November. It is quite unusual for any part of New Zealand to experience an outbreak of poliomyelitis confined to winter months.

As is usual in New Zealand experience, the intensity varied considerably in different parts of the country. The attack rates for the different health districts are shown in Table 4.

Table 4—Attack Rates, by Health Districts

Health Districts.	Mean Population.	Total Cases.		Paralysed Cases.	
		Number.	Rate Per 10,000.	Number.	Rate Per 10,000.
Whangarei	71,780	69	9·61	47	6·50
Auckland	363,556	354	9·74	162	4·46
Tauranga	44,750	32	7·15	25	5·59
Hamilton	163,720	179	10·93	112	6·84
New Plymouth	72,670	162	22·43	91	12·52
Gisborne	69,800	31	4·24	19	2·72
Palmerston North	207,340	106	5·11	81	3·95
Wellington	247,640	262	10·58	133	5·37
Nelson	53,970	49	9·73	25	4·63
Christchurch	206,960	33	1·59	23	1·11
Greymouth	40,294	29	7·25	19	4·75
Timaru	82,760	30	3·62	20	2·42
Dunedin	132,070	68	5·15	46	3·48
Invercargill	76,960	2	0·26	2	0·26
New Zealand	1,834,270	1,406	7·67	805	4·38

New Plymouth District experienced far the heaviest attack rate, both for total cases and for paralysed cases. Whangarei, Auckland, Hamilton, Wellington, and Nelson suffered very similar degrees of severity. Tauranga occupied an intermediate position for all cases, but the rate for paralysed cases was as high as or higher than the corresponding rates for the previously mentioned five districts. The remaining districts, and particularly those in the South Island with the exception of Greymouth, escaped comparatively lightly, and the outbreaks were relatively more circumscribed.

MODE OF SPREAD

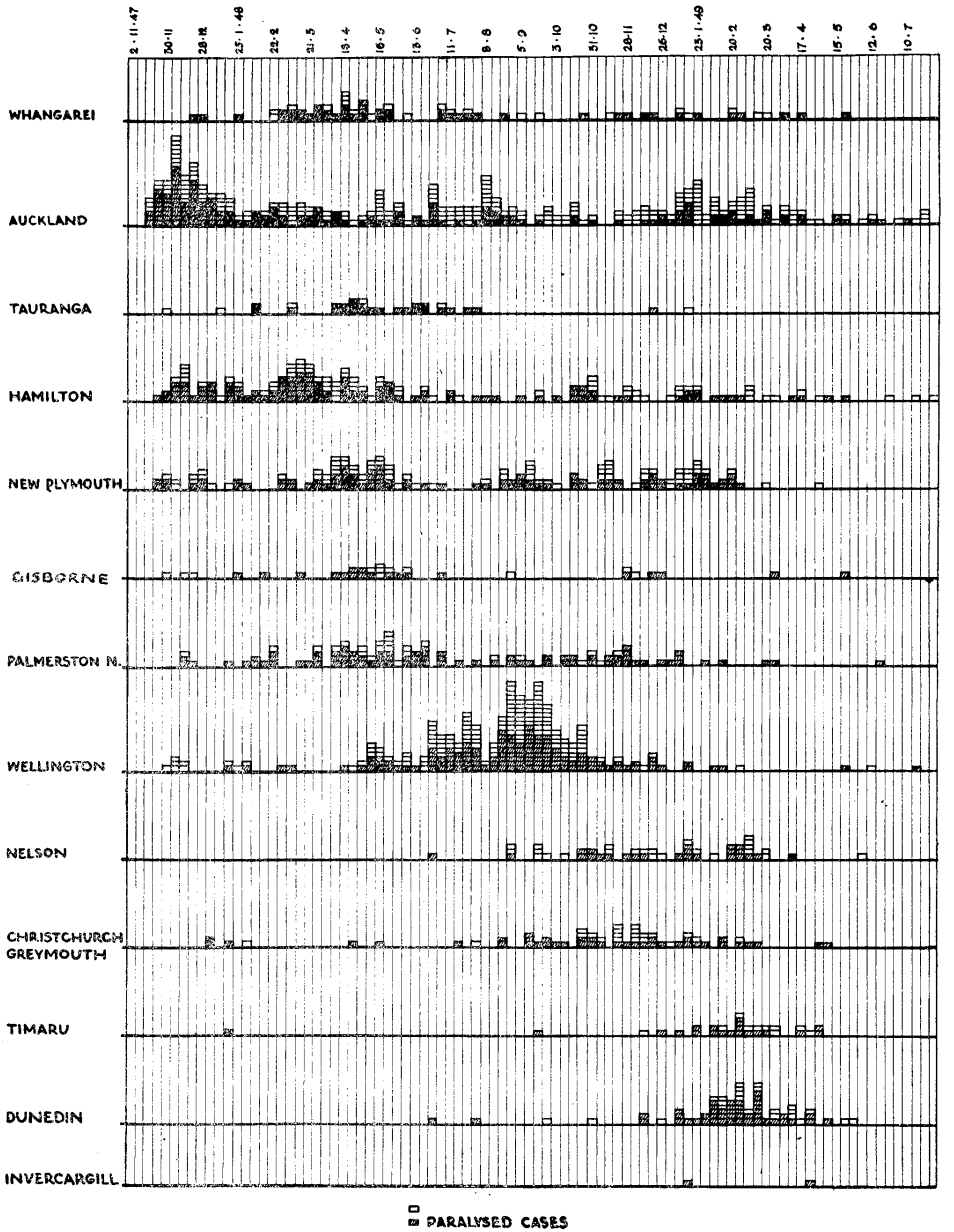
Reference to Fig. 2 will show that, while a few isolated cases occurred in most districts within a relatively short period, the main incidence of the disease in each locality occurred much later, and it took some time before the virus became at all widely dispersed throughout the southern districts. The most intense period of the outbreak in Auckland was during the three months November, 1947, to January, 1948, while in Wellington 80 per cent. of cases occurred between May and November, 1948. In the South Island the outbreak was still further delayed. All but three of the Dunedin cases occurred after 1st December, 1948. This feature of slow progression has been noticeable in earlier epidemics.

Another characteristic feature in some districts was the high incidence in rural districts as compared with urban areas. The Medical Officer of Health, Whangarei, reports that large number of cases were in very isolated households, and the source of the infection remained a mystery. Several towns escaped completely, while numerous cases occurred in the surrounding countryside. In the Gisborne Health District, another predominantly rural area, it was again noted that the majority of cases occurred in isolated rural communities. The towns of Opotiki and Whakatane did not have a single case.

A high incidence in rural areas was not, however, invariable. In the Auckland District, while the semi-rural areas showed a higher rate than the Auckland urban areas, certain intermediate boroughs had a still higher rate, as the following figures show :—

Auckland urban area : 218 cases, or 8·0 per 10,000.
Otahuhu, Papatoetoe, Papakura : 30 cases, or 21·5 per 10,000.
Remainder (semi-rural) : 97 cases, or 15·4 per 10,000.

FIG. 2 CASES BY WEEKS OF ONSET



In New Plymouth District, on the other hand, the distribution of the cases as between urban and rural areas was not so characteristic. As stated above, the incidence was heavier in this district than in any other, with a rate of 22·43 per 10,000 for all cases, and of 12·52 per 10,000 for paralysed cases. New Plymouth (population, 20,400) is the only town of any size, and the only other towns with populations over 2,000 are Hawera (5,160), Stratford (4,080), and Waitara (2,540). The occurrence of cases was as follows :—

—	Population.	Cases.	Rate Per 10,000.
A. New Plymouth City	20,400	40	20·0
B. Hawera; Stratford; Waitara	11,780	28	23·3
C. Remainder of district	40,440	93	23·5

The attack rates for these three groups are as follows :—

		Rate Per 10,000.
A. Paralysed cases	25	12·5
Non-paralysed	15	7·5
B. Paralysed cases	17	14·2
Non-paralysed	11	9·1
C. Paralysed cases	49	12·0
Non-paralysed	44	11·0

In the Wellington District the attack rate for the Wellington urban area was 10·2 per 10,000, and for the remainder of the district, which is predominantly rural, 10·6 per 10,000.

INCIDENCE BY AGE AND SEX

Tables 5, 6, and 7 give the age and sex groups for all cases, paralysed cases, and non-paralysed cases.

Table 5—Distribution, by Age and Sex, All Cases, November, 1947, to July, 1949

District.	0–1.		1–4.		5–9.		10–14.		15–19.		20–24.		25–29.		30–34.		35+.		Totals.		Grand Totals.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Whangarei	1	..	8	7	10	6	7	7	7	4	4	1	5	1	..	..	..	1	42	27	69
Auckland	7	..	39	26	74	44	41	36	14	11	17	11	9	3	6	4	12	..	219	135	354
Tauranga	..	..	3	..	10	6	2	2	1	2	3	..	1	1	..	1	..	..	20	12	32
Hamilton	1	2	18	10	32	20	18	6	14	9	11	8	7	6	3	2	8	4	112	67	179
New Plymouth ..	1	..	20	17	36	14	23	10	6	5	3	4	5	4	3	4	5	2	102	60	162
Gisborne	..	..	5	3	6	1	1	1	1	1	2	3	1	1	2	..	1	2	19	12	31
Palmerston North ..	3	..	11	9	11	9	10	7	5	14	2	6	1	5	3	2	5	3	51	55	106
Wellington	4	4	28	32	42	39	15	24	10	5	14	15	10	2	2	3	10	3	135	127	262
Nelson	..	..	7	7	10	7	2	2	2	1	1	2	2	3	..	1	2	..	26	23	49
Christchurch ..	..	..	4	3	6	..	6	..	3	2	..	2	2	1	..	2	1	1	22	11	33
Greymouth ..	1	..	3	2	8	2	1	1	2	1	1	..	1	..	1	4	1	..	19	10	29
Timaru	..	..	1	1	8	2	5	5	1	3	1	2	1	..	..	..	..	..	17	13	30
Dunedin	1	..	6	3	4	9	10	5	3	5	3	4	2	4	..	4	2	3	31	37	68
Invercargill ..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	1	1	2
Totals ..	19	6	153	120	257	159	141	107	69	63	63	58	47	31	20	27	47	19	816	590	1,406

Table 6—Distribution, by Age and Sex, Paralysed Patients, November, 1947, to July, 1949

District.	0–1.		1–4.		5–9.		10–14.		15–19.		20–24.		25–29.		30–34.		35+.		Totals.		Grand Totals.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Whangarei	1	..	6	6	5	5	4	5	4	3	3	1	2	1	..	..	..	1	25	22	47
Auckland	2	..	25	14	30	17	12	13	4	5	9	6	7	3	6	4	5	..	100	62	162
Tauranga	..	..	3	..	7	5	1	2	1	2	2	..	..	1	..	1	..	..	14	11	25
Hamilton	..	1	16	8	19	11	8	4	7	6	6	7	3	3	2	2	5	4	66	46	112
New Plymouth ..	1	..	12	7	20	8	9	7	3	3	2	4	4	2	2	3	2	2	55	36	91
Gisborne	..	..	3	2	2	..	..	1	1	..	2	3	1	..	1	..	1	2	11	8	19
Palmerston North ..	2	..	9	9	5	6	6	4	3	12	2	5	1	4	3	2	5	3	36	45	81
Wellington	3	1	15	12	19	22	3	11	8	4	8	12	5	..	1	2	6	1	68	65	133
Nelson	..	..	5	3	6	3	1	..	1	1	1	..	1	1	..	1	1	..	16	9	25
Christchurch ..	..	..	3	2	4	..	4	..	2	2	..	2	2	1	..	..	1	..	16	7	23
Greymouth ..	1	..	2	1	5	1	1	1	2	1	..	..	1	..	..	3	..	..	12	7	19
Timaru	..	..	1	1	4	1	4	4	1	2	..	2	..	..	..	..	..	..	10	10	20
Dunedin	1	..	4	3	2	5	7	4	2	3	1	4	2	4	..	1	2	1	21	25	46
Invercargill ..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	1	1	2
Totals ..	11	2	104	68	128	84	60	57	39	44	37	46	29	20	15	19	28	14	451	354	805

Table 7—Distribution, by Age and Sex, Non-paralysed Patients, November, 1947, to July, 1949

District.	0–1.		1–4.		5–9.		10–14.		15–19.		20–24.		25–29.		30–34.		35+.		Totals.		Grand Totals.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Whangarei	..	..	2	1	5	1	3	2	3	1	1	..	3	..	..	..	..	..	17	5	22
Auckland	5	..	14	12	44	27	29	23	10	6	8	5	2	..	..	..	7	..	119	73	192
Tauranga	..	..	..	..	3	1	1	..	..	..	1	..	1	..	..	..	..	..	6	1	7
Hamilton	1	1	2	2	13	9	10	2	7	3	5	1	4	3	1	..	3	..	46	21	67
New Plymouth ..	..	..	8	10	16	6	14	3	3	2	1	..	1	2	1	1	3	..	47	24	71
Gisborne	..	..	2	1	4	1	1	..	..	1	..	..	..	1	1	..	..	..	8	4	12
Palmerston North ..	1	..	2	..	6	3	4	3	2	2	..	1	..	1	..	..	..	..	15	10	25
Wellington	1	3	13	20	23	17	12	13	2	1	6	3	5	2	1	1	4	2	67	62	129
Nelson	..	..	2	4	4	4	1	2	1	..	..	2	1	2	..	..	1	..	10	14	24
Christchurch ..	..	..	1	1	2	..	2	..	1	..	..	..	..	..	..	2	..	1	6	4	10
Greymouth ..	..	..	1	1	3	1	..	..	..	..	1	..	..	..	1	1	1	..	7	3	10
Timaru	..	..	..	..	4	1	1	1	..	1	1	..	1	..	..	..	..	..	7	3	10
Dunedin	..	..	2	..	2	4	3	1	1	2	2	..	..	..	..	3	..	2	10	12	22
Invercargill ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Totals ..	8	4	49	52	129	75	81	50	30	19	26	12	18	11	5	8	19	5	365	236	601

As was the case in 1937, the age group 5 9 provided the greatest number of cases and also showed the highest attack rate. The attack rates for the different age groups are shown in Table 8.

Table 8—Attack Rates, by Age-Groups

Age Group.	All Cases.		Paralysed Cases.	
	Cases.	Rate Per 10,000.	Cases.	Rate Per 10,000.
0–4 years	298	13·8	185	8·5
5–9 years	416	24·5	212	12·3
10–14 years	248	18·4	117	8·7
15–19 years	132	9·7	83	5·9
20 years and over	312	2·6	208	1·7
All ages	1,406	7·67	805	4·38

It will be noted also that the age group with the second highest attack rate is the 10–14 group.

MORTALITY

The deaths include 42 males and 35 females, a total of 77. Among these were 5 Maori males and 1 Maori female. The case mortality for all cases and for paralysed patients, by age groups, are shown in Tables 9 and 10.

Table 9—Case Mortality, All Cases

Age Group.	Cases.		Deaths.		Mortality Per Cent.		
	M.	F.	M.	F.	M.	F.	Combined.
0–4 years	172	126	4	3	2·4	2·4	2·4
5–9 years	257	159	6	4	2·3	2·5	2·4
10–14 years	141	107	3	5	2·1	4·6	3·2
15–19 years	69	63	7	3	10·1	4·7	7·5
20–24 years	63	58	9	5	14·3	8·6	11·5
25–29 years	47	31	4	4	8·5	12·8	10·2
30–34 years	20	27	4	6	20·0	22·2	21·2
35 years and over	47	19	5	5	10·6	26·3	15·1
All ages	816	590	42	35	5·1	5·9	5·5

Table 10—Case Mortality, Paralysed Cases

Age Group.	Cases.		Deaths.		Mortality Per Cent.		
	M.	F.	M.	F.	M.	F.	Combined.
0–4 years	115	70	4	3	3·4	4·3	3·8
5–9 years	128	84	6	4	4·7	4·8	4·7
10–14 years	60	57	3	5	5·0	8·8	6·8
15–19 years	39	44	7	3	17·9	6·6	12·0
20–24 years	37	46	9	5	24·3	10·8	16·9
25–29 years	29	20	4	4	13·7	20·0	16·3
30–34 years	15	19	4	6	26·6	31·6	29·4
35 years and over	28	14	5	5	17·8	35·7	23·8
All ages	451	354	42	35	9·3	9·9	9·6

The oldest fatal case was that of a man aged forty-eight, and the youngest was that of an infant nine days old. The mother became ill from the disease seven days before her confinement. The child was removed from his mother immediately after birth, and had no further contact with her. He showed the first symptoms of the disease on the eighth day, and died on the ninth day.

It appears likely that in this case the child was infected at the time of birth from fæcal contamination. The mother's illness also ended fatally.

MULTIPLE CASES IN HOUSEHOLDS

There were fifty-three households or families having two or more cases. In three instances three members of a family were affected. In twenty-six instances the interval between cases in the same household was less than five days, and direct infection from the first case seems unlikely. In three instances the intervening period was twenty-two days or more. In the remaining twenty-seven families the period between dates of onset varied from five days to fifteen days. On the assumption that a patient may become infectious for several days before the onset of symptoms, there is a strong likelihood of a direct transfer of infection in these cases.

One remarkable feature is the rarity with which a case in a boarding-school was followed by a second case.

SECOND ATTACKS

Three cases of second attacks of poliomyelitis were reported.

(1) A male of twenty is stated to have been treated for poliomyelitis in 1937. In neither attack did any paralysis occur.
(2) A male of twenty-six suffered from poliomyelitis in 1923 and was left with an arm palsy. The second attack commenced on 1st November, 1948, and was accompanied with paralysis of the trunk and both legs.
(3) A woman of thirty-nine, stated to have had poliomyelitis in 1921, was again attacked in January, 1949, and suffered paralysis of the left thigh.

USE OF "IRON LUNGS"

All the larger hospitals are equipped with respirators, and a number of patients required their use.

Patients with bulbar paralysis invariably did badly. The opinion of the staff of one hospital was that these patients do better if kept out of the respirator. The respirators are of greatest value where diaphragmatic or intercostal paralysis is present. In a number of cases normal breathing was restored but the patients subsequently died.

In at least ten cases where the respirator was used the patient recovered. One patient was in the respirator for seven weeks and made a complete recovery. In another case the respirator broke down and had to be operated manually for fourteen hours. This patient also recovered.

It is also reported that the respirator caused "great relief" to patients, even in cases which did not finally recover.

CONTROL MEASURES

In accordance with customary practice in New Zealand, all schools were closed as soon as the existence of the epidemic became apparent. In Auckland, Hamilton, and New Plymouth, which were the first districts to be affected, all schools were closed on 29th November. In other districts schools were closed on 8th December and all prize-givings and other school functions were cancelled. In addition to the closing of the schools, all gatherings of children were forbidden, and children under 16 were not allowed to travel from the North Island to the South Island except for special reasons.

The schools remained closed after the summer holidays, but reopened on 1st March in the districts least affected. In Auckland, Hamilton, and New Plymouth districts, which continued to have the greatest number of cases, schools were finally reopened on 19th April. Thereafter in all districts individual schools were closed for two or three weeks after the occurrence of a case among the pupils.

In previous outbreaks it has not been possible to determine whether the closing of schools lessened the spread of infection. The recent outbreak continued for such a long period after the schools reopened that an opportunity was provided for investigating to what extent the disease was contracted at school. The general opinion among Medical Officers of Health is that the course of the outbreak was not affected by the opening or closing of the schools. In one district "diligent inquiry failed in any single instance to prove any association between cases through a school. In one case a child remained at school during an attack of the disease which was only recognized later when some degree of paralysis became evident. No other case occurred in the school."

A survey has been made of all school-children in the Auckland and Wellington districts who contracted the disease and suffered some degree of paralysis or paresis. The survey covered all periods when the schools in these districts were open. The total number of children between the ages of five and fifteen in these two districts who developed the disease with signs of paralysis numbered 127 out of a Dominion total for these age groups of 328. They therefore represent a reasonable sample. Of these 127 children, 81 were attending school at the time of the onset of the disease. In only three cases did a second case occur at the same school within the usual incubation period of seven to fourteen days. As the possibility of some other source of infection in these three cases cannot be excluded, it would seem very doubtful whether schools play any significant part in spreading the disease.

The many disadvantages of closing schools unnecessarily are too obvious to need mention.

AMOUNT OF RESIDUAL PARALYSIS

It was not possible to compile a complete record of the extent of paralysis suffered in individual cases. An attempt has been made, however, to assess the amount of residual crippling as at 31st December, 1949. Of the total number of 805 patients returned as paralysed, 77 died, and the degree of residual paralysis affecting the remainder is shown in Table 11.

Table 11—Residual Paralysis

——	Recovered Completely.	Minor Disability.	Serious Disability.	Complete Disability.	Died.	Untraced.	Total.
Number ..	212	295	87	9	77	125	805
Percentage ..	26·3	36·6	10·8	1·1	9·5	15·5	99·8

The classification used was as follows:—

"Minor disability" includes patients who have not completely recovered but who can expect to earn their living and take a normal place in community life.

"Serious disability" includes patients whose disability permits something less than normal employment but who nevertheless are not completely incapacitated.

It is considered likely that a large proportion of the persons that were untraced will either have recovered completely or be suffering from only minor disability.

COMPARISON WITH PREVIOUS EPIDEMICS

There are considerable differences between the four New Zealand epidemics in respect of their duration, intensity, severity, and distribution by age groups.

Duration and Intensity.—Taking the duration of these epidemics as the periods during which the number of cases continuously reached double figures in any month, the duration and monthly incidence of the four epidemics is shown in Table 12.

Table 12—Duration and Intensity of Epidemics Compared

Epidemic.	Month of Epidemic.										
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1916	119	319	320	167	44	19	..	..	..	..	..
1925	59	224	340	366	120	54	22	10	..	..	..
1937	85	70	53	107	244	163	95	30	14	14	10
1947–49	17	109	55	43	76	96	117	64*	85	85	117

Epidemic.	Month of Epidemic.										
	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	Total.
1916	..	..	..	..	..	..	..	..	..	..	988
1925	..	..	..	..	..	..	..	..	..	..	1,195
1937	11	..	..	..	..	..	..	..	..	..	896
1947–49	77	80	69	94	66	84	33	18	10	11	1,406

* Corrected return.

The short duration and great intensity of the epidemics of 1916 and 1925 will at once be apparent and is set out graphically in Fig. 3, which shows the monthly notifications for the last three epidemics.

The comparative attack rates are given in Table 13.

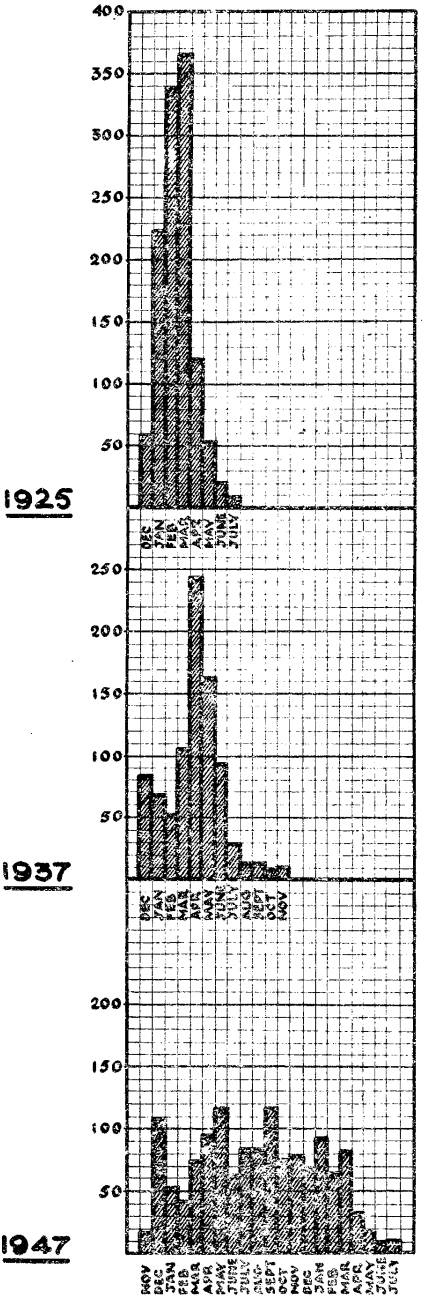
Table 13—Epidemics Compared: Attack Rates

Epidemic Year.	Mean Population.	Total Cases.	Rate Per 10,000.
1916	1,149,225	988	8·59
1925	1,379,487	1,195	8·66
1937	1,587,211	896	5·65
1947–49	1,854,270	1,406	7·67

Severity.—Unfortunately records are not available of the proportion of paralysed cases in the two earlier epidemics, but Table 3 above gives the comparative death-rates. This shows that the epidemic of 1925 was the most severe, and slightly exceeded the severity experienced in 1916. By comparison the two most recent epidemics were comparatively mild, particularly as the recent one extended over nearly two years.

Distribution by Age Groups.—Figure 4 shows the percentage distribution of cases by age groups, and the attack rates by age groups. It will be seen that a trend towards a high attack rate for the older age groups is evident, similar to that recorded in some other countries. The pattern for 1925 is similar to that for 1916, although a generally higher attack rate is evident. In 1937 the 5–9 age group is the one most seriously affected. In 1948 the youngest age group has dropped to third place, while all other age groups show a higher attack rate than formerly.

DURATION AND INTENSITY OF EPIDEMICS



ALL CASES — Showing monthly notifications

FIG. 3.

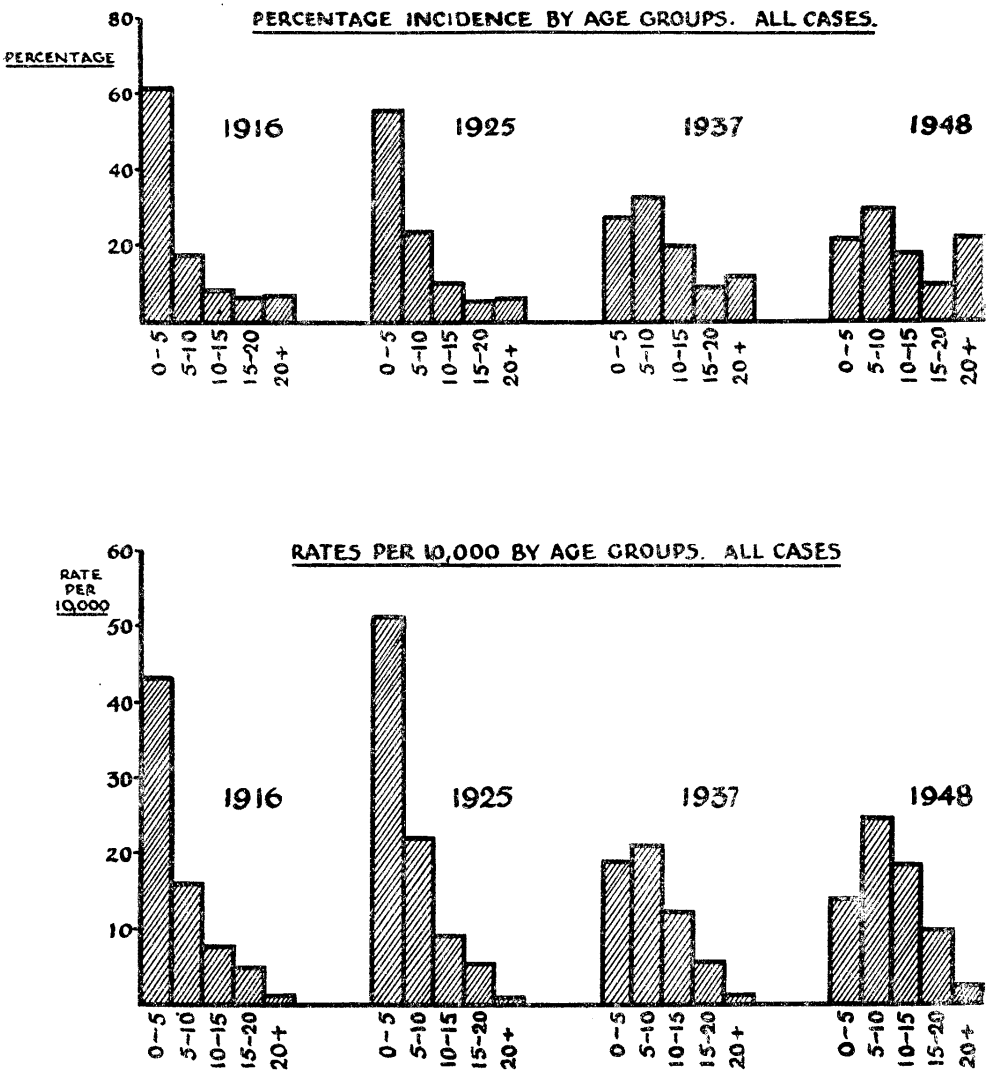


FIG. 4.

IMMUNITY AFTER ATTACK

It has generally been held that during an epidemic of poliomyelitis infection is very widespread and that in an affected community most people come in contact with the virus and obtain immunity to further attacks. In New Zealand experience, different epidemics vary in incidence in different health districts, and it would be reasonable to suppose that a district having a high rate of incidence in one epidemic would escape lightly in the succeeding one. To determine if this is so, Fig. 5 was prepared to show the attack rates in the different health districts in the epidemics of 1936 37 and 1947 49. In 1936–37 the disease appeared first in the Dunedin District and spread northwards, while in 1947 the outbreak began in Auckland and spread southwards. Only paralysed cases have been included.

INCIDENCE OF PARALYSED CASES BY HEALTH DISTRICTS ALL AGES

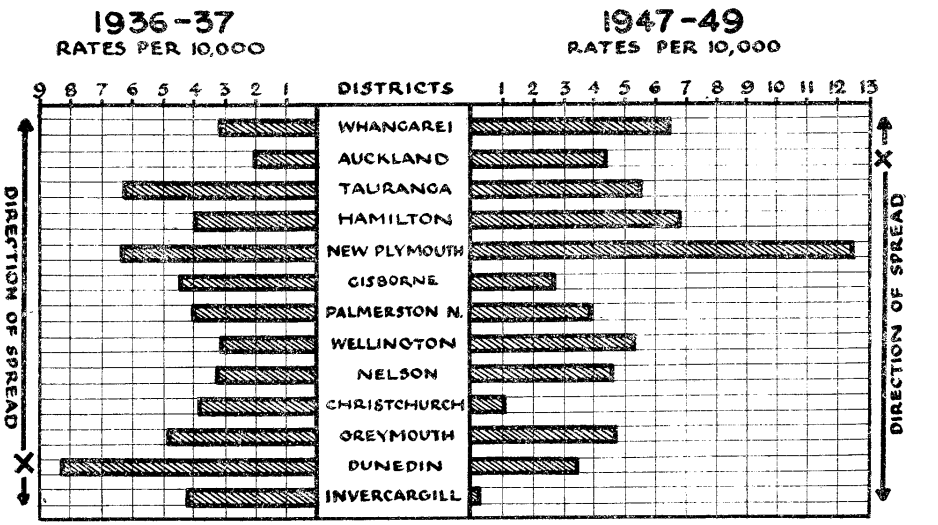


FIG.5.

Assuming that the paralysis rate is a measure of the distribution of the virus, Fig. 5 does not suggest that a lasting general immunity is conferred by a previous high incidence. New Plymouth District, which had the second highest attack rate in 1937, had an outstandingly high attack rate in 1947–49, while Whangarei, Tauranga, and Hamilton Districts had higher attack rates than Auckland District in both epidemics. Similarly, Dunedin and Greymouth show higher attack rates than Christchurch on both occasions.

Timaru District is omitted, as it did not come into being until 1947. It was formed from adjacent portions of Christchurch and Dunedin Districts. If the Timaru cases are allotted to their former districts, the attack rates in the two larger districts will be practically unaltered.

There are three factors, however, which may influence the development of immunity in a community. Fresh susceptibles are added to the community by natural increase, and if epidemics occur at approximately ten-year intervals, children under ten years of age are likely to be particularly susceptible. Furthermore, the spread of virus will be influenced by the density of the population, and it is commonly thought that urbanized communities maintain a higher level of immunity than do rural ones. Finally, the occurrence of cases year by year during the inter-epidemic period may considerably influence the proportion of immunes present at the onset of an extensive outbreak.

To allow for consideration of the first two factors, Fig. 6 shows the health districts arranged in three groups, according to the degree of urbanization, while the attack rates for the 1947–49 epidemic are those for paralysed cases in the age groups 10 years and upwards. The first group of districts includes the four metropolitan districts, which have a substantial proportion of their population living under urban conditions, the second group includes districts in which there are a number of towns with populations ranging from 4,000 to 25,000 with a closely settled farming population. The third group includes the five districts which have a predominantly rural population more thinly spread over wide areas.

INCIDENCE OF PARALYSED CASES BY HEALTH DISTRICTS

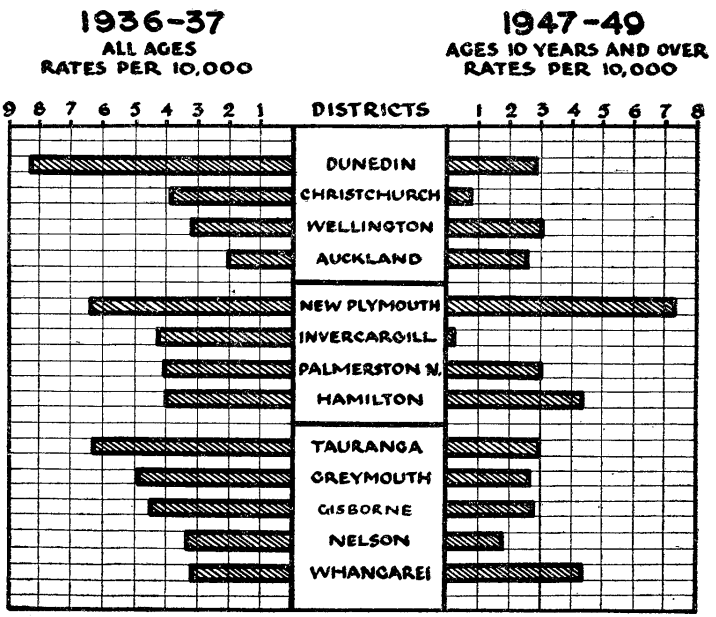


FIG. 6.

Table 14 shows the notifications by districts of all cases for the period 1st January, 1938, to 31st October, 1947, with the attack rates per 10,000 calculated on the approximate populations for 1942. These attack rates, together with the corresponding rates for 1947–49, are set out graphically in Fig. 7.

Table 14—Poliomyelitis, January, 1938, to October, 1947

——	1938.	1939.	1940.	1941.	1942.	1943.	1944.	1945.	1946.	January–October, 1947.	Totals.	Rate Per 10,000
Whangarei ..	..	1	..	..	8	1	..	..	..	..	10	1·43
Auckland ..	1	8	5	..	4	..	..	1	7	..	26	0·86
Tauranga ..	..	2	..	1	..	..	1	..	..	..	4	0·93
Hamilton ..	2	7	..	..	..	..	..	1	8	3	21	1·4
New Plymouth ..	..	..	1	..	..	..	8	3	..	..	12	1·66
Gisborne	1	4	1	..	2	1	..	1	1	..	11	1·61
Palmerston North ..	1	10	7	..	2	..	1	..	9	..	30	1·50
Wellington ..	1	9	..	..	..	3	8	2	9	1	33	1·50
Nelson	13	..	2	..	..	4	..	..	1	..	20	3·63
Christchurch ..	..	4	3	3	14	74	3	2	7	1	111	4·4
Greymouth ..	..	1	..	..	1	8	..	..	..	2	12	3·0
Dunedin	1	4	3	..	..	49	14	6	61	2	140	10·0
Invercargill ..	2	..	1	..	..	39	10	..	10	..	62	8·15
Totals ..	22	50	23	4	31	179	45	16	113	9	492	..

A study of Figs. 5 and 6 shows that the attack rates both for all ages, and for the age groups 10 years and over, bear no general inverse relationship to those of the preceding epidemic, even when comparative densities of population are allowed for. It would seem that even among persons old enough to have passed through a previous epidemic the varying attack rates fail to show a pattern suggesting that any degree of immunity can be attributed to the comparative severity of the epidemic ten years earlier.

Figure 7 compares the attack rates for the inter-epidemic period, January, 1938, to October, 1947, as set out in Table 14, with the corresponding rates during the epidemic. All notified cases are included. It may be claimed that, allowing for certain inconsistencies, Fig. 7 as compared with Fig. 6 does suggest a general inverse pattern.

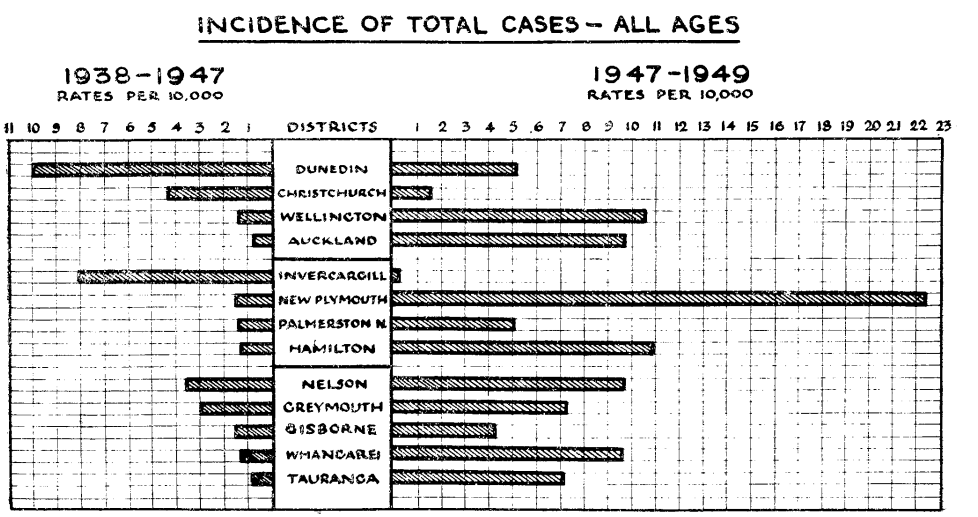


FIG. 7.

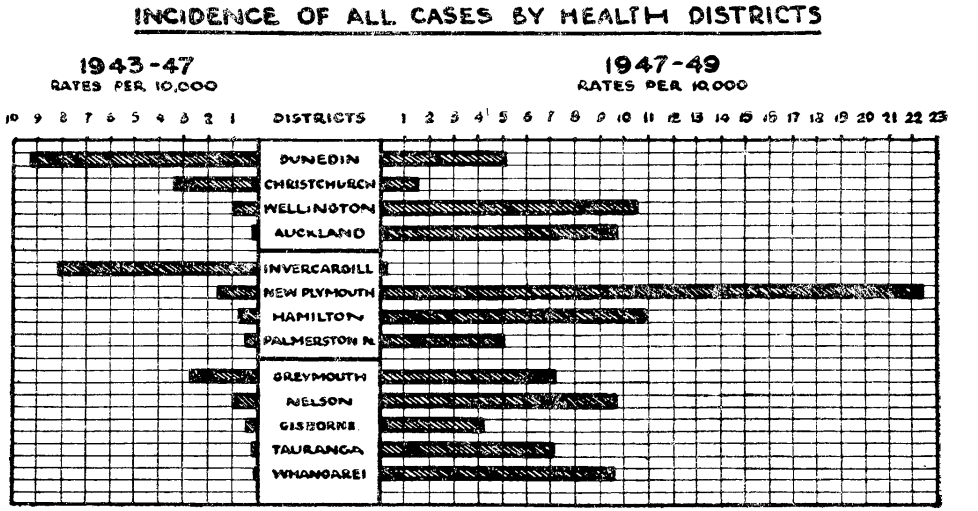


FIG. 8.

Carrying the argument a stage further, Fig. 8 includes only the cases notified in the five years 1943 to 1947, and the comparative rates are calculated on the census figures for 1945. It would seem that the inverse pattern is a little clearer.

The only conclusion that can reasonably be drawn is that the attack rate experienced in each district during the recent epidemic was in no way influenced by that district's experience in the 1936–37 epidemic, but there is an indication that it was influenced to a slight degree by the extent to which the virus was prevalent during the inter-epidemic period, and particularly during the five years immediately preceding the epidemic.

If this conclusion be accepted, it follows that the immunity conferred by contact with the virus of poliomyelitis is short-lived, and the increasing prevalence of cases in the older age groups would seem to support this suggestion. It may be that the ten-year spacing of epidemics in this country is a measure of the extreme duration of immunity, and that when an epidemic begins, people in the higher age groups do not possess any more acquired immunity than do young children. Their susceptibility to the disease may, of course, be influenced by other factors than previous experience of the infection.

OTHER FEATURES OF THE OUTBREAK

It will be of interest to record other studies and reports that have already been published concerning the recent epidemic. The following list is believed to be complete :—

Thompson, A. W. S. : " A Contribution to the Epidemiology of Poliomyelitis in New Zealand." Director-General's Annual Report, 1948.

Garlick, C. H. : " Poliomyelitis in Pregnancy." *N.Z. Medical Journal*, *47*, 262, December, 1948.

Thompson, A. W. S. : " Poliomyelitis in Auckland, 1947–48 : An Epidemiological Study." Director-General's Annual Report, 1949.

Hughes, Elizabeth K. : " Clinical Observations on Poliomyelitis : A Review of Cases Admitted to Auckland Hospital." *N.Z. Medical Journal*, *48*, 263, February, 1949.

Robertson, Walter S. : " Survey of the Modern Treatment of Polioencephelomyelitis." *N.Z. Medical Journal*, *48*, 263, February, 1949.

Caughey, J. E. : " Some Aspects of Poliomyelitis in New Zealand." *British Medical Journal*, *1949*, *2*, 406, 20th August, 1949.

North, J. D. K., and Saunders, J. W. : " A Clinical and Electromyographic Study of Muscle Spasm Occurring in Poliomyelitis." *N.Z. Medical Journal*, *48*, 268, December, 1949.

SUMMARY

Between November, 1947, and July, 1949, New Zealand experienced its fourth major epidemic of poliomyelitis in a space of thirty-four years. The outbreak was less intense and more drawn out than any previous one. There was a total of 1,406 diagnosed cases, 805 cases of paralysis, and 77 deaths. The attack rate differed considerably in different parts of the country, and the incidence in the New Plymouth District (22·43 per 10,000 population) was markedly higher than elsewhere.

The " epidemic " took approximately one year to travel from Auckland to Dunedin, although air transport daily covers the distance in a few hours.

The outbreak in Wellington was unusual in that it was almost entirely a winter outbreak, whereas elsewhere the incidence showed a lessened intensity in the winter months.

The age groups with the highest attack rates were 5–9 years, 10–14 years, and 0–4 years in that order. The incidence in the higher age groups was greater than in previous epidemics.

The case mortality rate was 5·5 per cent. for all ages combined, The highest mortality rates were in the higher age groups, particularly in females over thirty years of age.

There was no consistent difference in incidence as between rural and urban areas.

Multiple cases occurred in 53 households, with a likelihood of direct case to case infection in 27 cases.

Three cases of second attacks of poliomyelitis are recorded, although the evidence appears conclusive in only 1 case.

The usual control measures adopted, particularly the closing of schools, appear to have had little or no effect on the spread of infection.

The patients who died or who are left with serious or complete disability numbered 173, or approximately 21 per cent. of all patients who suffered from paralysis.

Compared with previous outbreaks, the recent one was less intense but far more drawn out. The severity as judged by the mortality rate was approximately equal to that of 1937 but far less than that of the first two outbreaks. There is a marked difference in the effect on different age groups. The youngest age group (0–4 years), which in 1919 and 1925 suffered the highest attack rate, has now dropped to third place.

It is suggested that the immunity resulting from experience of the virus is relatively short-lived, and does not last more than a few years.

REPORT ON ACCIDENTS AMONG BUSH WORKERS

By T. O. Garland, M.D., D.P.H., Director, Division of Occupational Health

Bush working is of particular interest to this Division because it is New Zealand's most dangerous industry. The number of bush workers employed in this country is slightly over 3,000. In 1947 they had 9 fatal accidents; in 1948, 7; and in 1949, 7. To the nearest decimal place, this works out at an average rate of 7·7 per year, which is equivalent to an annual death-rate per million of 2,500 approximately. It must be acknowledged that this high figure could be subject to considerable variation from year to year, because the numbers upon which the rate is based are very small, from a statistical point of view, and the average number of deaths has been based on the figures for only three years. Nevertheless, it does give some indication of the probable fatal accident rate among bush workers in New Zealand. This can perhaps be better appreciated by those not used to dealing with accident mortality rates if air-raid casualties in the Greater London area are considered for the five years mid-1940 to mid-1945, covering the period from the beginning of the blitz to the end of the war. The total killed by enemy action during this period was approximately 27,700 and the number at risk was approximately 10,000,000. This gives an annual death-rate per million at risk of 550. During this same period of five years the annual death-rate among 700,000 miners in Great Britain was approximately 650, giving an annual death-rate per million at risk of approximately 880. The corresponding figure among miners in New Zealand for 1943 to 1947 is approximately 1,240, but here again the figure is based on small numbers. We might put the comparison this way:—

Annual Deaths Per Million at Risk

Londoners from air raids, flybombs, rockets	1940–45	550
Miners in Great Britain	1940–45	880
Miners in New Zealand	1943–47	1,240
Bush workers in New Zealand	1947–49	2,500

Miners and bush workers, with their heavy casualties, can truly be said to be the Commandos of industry.

The fact that these figures are not appreciated, even by those involved, is to be explained by the small number of people in the industry and from the fact that they work in small isolated groups. If they all worked in a single factory and a man were killed every six or seven weeks, it is doubtful if the factory could continue to operate with such a fatality rate. With a quarter of the rate, there would certainly be a full-time safety officer and a substantial expenditure on training, safety equipment, and propaganda.

The death-rate among bush workers is only a fraction of the national loss from accidents. In addition to those killed, more than one in five has an accident every year putting him off work for at least three days; many are off for months. In one gang of twelve that I visited, two were off at the time of my visit, both with very serious injuries.

Before proceeding to review some of the aspects of the present position, I wish to make it clear that this report is based upon a period of only ten days spent in inspecting bush workings in one area of the North Island. I fully admit my very superficial knowledge of the industry and that in my ignorance I may have missed important factors, or even be guilty of misrepresenting the real position.

My first impression is that bush working is a very skilled occupation, and perhaps the development of this skill has more to do with preserving yourself against danger than anything else. Besides having to learn skills in such matters as axe work, the siting of a scarf, and the mechanics of the movement of heavy bodies, the bush worker has to acquire a highly sensitive response to what he can see and hear. There is a multitude of things he must notice if he is not to run into danger. A dull, stupid man cannot acquire this high sensitivity, and it can properly be called a skill.

It is not only the tree that he is felling that may endanger a bushman, but dead bits of wood or broken branches off another tree, or even pine cones falling have killed a man. These missiles from on high are called "sailors," but the descriptive language of the American bushman calls them "widow-makers." Windy weather in the bush greatly increases the danger from sailors. The handling of saws and axes and particularly timber-jacks causes many accidents. Falls alone cause nearly fifteen per cent. of the total number of accidents. This is easily understandable, for much of the country is extremely steep, and to move up and down the slopes, particularly in wet weather, would be dangerous for any one unencumbered by axes, saws, or by having to drag a heavy rope, &c. Moreover, in so many places the earth is covered with a thick tangled mass of undergrowth, fallen timber, &c., so that every step has to be taken with great care, and if some quick movement is attempted, a sprain is very likely to result. Wet weather sends up the risk considerably.

The wire ropes and blocks cause many accidents. Ultimately, any rope gets worn and may break from mere wear. Inevitably, also, the ropes are often strained beyond their tensile strength. Sometimes the equipment is not exactly suited to the particular job; one bush foreman demonstrated to me how a stiff-backed block, used as they were having to use it, cut the rope when it rode up on the fixed back and they had had three ropes snap in quite a short period. Ropes snapping under a heavy strain have killed a number of men and injured scores.

Timber is always apt to roll, and when force is applied on a fulcrum is apt to move to an extent or in a direction that cannot be exactly predicted. Men get crushed and pinched, therefore, by logs, and two of the fatal accidents in 1948 were caused this way. A number of serious accidents also occur in loading and transporting the logs from the hauler to the mill (three fatalities in 1948).

In talking to bush workers I gathered that they do acquire, in a haphazard manner, a certain number of safety maxims. One cannot call them rules, because the lack of a discipline of training results in their being constantly unobserved. These maxims include :—

Never stand or work in the bight of a hauler or tractor rope while the strain is on.

Always survey the upper portion of a tree and nearby trees before felling. They may be interlocked and may carry or turn into widow-makers.

After felling a tree, don't return to the stump for a few moments after it is felled, except on the odd occasions when there are no adjacent trees touching it.

Don't stand immediately behind a tree about to fall.

Never stand in front of or at right-angles to the foremost part of logs when being hauled.

Don't ride or walk directly behind a log being moved by tractor or hauler.

Never stand beside a block while the strain is on. Strops or shackles may break.

Always make sure that signalling device is in good working-order.

Always make sure that the whistle wire is well laid out. Lay the track of the whistle wire reasonably clear of bights and blocks.

Clear an exit from a tree before felling.

Never secure an angle or breaking-out block to a tree where a sailor is lodged.

Don't use an axe with a shoulder on the blade face. File or grind it off. A power-driven grinder should be at every hauler.

Don't use an axe that is not properly balanced and the handle correctly fitted.

Wear boots properly sprigged. Hobnails, with their round polished tops, are an added danger.

Never stand upon loaded logs while holding-chains are being released.

Never stand between logging-truck and loading-skids while chocks are being removed or logs being rolled.

Don't lift blocks or move heavy timber with a jack when the hauler and a rope can do the job for you.

Never work a tractor in the bush without a canopy. (The first fatal accident in 1949 was due to the neglect of this.)

Don't use logging road blocks without adequate lubrication.

Never use wire rope after splicing until all projecting sprags have been removed. Use care in handling all wire ropes, and treat rope injuries immediately.

Don't use blocks with worn sheaves, or shackles with worn pins.

Learn left and right hand axe control. A one-handed axeman is a danger to himself and his mates.

These maxims, of course, only represent a fraction of the bush lore that an experienced man acquires. There are two maxims that they should certainly all know in relation to severely injured men, but which they do not know. These are that a severely injured man, to avoid shock, must be kept warm, and that it is far more important to move him gently than quickly. It is only too easy to bump a shocked man over the narrow stream that divides him from death.

How does a bush worker learn his bush lore ? The answer I received was invariably that he learns it haphazardly on the job from the experienced older man. It was often added that this is the only possible way it can be learned. In fact, many never do learn at all, as is only too obvious from watching some of the so-called experienced bushmen at work, and from going through the records of the last twenty fatal cases, where the

phrase "the man was an experienced bushman" turns up on a number of occasions and is used in the sense of "How could an experienced man do such a thing?" A man left to "learn" like this may be a shy fellow who is diffident about asking questions, and therefore does not get told, or he may be put with a strong silent man who never does much telling, or even with a man who cannot teach or with one who may teach bad and careless ways rather than good and careful ones. Personally, I could never feel happy to let any of my sons go bush working now, unless I had picked the man who was going to train them and knew that they would have a full course of training with him.

I watched one young cross-cutter cut a hole for a jigger for a scarfer. Even to my inexperienced eye, having had a demonstration the previous day from a very efficient man, it was obvious that he neither square-cut the hole properly nor selected a suitable piece of timber for the jigger, nor took sufficient pains to fit the unsuitable jigger to the unsuitable hole. His attitude all along was, "She'll do." (A jigger is a piece of wood fitted into the tree to serve as a step to facilitate climbing.)

I asked him how he had acquired his training. He was now eighteen, and had come into the bush two years ago and his first job was that of ropee. In answer to the question as to how he learned the duties of a ropee, he replied, "A fellow took me up and down the rope a couple of times and then left me to it."

I saw a good example also of how an experienced bushman may sometimes work. We watched the felling of a large totara. The usual second cross-cutter was away and the bush foreman gave a hand to the man on the saw. As the totara crashed, it hit heavily a neighbouring tree which was leaning in the same direction. This was half torn from its roots, but was left standing. The foreman pointed out its danger to me as he went down to help in topping the fallen totara. For some ten minutes they worked in the line and within range of the fall of the damaged tree, if it should fall. Both the local manager who was with me and the Inspector called out to the men that the tree was still moving, for you could hear it giving little cracks from time to time. The foreman looked up, said "She'll be right," and carried on. The Inspector said, in sympathy with my rising agitation, that she'd certainly be down by the morning. In fact, the tree fell in twenty minutes, most of it on top of the former one, but the two men were by this time too far down towards the head to be caught. It was not altogether surprising to learn that the bush foreman had been caught by a tree two years previously and severely injured and was very lucky not to have lost his life, yet here he was risking a similar accident again. The fact is that bushmen have never been taught a discipline of safety, as bus and train drivers, or apprentices under a good instructor, are taught.

It is worth quoting in detail the accident history of a man nearing the end of his working span who attended one of the meetings of bush workers that I addressed in the evening. He took off his boot and sock to show me where his axe had gone right through the foot, between the first and second toe, severing the big toe. Now, years later, the foot was starting to give him a lot of pain, due to the deformity. He also had a deformed right wrist from an old Colles fracture. He had sustained this at the age of twenty-eight, in his own words, "while jacking with two inexperienced mates and using a jack with a bad handle and my mates failing to catch the log at the same time, the weight being too much for one man." The accident of the axe through his right foot happened when he was thirty-eight, from "sniping a log using an axe I was unfamiliar with, having given my usual sniping axe to a new chum who was working with me, and I was also chopping offhand, the new chum being a one-handed chopper." (Note how in both cases the untrained man involved the experienced man in a serious accident.) His left ankle was also deformed, again obviously from an old fracture. He had sustained this at the age of forty, "jumping away from a tree and striking uneven ground and my ankle turned inward." He had had four other axe wounds and a knee injury caused through bush work. Interesting sidelights on this man's injuries were that he was never x-rayed for any of them, and for the fracture of his ankle (it was probably what is known as a Potts'

fracture) he never even saw a doctor, just staying off work until he could hobble around again. The axe wound through his foot required fifteen stitches. "After this accident I walked 25 chains to the hauler, where first aid was applied, then rode three miles by truck and horse and three more miles by car to the station, then twenty-seven miles to the doctor by train."

It was remarkable how few of the older men to whom I spoke had not a record of some serious accident during their working life, often of more than one. How could it be otherwise when nearly a quarter of the men every year have to go on compensation on account of an accident? Many of these are really serious disasters in a man's life. For example, one man described how, at the age of thirty-five, he and another man were repairing three of the logs composing the skids. They had repaired two of them when a big log was hauled in, and they decided to stack it and repair the third skid afterwards. I don't understand the exact details of the accident, but in effect, as a result of the broken skid, he was tossed by the big log and rolled on, resulting in a fractured skull and a crushed pelvis, with severe damage to both testicles, which never functioned again. This story illustrates how the suffering and inefficiency resulting from serious accidents do not really end when the man returns to work and insurance payments cease. This man was virtually castrated for life. Similarly, the previous case is for ever left partially crippled, and suffers to an increasing extent from his deformities as he gets older.

Certain principles of protection can be applied to all accidents and health hazards in industry. The first and most important principle is training the man at risk. That is why the Factories Act, 1946, requires that no one may be put to work on moving machinery without training. It is not in order that he shall make a good machinist; it is in order that his production shall not be lost to the nation by an accident. Training can only be satisfactory when carried out by picked instructors covering a planned course. A training course, therefore, for bush workers could be expected not only to build up a discipline of safe practices, but the trainee would be taught to be an efficient worker. He would not risk another man's limb by being a one-handed axeman: he would learn to square-cut a hole for a jigger properly and how to fit his axe handle and to sharpen a saw; how to lay a safe whistle wire, and all the rest of it. It would quickly become obvious that certain of the recruits would never make efficient bushmen, and they could be weeded out before they were let loose in the bush to risk their own and, likely enough, some one else's life. They could be taught in the school the elementary facts of first aid and how to move seriously injured men gently. A school provides the ideal opportunity, moreover, for building up some morale and understanding of the importance bush working plays in the national economy. There is no reason whatever why the very dangers of bush working should not be utilized as a reason for pride in the job, using the same sort of technique in this respect as was used with Commandos. The cost of a training-school for a dozen or two dozen men a year appears very unlikely to be more than the sum, at least £25,000 a year, that accidents to bush workers alone now cost the industry, quite apart from accidents in sawmills. The industry complacently shoulders this cost year after year, getting no return for it. The cost involved in training men would pay dividends over and over again. Nobody wants the untrained man in the bush, least of all the employer, and the natural sympathies of the workers are constantly strained by having to put up with the inefficiencies of a new chum.

The next principle to adopt is the provision of safe equipment. My impression was that the Inspector who accompanied me in this respect was doing a thoroughly efficient job, and if the other three bush Inspectors are of his calibre, the routine inspection of mills, tram-lines, bridges, transport, and bush equipment is probably well covered. The bush Inspectors, however, have no authority to inspect State bush workings.

The third principle is that of propaganda for safety, designed to remind men of dangers and to increase their consciousness of safety precautions. This is necessary for all of us in dangerous situations, and is admirably applied, for example, by the

Transport Department in their campaign for road safety. Men need to be reminded, and they readily admit it. An experienced bushman employed as a cross-cutter told me how the previous week he had had his shirt nicked by a falling tree which split and jumped back. In answer to my question, he stated, "I know you shouldn't walk behind a tree, but I get careless. I did it the other day and almost got killed . . . . I may be chopping and just glance my boot with the axe. My God, for the next day or two I'll be damned careful to clear the scrub before I start chopping." This man had actually seen two men killed in his own gang some years ago, within a month of one another, one by a log sliding into the tractor and killing the driver and one by a snapped hauling rope. "Of course, you don't like going back again after a thing like that," he added. No propaganda for safety whatever was carried on among bush workers in the area I visited, either by the State, the management, or the union.

The fourth principle to employ in a safety campaign is to make sure that men wear equipment which is likely to increase their safety. In the case of bush workers, an item of first importance is protection for the head by a suitable helmet. Every one to whom I spoke showed resistance at first to the idea of wearing a helmet, yet a substantial proportion of the accidents that occur each year would be prevented by them, and, in fact, bush workers in America must be wearing one if they want to establish a claim for compensation as the result of an accident. This resistance is always met with among workers, and must not be a deterrent. For a long time miners on the West Coast resisted helmets, but few would be without them to-day. At the two meetings I addressed I was able to reduce the resistance, and in each group had men saying at the end that they would give them a tryout if they had the chance. One elderly man, who actually had three sons working in the same camp, said he would certainly try one on a windy day. "And if I had one, I know all my mates would be wanting to borrow it."

The next item under this heading is that of boots. A bush worker is in danger time and time again if he has not got a secure foothold. The difficulty of obtaining suitable boots was mentioned more than any other single item by the bush workers to whom I talked. They complain that they can only buy boots with hobnails, and that the round polished surface that a hobnail acquires is an added danger to them. In fact, most of them were wearing boots with sprigs in the instep which they themselves had put in, in addition to the hobnails, but it was generally declared that this is not really a very satisfactory arrangement, and, in any case, it was extremely hard to get sprigs. Again, I am informed that in America a bush worker cannot claim compensation unless at the time of the accident he was wearing the specially designed bush worker's boot. Surely some arrangement can be arrived at whereby suitable footwear is available for bush workers; even if the arrangement cost some thousands a year, it is likely that the resultant fall in accidents would compensate for it.

A third item that appealed to me was gloves. A number of men are injured by wire sprags and are off duty from the resultant sepsis. Suitable gloves would prevent this. I watched a man trying to remove a rope with a number of frayed strands from a shackle. He kept cursing because of risk to his hands, and finally had to spend some time clumsily kicking it clear. I think suitable gloves might well be a protection in other ways, though I may be wrong.

Finally, I should like to say something about action to be taken in the event of serious injuries, and about first-aid equipment. The existing equipment in the first-aid boxes in the haulers, in my opinion, is too elaborate and likely to be a source of infection in minor wounds. A separate detailed report on first aid and allied matters will be made later. This report will include the recommendation that at each hauler a second box be kept containing two blankets and two hot-water bottles, to be used as an anti-shock measure for a severely injured man. On the lid of the box should be two slogans, "Keep an injured man warm" and "Move an injured man gently." I suggest that

it could be taken down to the mill at the end of the working week and back again on the Monday, to lessen the risk of theft. A certain amount of thieving should not be accepted as a valid reason for neglecting this life-saving measure; otherwise we come to the pass where our policy is dictated by the thief. The link-up of bush workings and ambulances is also an important matter, as is some elementary first-aid training for those willing to volunteer. A further measure which might well be considered and which was suggested by the manager of one mill is to encourage the management to connect all haulers by a local telephone line to the mill, which must itself be in telephonic communication with the outside world.

To summarize :—

(1) The present death-rate and accident-rate among bush workers in New Zealand is exceptionally high, and far, far higher than among any other group of workers.
(2) There are practically no measures being taken to combat this high incidence by training new employees. A training scheme is therefore recommended.
(3) Investigation, with the necessary steps to win the support of the men, should be made into the supply of helmets and safe footwear for bush workers.
(4) There should be a substantial sum allotted yearly for propaganda in the field of accident-prevention amongst bush workers.
(5) Revision is required of the equipment kept in the first-aid boxes, and, in addition, a second box primarily designed to lessen shock in seriously injured men, should be provided at every hauler.

I also inspected a number of bushmen's huts, houses, and washing and eating accommodation. While some were fair, and I am satisfied that in other parts of the country some are very good, some that I saw were very bad indeed. It is quite hopeless to attempt to raise the educational level, on safety or anything else, of a group of workers, and particularly to raise their morale, if their quarters are such that no man with a modicum of education would tolerate them and in which morale must inevitably sink to a low level. It would appear also to be an urgent matter to give consideration to including married men's quarters within the scope of the Agricultural Workers Act.

TYPHOID FEVER IN A RURAL AREA

By Thos. C. Lonie, M.B., Ch.B., D.P.H., Medical Officer of Health, Palmerston North

INTRODUCTION

Towards the end of 1948 a limited outbreak of typhoid fever occurred in a remote country area of the North Island, and the consequent investigations revealed certain features of some interest. Ultimately twelve proven cases were traced, the existence of a chronic typhoid carrier was ascertained, and her association with these and earlier typhoid cases occurring over a period of years was demonstrated.

GEOGRAPHICAL FEATURES

The area concerned consists of hill country largely devoted to sheep-farming with some small amount of dairy-farming and timber-milling. The district is sparsely populated with a population predominantly European, but of whom perhaps about a quarter are Maori according to census figures. It is rather more than fifty miles to the nearest hospital and major centre of population. There is a District Nurse stationed about fifteen miles from the homestead principally affected, and a doctor resident about forty miles from the same homestead, which is at the distant limit of the area involved. It will be obvious that the conditions mentioned, while helping to limit the outbreak, also hamper adequate medical supervision at all times, and the work of investigation also in the present instance.

GENERAL INCIDENCE OF TYPHOID FEVER

Until September, 1948, when the first case of the present outbreak came under notice, no case of typhoid fever had been notified from this area for more than four years. As will appear, the earlier cases were also associated with the persons involved in 1948, and, in fact, with this particular sheep-station.

DESCRIPTION OF OUTBREAK

On 27th December, the B. family entertained a number of friends and neighbours, including children at the sheep-farm where Mr. B. was manager. In all, sixteen adults attended the party. Five children attending with their parents brought a picnic meal with them, and did not eat at the B.'s house. The guests at the house had a meal prepared by Mrs. B. with the assistance of two resident visitors, one aged twenty-five and one aged seventeen years. The meal consisted of a fish mould prepared from tinned salmon and gelatine, cold lamb with lettuce salad, salad dressing, peas, and potatoes, and the sweet course was lemon snow, peach melba, jelly, and whipped cream. Some of the items were prepared on the previous day, and their character is such as would not, at the least, prevent the survival of any *S. typhi* inoculated upon them. Mrs. B. had a busy time preparing all this, especially as she also had to attend to John B., her fifteen months' old son who had not been very well for the previous ten days (since 16th December) with indeterminate symptoms, including loose motions. He had at least seven stools on 27th December, and on the 28th the stools were strongly positive for *S. typhi*. The District Nurse saw him on 26th December, and doctor on 28th December, when he was removed to hospital, where he died on 28th January. On 28th December, John B.'s sister became ill, was seen by the District Nurse, and on 1st January was admitted to hospital. On the same day John was notified as a case of typhoid fever, and on 3rd January a diagnosis of typhoid fever was made in the case of the sister.

As soon as the first case was notified, an extensive investigation of contacts and of possible sources of infection was undertaken. Fæcal specimens were obtained from all household contacts on the 5th to 7th of January, all with negative results. Meanwhile, in view of the diagnosis of typhoid fever, all contacts, and especially those who had attended the party, were warned of the importance of obtaining medical attention should they become ill. From 10th January onward a further six persons, including Mrs. B., developed typhoid fever, the period elapsing since the B.'s party until the onset of illness being fifteen, sixteen, seventeen, nineteen (two), and twenty-two days, and all having partaken of the meal on 27th December.

Mrs. B. had a negative fæcal specimen on 7th January and a positive one on 20th January.

C.M., a male adult who lived in the B. household, had a negative fæcal specimen on 6th January and a positive one on 17th January.

Both these cases became ill on 14th January, though both, and especially Mrs. B., had been in close contact with John B. during the whole of the previous month when he had been ill.

Mrs. N., who became ill on 11th January, had had no visitors to her home for a month prior to her illness and had only had one meal away from home—namely, that at the B. household, where, incidentally, she had handled John B. She was a positive case. *Mr. and Mrs. U.* took ill on the 12th and 17th January respectively, and likewise had apparently had no outside contacts except the meal at the B. household. Five children, including three of this family, who also attended the party did not have the meal prepared by Mrs. B., but had a picnic meal, which they had themselves brought, out-of-doors. None of these children developed typhoid, although one was notified as a suspect at one stage, but was later ascertained not to be suffering from the disease.

D.F., a male aged twenty-five years, was found to be unwell in the course of a routine visit to his home on 21st January. He had not been well for about ten days, but had been up and about until that day. He was admitted to hospital next day, but it is interesting to record that clinical and pathological examination at first gave negative results. However, his blood became positive on culture on 26th January and his fæces on 27th January, and he eventually succumbed on 24th February. Here again there seemed no suspicious circumstances except the fact that he had the party meal on 27th December. This man had had T.A.B. inoculation while in the Navy in 1945.

There was no other common factor to these cases. No question of common water-supply, milk-supply, sewage contamination, or other common source of possible infection. All of these were investigated in detail. We may reasonably assume either that the child John B. was handled by all those who afterwards developed typhoid, and that they received their infection by picking up infected material in the process (one of the cases, Mrs. N., actually did handle John B.), or the alternative—namely, that the meal on the 27th was actually infected in preparation by mechanical transfer of organisms from John B. to it by the mother, or some other person handling both the food and the child.

There was one other possibility—namely, that a carrier was present in the household—but fæcal specimens were examined from all members of the household and were found to be negative. However, an interesting fact came to light—namely, that *Mr. B.*, father of John, the first case, had himself suffered from typhoid fever in March, 1931, when he had been living on the same sheep-station, but away from the house in rough farm-hand quarters which were shared with some Maoris, apparently a shearing gang. Members of this gang included one *S. T.*, a female who was notified as a case of typhoid in November, 1933, when Mr. B. was also present and named as a contact. A third person, present in both 1931 and 1933, was a Maori named *Mrs. H.* In 1935 (February) a further case of typhoid occurred on this farm, and the patient was ultimately released from hospital as a carrier upon giving certain undertakings. He died some years ago. So previous cases of typhoid fever had occurred on this sheep-station, all in the summer months and all in persons associated with a shearing gang. In November, 1948, shearers arrived at this same sheep-station, in charge of S. T., the former 1933 patient, and bringing with them *Mrs. H.* There was another former case of typhoid fever with them. He was a man, *F. S.*, who had the disease in 1943. In 1944 his brother, *P. S.*, contracted typhoid fever, and at that time F. S. was investigated as a possible carrier. But the examination had negative results, as had also a similar examination early in 1949 when urine and fæces were examined. About the same time specimens of urine and fæces from S. T. and of fæces from Mr. B. were examined and found to be negative. Only in the third week of January did Mrs. H.'s connection with the above cases and also with another previous case, *S. M.*, come to light, and she had then left the district. Ultimately she was traced, and specimens of fæces showed her to be a typhoid carrier. She had been at the B.'s sheep-station for a month before little John B. became ill.

All the known former cases on the station at this time—the child's father, Mr. B., S. T., and F. S.—had not proved to be typhoid carriers. The shearing gang's quarters are quite near the B.'s residence, and there is evidence that Mrs. H. assisted in cooking for the shearing gang. She is a kindly old lady, and it seems more than likely that there may have been contact between her and the B. family, whom she had known for many years, and very probably there had been contact with the children, including the baby, whom she may well have handled, and perhaps given some tit-bit of food. It seems a reasonable hypothesis. It was later disclosed that the B. children had been seen playing near the shearers' quarters and that Mrs. H. was particularly fond of the baby, John B.

She was certainly hospitable, for on the night of 28th August, 1948, she entertained at her home a little boy, *S. M.*, aged six years, on his way to spend a holiday with friends. Sixteen days later the lad became ill, and was admitted to hospital on 16th September. Laboratory and clinical investigation showed him to be suffering from typhoid fever.

The evidence tending to involve Mrs. H. as a source of infection in the B. household is therefore—

(*a*) She is known to be a persistent fæcal carrier of typhoid organisms. Samples of fæces taken on 18th March, 1949, and subsequently in hospital on six occasions during March and April, were all positive for *S. typhi*.

(*b*) She has been closely associated with the following known typhoid cases :—

		Examination of Fæces and Urine.
James B. in 1931 ..	Present on B.'s farm, 1948	Negative (fæces), January, 1949.
S. T. in 1933 ..	Present on B.'s farm, 1948	Negative, February, 1949.
F. C. in 1935 ..	Dead.	
F. S. in 1943 ..	Present on B.'s farm, 1948	Negative, September, 1948, and January, 1949.
P. S. in 1944 ..	Not present in 1948.	
S. M. in 1948 ..	Case associated with Mrs. H., but not with farm.	

(*c*) She was the only known carrier of *S. typhi* who was a possible contact of Baby John B.

GROUP OF CASES NOT DIRECTLY CONNECTED WITH ABOVE

A further group of cases occurred in the neighbourhood at about the same time and included a woman and two of her children :—

Mrs. A. ..	Onset, 30th November, 1948 ..	Died, 12th December, 1948.
D. A. (F. 7) ..	Onset, 8th December, 1948 ..	Recovered.
Dennis A. (M. 8)	Onset, 7th January, 1949 ..	Recovered.

The fæces of all three patients were found to contain *S. typhi*.

All these persons were known to Mrs. H., but no direct chain of infection could be established with certainty. The two children concerned had received T.A.B. inoculation in 1948 and the course of their disease was mild.

TREATMENT OF THE CARRIER

It proved somewhat difficult first to trace and then to put Mrs. H. under treatment, but ultimately she was admitted to hospital, where six consecutive specimens of fæces at intervals extending over a month were all positive. She was then given massive doses of penicillin and sulphathiazole, and six consecutive specimens of fæces between then and 24th May, 1949, were all negative. A further fæcal specimen in July was negative, and Mrs. H. was then discharged from hospital after signing a suitable undertaking as to her conduct in the matter of cooking food, disposal of urine and fæces, washing, &c. Further specimens of fæces will be taken at appropriate intervals. Operative treatment was considered but declined, and, in any case, Mrs. H. was not a good operative risk. However, if the medical treatment which she has had can keep her fæces free of *S. typhi*, all will be well. She should, however, be kept under observation.

CONTROL OF THE CARRIER

Satisfaction at the tracking down of a carrier is always tempered with the uneasy feeling that the person involved has probably been a danger to the community for a long time, and should have been found earlier. However, it has to be remembered that, unless very good and specific grounds exist for labelling a person as a "contact" or "carrier" of an infectious disease, no compulsion in the matter of examination or treatment is possible. Especially would this be the case with an elderly Maori woman like Mrs. H., not very co-operative, and unwilling to provide the means whereby her guilt or innocence could be established. Like many Maoris, too, she appears to be given to visiting relatives in remote places. Also, of course, it would be easy to miss any carrier if the excretion of organisms were intermittent, as it usually is, and swabs were taken and specimens examined during a clear period. Probably Mrs. H. has had long periods when she did not pass organisms. Probably, too, her normal contacts are all well "salted," and so immune. None of the cases appearing to have contracted infection from her were normal contacts, and there is no information that members of her own family have ever had a clinical attack of typhoid fever.

ACKNOWLEDGMENTS

In the investigation of any outbreak of infectious disease, many persons are involved, and it was so in this case. I am very grateful to all who assisted in the inquiries, but particular reference should be made to Nurse Paterson, District Nurse at Matawai, Mr. Adams, District Inspector of Health, and Mr. Milne, Health Inspector, who collected most of the data upon which this report is written; and I should also mention Mr. Carruthers and the staff of the laboratory at Cook Hospital, who examined a very large number of specimens for us in connection with the investigations.

SUMMARY

(1) The circumstances surrounding the occurrence of twelve cases of typhoid fever occurring in an up-country district of New Zealand are described.

(2) Three deaths occurred among these cases.

(3) The source of infection of seven of these cases was a then undiagnosed case in a household, and the medium of infection in six of them is presumed to be a meal prepared by the mother of the undiagnosed patient.

(4) The ultimate source of infection of this case is strongly suspected to have been a person, now known to be a typhoid carrier, who is known to have been intimately associated with a series of cases of typhoid fever occurring over the past seventeen years, the last being in August, 1948.

(5) Three other cases of typhoid fever form a connected series not directly associated with the above group.

(6) No proven source of infection of these has been discovered, but they are known to be on terms of close friendship with the carrier referred to above.

(7) Two of the patients had had T.A.B. inoculations in August, 1948. The disease in them was mild. Their mother, another case, succumbed. In one fatal case the patient had had T.A.B. inoculations in the Forces over three years previously.

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