**Report of the Department of Health / New Zealand.**

H. 31

# REPORT

OF THE

# DEPARTMENT OF HEALTH

FOR THE YEAR ENDED

31 MARCH 1960

*Presented to the House of Representatives Pursuant to Section 10 of the Health Act 1956*



BY AUTHORITY:
R. E. OWEN, GOVERNMENT PRINTER, WELLINGTON, NEW ZEALAND—1960

# CONTENTS


| | Page |
|---|---|
| PART I—Introduction | 5 |
| PART II—Bureau of Public Health Services | 12 |
| 1. Public Health (Including Occupational Health) | 12 |
| 2. Child Health | 22 |
| 3. Tuberculosis | 25 |
| 4. Dental Health | 26 |
| 5. Health Education | 32 |
| 6. Public Health Nursing | 33 |
| 7. Medical Statistics | 33 |
| PART III—Bureau of Medical Services | 44 |
| 1. Hospitals | 44 |
| 2. Physical Medicine | 60 |
| 3. Clinical Services | 65 |
| 4. Nursing Services in Hospitals | 69 |
| 5. Maternal Welfare | 70 |
| 6. Welfare Services | 73 |
| 7. Tuberculosis | 75 |
| PART IV—Bureau of Mental Health Services | 77 |
| 1. Mental Health | 77 |
| 2. Excerpts from Reports of Medical Superintendents of Mental Hospitals | 81 |
| 3. Psychoneuroses | 85 |
| PART V—Special Branches | 86 |
| 1. National Health Institute | 86 |
| 2. Dominion X-ray and Radium Laboratory | 93 |
| 3. Chemical Inspectorate | 100 |
| PART VI—Miscellaneous | 109 |
| 1. Board of Health | 109 |
| 2. Nurses and Midwives Board | 111 |
| APPENDIX I—Organisation and Staffing | 113 |
| APPENDIX II—Statistics | 120 |

# REPORT

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 1959–60.

The vital and medical statistics which appear in the report are for the calendar year 1959. On the other hand, the financial figures and, in particular, the reports of the Divisions of Hospitals and of Clinical Services are for the year ended 31 March 1960.

# PART I—DIRECTOR-GENERAL'S INTRODUCTION

**Functions of Department**

The Department of Health has three main functions:

(1) The prevention of disease and illness, and the carrying out and coordination of measures conducive to the public health:

(2) The oversight of those public services (medical, dental, and nursing) which have their being as a result of the failure of the first function:

(3) The institution itself of facilities for treatment which are not provided by the second.

The first of these functions has been the primary one of the Department since its inception. The scope has widened over the years with the ever-developing knowledge of preventive possibilities. To the basic Divisions of Public Health, including Occupational Health, Child Health, Dental Health, and Maternal Health, there are now added the National Health Institute, concerned with researches and investigations into public-health problems and the prevention of disease, the Dominion X-Ray and Radium Laboratory, engaged in the protection of the people from the effects of ionising radiations from whatever source, and the Division of Health Education and the Branch of Nutrition, endeavouring to persuade citizens that health is really a personal responsibility, attainable for most people if existing knowledge be applied.

The second function has varied over fairly recent years, widening all the time. It includes the activities of the Divisions of Hospitals, of Clinical Services, of Nursing, of Tuberculosis, of Welfare Services, and of Physical Medicine. The hope is the achievement of integrated services ensuring the return of the sick and frail to the maximum possible economic livelihood or enjoyment of life.

The third function includes the Division of Mental Health with its chain of hospitals, Queen Mary Hospital concerned with the treatment of psychoneuroses, and the Queen Elizabeth Hospital dealing with the rheumatic diseases and cerebral palsy.

Total expenditure last year for health services was £45,160,042. A very large proportion of this sum was devoted to medical services in the form of treatment of illness, whether in hospital or under the social security scheme by medical practitioners, through pharmaceutical benefits, and through sickness and invalid benefits.

The community has a right to incur this expenditure, but it has a much greater right to expect the preventive services of health will keep that expenditure to a minimum. This can only be achieved by the appreciation and recognition of the value of such services and by the financial support which will enable them to function to the fullest extent.

**Administrative Organisation**

The Department of Health, with a staff nearing 6,500 and an expenditure last year of £45 million, is a big organisation by any standards. Size brings its own problems of organisation and administration and not the least of these is the need to coordinate the work and effort of many people whose total activity ranges over the whole broad field of public health.

Hitherto the Department has been organised on a divisional basis. This met its needs when the task was simpler and less complex than it is today. Problems in public health in this day and age are not the prerogative of any one speciality. Their solution demands a team effort with a pooling of knowledge and resources. This requirement in its turn calls for an administrative organisation which will provide the means for coordination and consultation.

So it is that the Head Office of the Department in recent months has been reorganised on a basis which had as its main objective the grouping together of Divisions and units with an affinity of interest and purpose. These groups, for want of a better term, have been called Bureaus. There are three of them.

(i) The Bureau of Medical Services, which deals mainly with the curative side of public health.

(ii) The Bureau of Public Health Services, which is largely concerned with the preventive aspects of public health.

(iii) The Bureau of Mental Health Services, which covers the work of the Mental Health Division and includes psychoneuroses, as represented by the Queen Mary Hospital, Hanmer.

For special reasons other branches such as the National Health Institute and the Dominion X-ray and Radium Laboratory have not at the moment been included in the Bureaus but, of course, are brought in on consultation when necessary. Eventually they could well form a fourth Bureau of Research, together with our nutrition research unit and a unit which it is hoped will later be developed to engage in research on the many problems associated with the provision and administration of public hospitals.

Each Bureau is headed by a senior Director who has the administrative title of Assistant Director-General, and at the same time continues to carry responsibility for his particular Division. The Directors concerned are:

Dr C. A. Taylor, Director of the Division of Hospitals, for the Bureau of Medical Services.

Dr L. S. Davis, Director of the Division of Public Health, for the Bureau of Public Health Services.

Dr G. Blake-Palmer, Director of the Division of Mental Health, for the Bureau of Mental Health Services.

Each Bureau has met regularly since the new organisation was introduced and, although its full potentiality has yet to be developed, already it is clear that we are proceeding on the right lines. Regular meetings of the Director-General, his two deputies, and the three Assistant Directors-General are also held. These meetings deal with major recommendations from the Bureaus and define future policy and action.

The broad shape of the Head Office organisation will be found in Appendix I.

**Form of Annual Report**

This year's report is presented in a form which follows the general pattern of the new organisation. Tables which have hitherto appeared in the text have been placed in Appendix II except for a few which it is more convenient to leave associated with the reports to which they relate. Additional appendices show the break-up of departmental staff, the offices, institutions, and branches of the Department, the senior staff and the membership of statutory bodies and advisory committees. This last, incidentally, indicates the extent to which the Department seeks and is assisted in its work by the help and advice of knowledgeable people not directly associated with the Department.

**Statistical Survey**

The number of live births recorded during 1959 shows an increase of over 1,000 from the previous year, while the birthrate sustained the relatively high rate of recent years. The figures for 1959 are: European, 54,739; Maori, 7,130; total, 61,869. The birthrate for 1959 is European, 25·10; Maori, 46·28; combined, 26·50. These figures compare with 25·16, 46·24, and 26·53 for the previous year. The continued rise in the Maori birthrate on a general level much higher than the European poses some interesting population problems for the future.

The still-birth rate per 1,000 total births is 14·49 for Europeans and 18·85 for Maoris, giving a combined figure of 15·00. The Maori rate rose in 1959, but the European and the combined rate are the lowest yet recorded.

The infant-mortality rate (deaths under one year of age per 1,000 live births) is 19·89 for Europeans and 54·42 for Maoris, giving a combined rate of 23·87. With the exception of an appreciable rise in the Maori infant-mortality rate in 1957, all three rates have remained at a very steady level for the last four years. The neo-natal death rate (deaths in the first month per 1,000 live births) is 13·94 for Europeans and 19·21 for Maoris. The European rate shows a slight rise in 1959 as compared with 1958, but the Maori figure and the combined rate both show a decrease.

The European maternal-mortality rate (excluding illegal abortion) of 0·42 per 1,000 live births remains low (0·35 in 1958). The rate for Maoris, 1·26, has fallen a little (1·31 in 1958). The combined rate for Europeans and Maoris is 0·52 (0·46 in 1958).

**Public Health**

There were no major epidemics during the year, but Dr Davis draws attention in his report to a rising danger in infective hepatitis, a disease difficult to control. Bacillary dysentery and food poisoning remain as a constant problem. Yet these three diseases can be diminished in impact if our people observe good personal hygiene, and our local authorities insist on high standards of food handling.

The poliomyelitis vaccination programme was completed, protection being offered to all between the ages of six months and 21 years. The best response came from the school ages, where 80 per cent acceptance was the rule. Diphtheria continues in low incidence, a tribute to mothers who are having their babies immunised against this disease.

The section on occupational health reveals the wide field of endeavour undertaken to assure the health of our workers, town or country. Agricultural chemicals are being closely watched, both as to their effects on the worker and on our foodstuffs.

### Air Pollution

Air pollution is a new conception to our people. Fumes attacks during the year were severe at times in Auckland, and smog of minor degree happened in the winter in Christchurch. In these cities air pollution advisory committees are encouraging surveys as the basis of future effective control measures. There is still much uncertain about the Auckland fumes problem, discussed in Part V 3 of this report. Air pollution in Auckland is a problem of industry. In Christchurch domestic chimney smoke is probably the major factor, and "smokeless" zones may have to be required as the solution if smog growth continues.

### Child Health

The physical health of our European pre-school and school-children in general remains satisfactory, but Dr Lennane calls attention to an increasing proportion of psychological maladjustment and emotional disturbances, and also to certain unsatisfactory features in the health of Maori children such as staphylococcal infections and discharging ears, Audiology clinics are being increased and special effort is being directed to the prevention of deafness in children of all ages.

### Tuberculosis

The downward trend of tuberculosis incidence continues as in previous years. The mortality from all forms is 5·9 per 100,000 population, and there were fewer notifications of new cases than in 1958. However, more must be attemped to reduce the incidence among our Maori people, now approximately seven times that of Europeans, and their death rate, six times that of non-Maoris. Encouragement to this end comes from the nine-fold reduction in Maori death rate achieved since 1950, 224 deaths per 100,000 of that year having fallen to 25·3 per 100,000. The mass X-ray units continue the good work of revealing the hidden unsuspected sources of infection in the community, finding 265 new cases, or 22 per cent of the new notifications of the year, a rate of 1·24 active cases per 1,000 persons examined.

### Dental Health

A new and third school for dental nurses was opened during the year in Christchurch. Last year 374,116 children under regular dental treatment required 1,905,120 fillings and 70,475 extractions, as Dr Bibby points out, so that it is obvious dental caries is a national weakness. In the light of present knowledge, fluoridation offers the only counter to the inability of our people generally to practise that dental cleanliness and follow that dietary pattern which make for dental health. Lower Hutt city fluoridated its water during the year, and Hastings city continues to do so. At local authority elections in November fluoridation polls were conducted and lost in eight municipalities. Nevertheless, several communities are still actively proposing to fluoridate their water supplies, and the National Fluoridation Committee of the Board of Health hopes that

the aid of fluoridation will be invoked by more and more towns as the best means available to date to stem the tide of dental disease in our land.

**Hospitals**

New Zealand has a widespread public hospital system providing a high standard of patient care. Private hospitals supplement this national provision. Our ratio of these hospital beds per 1,000 population at 7·7 (6·5 general and 1·2 maternity) is more than sufficient by overseas standards, yet there are waiting lists at many hospitals. Dr C. A. Taylor, in his report, is able to record achievement in better utilisation of existing beds and in reduction of the average length of stay in hospital. Hospital boards are being encouraged to turn their attention to the development of home-care programmes, as a further needed step in saving acute beds for acute cases and lessening the call for further building of hospital beds. The Board of Health, in a special report just released, urges the reaching back of the hospital into the community, and, in liaison with the general practitioner, an evolution of domiciliary care. Pilot home-care programmes, in being under a few boards, are proving their worth in freeing beds for acute cases. If hospital boards engaged in this activity on a national basis the need for more hospital beds would definitely be curtailed.

The prerequisites for home-care schemes are that the housing must be suitable, the family agreeable, the patient happy at the prospect, the general practitioner willing to help, and the family given from hospital sources the aid needed to carry out home care. The hospital would supply the visiting nurse to assist the general practitioner, transport to and from the hospital for any special services needed, extra home-nursing equipment required, home aids where necessary, physiotherapy and occupational therapy in the home, and, where recommended, laundry service and meals on wheels. It is the earnest desire of the Department that extramural services of this type be evolved to save hospital beds for selective use, to reduce waiting lists, and to limit hospital building expansion.

**Pharmaceutical Benefits**

The rising cost of pharmaceutical benefits is by no means peculiar to New Zealand. Dr Thompson draws attention to the experience of other countries. The belief has grown in all developed countries that modern medicine has a specific remedy for most bodily ills. Much as it is to be deplored, people's thoughts fly to drugs the world over when ill, rather than to preventive healthful living, and whether there be social security schemes or not, they are prepared to pay the rising costs of medicines. It is suggested that a reappraisal of our scheme in the light of these facts might be profitable and this is being arranged.

**Maternal Welfare**

The fact that last year over 90 per cent of Maori mothers and over 99 per cent of other mothers had their babies in hospital shows the gradual appreciation of the value of policy adopted in 1923. Dr C. N. D. Taylor produces figures to show this trend. Infant mortality is discussed and reference is made to a statistical survey carried out during the year by Mr R. J. Rose of the Medical Statistics Branch.

### Welfare Services

The rate of subsidy having been raised to 100 per cent, hospital and home accommodation for the aged by religious and welfare organisations is expected to increase. Dr Dempster discusses the need for standards of assessment of future proposals for accommodation of the aged. An increasing development of domiciliary occupational therapy for the aged is desirable to prolong their independence.

### National Health Institute

The report from Dr J. D. Manning, Director of the National Health Institute, illustrates the increasing confidence being placed by the hospital world and by the public health services generally in the invaluable work of this Institute, and in particular the contributions of Dr Manning himself, Dr H. T. Knights, Epidemiologist, and Dr W. Hamilton, Virologist. It is most gratifying to note the cooperation from hospitals and their desire to become more acquainted with the difficulties of cross-infection and the techniques to combat it. The work done on cross-infection in hospitals is highly commendable.

This relatively new establishment in health services is rapidly making a place for itself through the technical acumen and industry of its personnel. There can be no doubt that this Institute will play a more and more important part in the preventive field of health and will demand more financial support in its further development if New Zealand wishes to relate its expenditure to prevention rather than cure.

In this modern age the increasing hazards in occupational health have received attention and the appointment of Dr F. H. King to this Institute will further the efficacy of the occupational health work of the Public Health Division.

### Protection from Ionising Radiations

Radioactive fall-out is being monitored through the Dominion X-ray and Radium Laboratory of the Department. A level for "threshold of interest" has been set at 1 per cent of the recommended safe limit for continuous breathing of the population of a radioactive-contaminated atmosphere. All tests to date fall below this level. Milk samples are also being analysed from seven widely separated centres to indicate the likely average uptake of strontium 90.

### Maori Health

There has been a new statistical appraisal of Maori compared with European health in New Zealand. A separate monograph is being published on this subject, but reference is made to the differences in Mr Gardiner's report on medical statistics.

Dropping crude mortality rates and using age-adjusted rates there shows up a very much higher overall mortality in the Maori. Epidemic, respiratory, and gastro-intestinal diseases have their share in this result, but it appears that the Maori is much more susceptible than the European to death from cancer, diabetes, cerebral vascular lesions, heart disease, and chronic form of nephritis. The lung cancer rate among Maori women would be among the world's highest in this sex.

The disparity between Maori and European death rates calls for action. Further study of the problem is under way, with a view to the enlistment of Maori interest and cooperation in the betterment of Maori health.

**Mental Health**

The idea of the World Federation for Mental Health of having 1960 as World Mental Health Year has had a favourable impact on New Zealand. The recently formed Mental Health Associations in the main centres have shown a most welcome activity in considering mental health problems. There is evidence that public interest is being stimulated from these activities and those of the Mental Health Division. Dr Blake-Palmer feels this interest will enable worth-while progress to be made in the wide field of mental health. The Department will put its full weight behind any constructive efforts aimed at improving mental health services.

As in other spheres in the hospital world, greater emphasis is being placed on community care and a careful watch is being kept to see that the building programme of the Mental Health Division does not create more beds than is likely to be necessary in the foreseeable future.

A most important trend is that consultant physicians and general practitioners are interesting themselves in part-time work in the mental hospitals in their localities. This as much as anything will overcome the tendency to regard these hospitals as "something different".

**Retirement of Dr John Cairney**

On September 30 1959 Dr John Cairney retired from the position of Director-General of Health. I wish to express my appreciation, and that of my colleagues in the Department, of the leadership given in his term of office, and of his acknowledged achievements in that time, particularly in furthering the establishment of a sound hospital structure in our land.

**Appreciation**

I would like to place on record my appreciation of the very good work done during the year by all members of the staff. They have worked as a loyal team and have shown the great value which can be achieved from a continuing and combined effort.

H. B. Turbott,
Director-General of Health.

# PART II—BUREAU OF PUBLIC HEALTH SERVICES

## 1. PUBLIC HEALTH

### Infectious Diseases

**Poliomyelitis**

There were 16 cases of poliomyelitis reported during the year, the smallest number since 1946, when there were 14 cases.

The main poliomyelitis vaccination programme decided upon has now been completed. Vaccination has been offered to all between the ages of six months and 21 years, and protection given to all those coming forward. The response from school children has been very gratifying, and well over 80 per cent of this group have now been protected. The response from the other groups, six months to four years, and 17 to 21, has not been so satisfactory, though even in these groups some districts report that 70 per cent have been protected. This programme has imposed a very heavy strain on our field staff over the past four years, and other work has had to be neglected. An added complication has been the increasing shortage of public health nurses, all districts being under-staffed in regard to nurses. The completion of this programme will give a very welcome relief to our public health nurses and medical staff, who will now have to cope only with infants and pregnant women, and other adults at special risk. Table 14 in Appendix II sets out the vaccinations performed in the various health districts during the year, a total of 1,363,204 injections.

**Influenza**

In last year's annual report it was reported that in November and December influenza was very prevalent in several parts of the North Island, a secondary wave following on the pandemic of 1957. This epidemic continued into this year and throughout nearly the whole year a very high incidence of influenza and influenza-like diseases was in evidence in many parts of New Zealand in both islands. Actually there were 186 deaths reported as due to influenza, five more than during the pandemic year 1957. Practically every district in New Zealand was equally affected and the incidence each month was substantially the same except for November and December, when there were very few deaths.

**Diphtheria**

The number of cases, 18, was only two above last year's figure, which was a record. This continued low incidence is undoubtedly due to the highly immunised state of the community against this disease, and it is to be hoped that this comparative freedom from this one-time much dreaded infection will not lead to any neglect of this important public health measure.

**Infective Hepatitis**

There were 1,973 cases with 34 deaths, six Maoris and 28 Europeans, by far the highest incidence of any of the notifiable infectious diseases. This represents an increase of 80 cases over last year as against an increase of 450 in the previous year. This may give some hope that we have now reached the peak of this slowly simmering epidemic, and there is some support for this suggestion in that the Medical Officer of Health for Wellington reports that there has been a 64 per cent reduction over the previous year. The Medical Officer of Health for Gisborne also reports a considerable reduction, and the Medical Officer of Health for Invercargill reports that in those areas where there had been a high incidence in the previous year there were very few cases this year. These happenings would appear to indicate that in several parts of New Zealand a "herd immunity" has been gained against this disease.

The high incidence of this disease creates an important and serious problem. Its spread is thought to be brought about in a similar manner to poliomyelitis, and from experience it has been found that until vaccination was discovered the control of poliomyelitis was impracticable. Difficulty arises from the large number of unrecognised cases, from the fact that the disease is transmitted more readily in the early stages before jaundice settles the diagnosis and also because of the high incidence of chronic carriers of this disease. The long incubation period also creates difficulty in regard to control.

The disease is a very sensitive index of personal hygiene and community sanitation, and presents an obvious challenge to the individual to take stock of personal hygiene, and to the community to look to environmental sanitation and to pay particular attention to water supplies. Investigation of this disease is made the more difficult because so far no laboratory tests of the virus are known and no animal other than man is susceptible to the disease.

**Typhoid**

There were 60 cases of typhoid and six cases of para-typhoid reported during the year, an increase of 22 cases over the previous year. Most of these cases occurred in the Auckland, Rotorua, and Gisborne districts. The Medical Officer of Health, Rotorua, reports two outbreaks in his district, one of seven cases, certainly due to a carrier, and one of five, almost certainly due to another carrier. The Medical Officer of Health, Christchurch, reports an interesting case in which a child was infected by his father, a carrier who had typhoid 35 years previously, and during that period had infected several members of his family. Phage typing of bacteria has proved most useful in tracing and proving the carrier role in these cases, and the National Health Institute is compiling a National Register of Typhoid Carriers which should prove of great value in future investigations of this disease.

**Psittacosis**

In June a case of psittacosis was notified, and inquiries enabled another positive case to be diagnosed. Both cases were members of the staff of the Wellington Zoo and were undoubtedly infected by birds of the psittacine family at the Zoo, for it was found that several of these were

sick, and several deaths had occurred. Investigation proved that this was due to psittacosis. A decision was made to destroy these birds, as the disease is a serious one, and formerly frequently fatal to man. Fortunately, antibiotic treatment has now been found to be fairly effective in treating this disease, and has taken the terror out of what was at one time a disease of very high mortality. It was not felt, however, that this justified the taking of risk where human lives were concerned. New Zealand had previously an unfortunate experience in regard to this disease. When a ban against the importation of these birds was lifted in 1952, a rather serious outbreak occurred with a number of human cases. The United Kingdom and the United States of America had similar experiences and the ban was reimposed in all these countries. So far it has not been lifted, and the present outbreak was doubtless due to the introduction of smuggled birds.

**Taeniasis**

A patient in Wellington Hospital, an immigrant to this country, was found to be a carrier of *Taenia solium*, commonly known as the pork tape worm. The worm stage of this tape worm occurs in man and the cyst stage in pigs, and also can unfortunately occur in man, and it is this stage which is most harmful to man. The disease is common in European countries, but so far had not been found in New Zealand until this case occurred. The case was not diagnosed until the patient had left hospital, and she refused to return for treatment, despite all sorts of persuasion. As the disease had not been scheduled as a notifiable infectious disease it was necessary to introduce a regulation to deal with this case. A notice was eventually served under section 79 of the Health Act, and the necessary treatment carried out. It is most essential that this disease should not be introduced to this country.

**Rubella**

During the winter and spring there was a widespread epidemic of rubella which affected most parts of New Zealand. The Medical Officer of Health, Auckland, reported that in Auckland during August, September, and October it was estimated that the number of cases of rubella reached over 400 per week. Gamma globulin was made available free for protection in early pregnancy to those women who had contact with rubella and had not had a previous attack of the disease.

**Bacillary Dysentery**

There were 679 cases of bacillary dysentery, compared with 438 in the previous year. Auckland, Rotorua, Wellington, Christchurch, and Greymouth were the districts mostly affected. Localised outbreaks were responsible for a great many of these cases, e.g., in Christchurch district there were 70 cases in one town where the general sanitation and water supply were not considered satisfactory. As reported in previous annual reports, bacillary dysentery is one of the most infectious diseases that we have to deal with. It is at the same time a clear index of the state of personal hygiene and community sanitation of the country and, as in the case of infectious hepatitis, presents a challenge both to the individual and to the local authorities charged with the responsibility for seeing that community hygiene is of an acceptable standard.

### Smallpox

Owing to an outbreak of smallpox at Singapore all Port Health Officers were alerted and examination of passengers by air from Australia reimposed. A clergyman who had been in India 14 days previously arrived at Christchurch Airport with a vesicular rash on the forehead. He was admitted to hospital as a suspect case of smallpox and the necessary measures for control carried out. Fortunately the case was soon cleared as not being a case of smallpox, but this incident did prove a very useful exercise.

### Salmonellosis

An outbreak of salmonellosis occurred in a licensed hotel and all told there were 37 positive cases. When the outbreak was notified positive results were found amongst staff and guests and no certain source of the infection could be traced, but it seems likely that either as a result of infected food in the first place, or through an infected worker in the kitchen, the disease was spread to staff and guests. Effective measures were adopted and no further cases resulted.

## Notifiable Diseases

### Hydatids

There were 69 cases of hydatids, with five deaths, two Maoris and three Europeans, notified during the year, an increase of eight cases over the previous year.

### Food Poisoning

There were 310 cases of food poisoning notified during the year, an increase of 22 over the previous year. Medical officers of health again reported that many of these cases are reported to the Department too late for effective action to be taken, and there is no doubt that a great many cases are not reported at all. The Department has for some years carried out an extensive health-education programme in regard to proper food handling, and there has been an improvement in this direction, but there is still further room for advancement. The habit of eating out in public restaurants which is increasing very rapidly in this country calls for greater efforts and greater knowledge in regard to food handling. Particulars of some of the outbreaks which have occurred during the year are as follows:

(a) On the second day of a two-day community gathering, a left-over portion of a stew was eaten for the midday meal, and those who partook were taken ill a few hours later. This was undoubtedly due to infection of the stew by staphyloccocus.

(b) In a large school some 90 pupils were reported ill following a meal in which, after investigation, Spanish cream was thought to be the offending vehicle. Unfortunately this finding could not be definitely proved as nothing of the meal remained, but it seems very likely that this was a case in which Spanish cream prepared the day before was infected by one of the kitchen workers and, being kept at room temperature, incubated overnight. Spanish cream is a frequent source of food poisoning, especially with the staphyloccocus, and, apart from preparation with great care to prevent its being infected, should always be stored in a refrigerator.

(c) In a family outbreak infection of a meat pie by staphyloccocus was proved to be the cause of food poisoning of four people, one of them of sufficient severity to be sent to hospital. (Statistics for notifiable diseases appear in tables 15A to E – Appendix II.)

## Food and Drugs

### Agricultural Chemicals

Limits have been set, in parts per million, for residues of a number of pesticides unavoidably remaining on vegetables, fruit, and other foodstuffs. A number of restrictions under the Health Act 1956 have been placed on the pre-harvest use, on crops being grown for food, of certain poisonous chemicals which are systemic in action, i.e., are distributed throughout the plant by its sap stream. Already the list of agricultural chemicals controlled in this way by a residue limitation or as a systemic poison is extensive and it is expected that this will be the forerunner of what eventually will be important and far reaching legislation. There can be no doubt that on account of the increasing widespread use of poisonous chemicals more positive and specific measures to protect food are becoming an absolute necessity.

### Milk Sampling

Departmental sampling of over 12,400 specimens of milk is reviewed in table 16 – Appendix II, showing a reduction on the number sampled last year. The proportion of non-complying samples has dropped from 8 per cent to 6 per cent but, as noted in this report last year, the sampling is not representative of the total quantity of milk sold – the departmental sampling is directed to secure enforcement of standards and the improvement of unsatisfactory supplies and hence includes a substantial proportion of samples taken from sources which may be receiving special attention.

### Sampling of Other Foods and Drugs

Table 17, Appendix II, will show that some 4,800 samples of other foods, and of drugs, were taken during the year, a reduction on the number taken in 1958. The number of prosecutions was also less, but once again offences by retail butchers continue to provide a very large proportion of the total. The number of instances when food was seized or destroyed, on the grounds that it was unfit for human consumption, increased by nearly 50 per cent.

### Foreign Bodies in Foods

In 1959 some 30 prosecutions were taken against vendors of foods containing extraneous substances and of foods which were unsound or unfit for human consumption. Examples were a mouse nest in a sack of sugar, a metal pot scrubber in a date square, rodent droppings in bread, and a plastic dressing in a sausage. Such evidence of carelessness in the preparation of food is almost always given publicity by newspapers and this is usually far more salutary than any fine imposed on conviction. As noted on previous occasions members of the public show an increased willingness to bring complaints to the notice of the

Department, and if necessary support departmental prosecutions. Members of the public can assist in the overall improvement of food manufacture and handling if they will take the effort to bring food complaints to the notice of the Department, in preference to dealing with the matter on a personal basis.

## Environmental Sanitation

### Sewerage

It is very heartening to be able to report that there is over the past few years an undoubted awakening of the public conscience in regard to the proper provision of sewage treatment. With the exception of three, all cities in New Zealand have now either installed, are installing, or are well advanced in the planning for approved sewage disposal or treatment plants, and many boroughs and towns both large and small have installed, or are installing, similar works. In the two previous financial years £11,000,000 and £6,500,000 respectively were approved by the Loans Board for approximately 100 sewerage, stormwater, drainage, or water-supply schemes, and this year over £5,000,000 in loans has been approved for 57 similar projects.

### Sewage Treatment Subsidy

For some years an inter-departmental committee has been studying the question and has decided upon a suitable sewerage subsidy scheme for submission to Cabinet. Although not approved by Cabinet during the year under review it had been approved before this report was written. The scheme is designed to level off the cost per head of sewage-treatment works, which becomes relatively more costly to the smaller town. The subsidy scheme should do a great deal to assist and to encourage the smaller local authorities in the very necessary provision of sewage-treatment works.

### Training of Sewage Treatment Plant Operators

The Ministry of Works has established at Trentham a training school for sewage-treatment-plant operators and many local authorities have already taken advantage of this very valuable course. Health Inspectors are also being trained at this school. It must be emphasised that if expensive sewage treatment works are established they require proper care and attention and if not properly operated their value loses effect.

### Rubbish Collection and Disposal

Many local authorities are to be commended for the efficient manner in which rubbish is collected and disposed of without causing any nuisance whatsoever, others are very remiss in this matter. There are a number of rubbish dumps which are a disgrace to any community and the local authorities responsible are reprehensible in the lack of action.

### Water Supplies

Quite a large proportion of the loan money mentioned under sewerage has been set aside for water schemes, and in many parts of New Zealand improved water treatment is in evidence. From the nature of the country New Zealand has in the past been able to obtain reasonably safe water

from upland catchment areas which have been free from dangerous contamination. As the country becomes more settled this immunity is gradually disappearing, and we are now reaching the stage when most of our water supplies should be chlorinated at least, if not submitted to full treatment.

### Fluoridation

The concept of subjecting public health procedures to popular vote is a dangerous innovation which calls for special comment. To ask the public to express an opinion on the merits of a technical problem requiring expert knowledge is a questionable practice, which, if persisted with, could undermine the whole basis of public health in this country. Yet in November eight local authorities held referenda about fluoridation. Before polling took place voters were subjected to an intense campaign by opponents of fluoridation designed to arouse fears about the consequences of fluoridating water supplies and to arouse distrust of the medical and dental professions which were united in commending this procedure.

The responsibility of the Department is to advise local authorities and give them the facts. With fluoridation these facts are simple – that dental disease is so widespread that a preventive measure is essential; that water fluoridation will substantially reduce the incidence of this disease; that it is a safe and convenient means of doing so.

## Occupational Health Programme

The integration of occupational health into the programme of all districts, commenced some three years ago, is developing well and the reports of the smaller districts indicate a much wider impact in consequence. The establishment of further health districts in the North Island will ensure that departmental medical advice is readily available to practically every district office of the Department of Labour.

Some progress has been made with the development of an Occupational Health Unit at the National Health Institute. When fully developed its investigational and consultative assistance will be available to both the Division of Public Hygiene and to medical officers of health.

The following reports were published during the year:

The Employment of Diabetics – Dr J. Copplestone: *Br. J. Indust. Med. 16,* 170 (Apr 1959).

Noise and Hearing Loss in New Zealand Industry – Dr J. Copplestone: *N.Z.M.J.,* Aug 1959.

The Employment of Epileptics in New Zealand Factories – Dr J. Copplestone: *N.Z.M.J.,* Oct 1959.

A Case of Dieldrin Poisoning – Dr A. H. Paul: *N.Z.M.J.,* June 1955.

### Notification of Occupational Diseases

Table 18, Appendix II, shows the official notifications received, together with a number of cases which have come to notice unofficially from other sources.

It is evident that more interest is developing both with notification and control measures in the smaller districts.

*Notes on Diseases Arising from Occupation* for issue to medical practitioners has been reviewed and printed.

**Dusts, Fumes, Gases, etc.**

*Ammonia*—The most serious occurrence during the year was from the bursting of an ammonia pipe in a freezing works. The incident was the subject of a special inquiry.*

*Chlorine*—The three cases reported all occurred when changing chlorine cylinders. In one case the wrong respirator was in use; and in the other two no respirator was available. The men involved had been doing the work one week, six months, and 12 months respectively.

*Nitrous Fumes*—One case resulted from the careless cleaning of a copper shower floor with nitric acid; the other in a welder working in a confined space.

*Diseases of the Respiratory System*—Seven cases were miscellaneous bronchitis or asthma due to a variety of dusts. Four cases of pneumoconiosis were in miners or quarry workers.

**Physical Agents**

(a) *Eye injuries* continue to exact unnecessary damage. When molten aluminium exploded in a mould the moulder, with an unprotected face, lost his right eye and part of his nose, requiring extensive plastic surgery. A labourer assisting a mechanic to change a tyre has a permanent 40 per cent loss of vision from a piece of metal which flew off a nut. These cases merely illustrate the importance of simple protective measures. *Notes on Eye Protection at Work* has been reprinted.

(b) *Impaired Hearing*—Although very few cases are notified it is probable that far more deafness is attributable to occupational noise than is commonly realised.

The formulation of a programme to prevent occupational deafness is included in the task of a special Board of Health committee, and some limited investigations are being undertaken by the Department. Dr Copplestone's paper is referred to above. Dr Hickling, in the Wellington district, surveyed 74 men in blacksmith and boilermaking shops and found 57 to be suffering from deafness definitely of occupational origin.

Although a survey of dentists using high-speed turbo drills is incomplete it has been found in some individuals that there is a demonstrable degree of hearing loss at the 4,000 cycles level after one year of exposure.

Trials of one-stage direct-moulding acrylic ear defenders appear not only simple but promising, resulting in a consistent reduction in the 4,000–8,000 cycle range of over 40 decibels as compared with less than 20 decibels for neoprene ear defenders.

**Control of Health Hazards**

*Lead Processes*—Table 19A, Appendix II, summarises the supervision undertaken and table 19B, Appendix II, shows distribution of workers by health districts.

Of the 115 workers found to be absorbing lead in unhealthy quantity – 15 were suspended; one admitted to hospital; two attending a hospital outpatient department; the other 97 remain under supervision of public health nurses.

*Report by the Commission of Inquiry into Explosion of Ammonia Gas at the Auckland Farmers' Freezing Company Premises, dated 10 December 1959.

The cases of frank lead poisoning were: Auckland, two cases engaged in ship breaking; Wellington, one case engaged in lead smelting; Christchurch, one case engaged in motorcar-body manufacture.

The Wellington office reports a noticeable improvement in working standards over the last five years.

*Dermatoses*—An analysis by the Department of Labour to determine trends of occupational accidents over the period 1953–57 shows a decrease in compensable dermatitis by 8·8 per cent, from which it can be reasonably concluded that the preventive work by the two Departments is beginning to have some effect.

*Hydrofluoric Acid*—Two cases reported during the year occurred when operators had leaks in their PVC gloves. One suffered severe burns and one lost part of his thumb.

Two fairly new fields have produced cases of dermatitis. The first is the use of *epoxy resins*. The hazard lies mostly with the curing agents rather than with the uncured resin. Dermatitis can be overcome with careful worker education, good general ventilation, good work methods, cleanliness, and the intelligent use of appropriate barrier creams.

The other new field is that of the *isocyanates* and the accelerators used with them in the making of plastic foam. A number of cases due to contact with diphenyl methane diisocyanate have occurred. They were of short duration, lasting only three days, and of a fine red pinpoint nature responding well to a local skin application together with benadryl.

A new public *Notes on Occupational Dermatitis* was published during the year.

*Electro-plating Processes*—Table 20, Appendix II, sets out the results of regular supervision.

Conditions discovered included one case of marked allergy to various chemicals (worker changed his job); one chrome dermatitis (advised to take job in another part of factory); a worker with chrome ulcer removed from plating until ulcer healed, another was suspended entirely; in a cyanide-rash case contact with process was broken for two weeks.

Treatment of one case was made by worker's own doctor while advice and treatment were given by public health nurses to others with new and recurrent rashes, sores, and ulcers.

In one factory an unsatisfactory chrome-plating tank was discovered, resulting in a new tank being installed.

The use of spray suppressants in chromium-plating tanks is becoming increasingly common. Exemption to the requirement for exhaust ventilation for chromium-plating baths is granted only when baths are fitted with a thermostat to ensure the proper temperature range is maintained; the bath is used only for "decorative" and not for "hard" chrome plating.

A survey of the level of chrome mist undertaken in Auckland revealed a fair state of affairs, 50 per cent of the plants surveyed conforming to the maximum allowable concentration laid down by overseas authorities.

The Deputy Medical Officer of Health, Wellingon, reports that while there are a number of highly satisfactory premises many are far from satisfactory. Progress appears to be very slow, and, for some reason, out of all proportion to other trades; electro-plating businesses seem to settle in old, unsuitable buildings, to become overcrowded, and always on the point of moving into new premises. Without blatantly breaching the standards of regulations they remain unsatisfactory.

*Abrasive Blasting*—Reports indicate little difficulty in the application of these regulations. Some temporary exemptions have been necessary to allow the importation of equipment, but by the end of 1960 the use of sand for abrasive blasting in factories will be virtually non-existent.

*Gas-main Maintenance*—Poisoning from carbon monoxide continues to be reported, but it is anticipated that the Gas Supply (Safety) Regulations 1959, administered by the Department of Labour, will effectively reduce such incidents.

*Aerial Application of Poisons*—Close collaboration with Civil Aviation Administration and the Department of Agriculture has been maintained, with marked progress towards the establishment of a "chemical rating" for pilots. In anticipation of this rating this Department has assisted in the preparation of lecture notes prepared by C.A.A. and provided lecturers for the course held at Lincoln College and examiners for the examinations sat to date. The Inspector of Health at Wanganui is now giving regular lectures at the Commercial Pilots School in that area.

Several officers of the Department gave papers at the first Agriculture Symposium organised by C.A.A. and held in Wanganui during the year.

The introduction of this rating by C.A.A. marks a milestone in the control of the aerial application of poisons, and demonstrates the value of the Joint Committee on Aerial Spraying established by C.A.A., in which the three Government Departments concerned, the Aviation Industry Association, and the Commercial Pilots Association all participate.

*Agricultural Chemicals*—The phenomenal increase during the past decade in the use of chemicals in agriculture makes this a subject of particular interest. The establishment of an Agricultural Chemicals Board, on which this Department is represented, and the introduction of a Poisons Bill during the 1959 Parliamentary session are particularly relevant. During the year, at the request of the Department of Agriculture, selenium and its compounds were brought under closer control and special regulations for controlling the use of "1080" have been prepared.

An accidental death of a man during the year from ingestion of Malathion illustrates that even the safest of the organo-phosphorus compounds cannot be dismissed as harmless. A case of chloropicrin poisoning in a market gardener and a case of dieldrin intoxication in a farm worker illustrate the well known properties of these chemicals.

A man employed poisoning trees with sodium arsenite for two months a year over three years developed a wrist drop, subsequently established as being due to chronic arsenic poisoning.

One factory formulating organo-phosphorus insecticides has the workers concerned on regular cholinesterase surveillance.

*Coal Mining*—The survey into coal miners' pneumoconiosis in the Grey Valley area has not been completed due to the illness of the officer concerned, but it is expected that the report will be available this year.

A special amputation kit was designed during the year and will be added by the Mines Department to the equipment of mine rescue stations. Improvements in the storage of stretchers in mines and the handling of morphia have been taken up with the Chief Inspector of Mines.

### Medical Nursing and First-aid Services

Tables 21A and 21B, Appendix II, indicate the extent of medical and nursing services in factory and other places of employment.

Table 22 shows the attendances at Industrial Health Centres and the projected developments.

*Examination of Young Workers*—Table 23 sets out the number of examinations carried out in 1959 under the Factories Act 1946.

A special Board of Health committee is examining the whole subject of the medical examination of young workers and its report should be available during 1960.

*First Aid*—The first aid placard used jointly by Departments of Health and Labour was revised during the year, and is in accord with current first-aid teaching.

## 2. CHILD HEALTH

### The Consultative Committee on Infant and Pre-school Health Services

This Committee sat in the four main centres and heard evidence from the Department of Health, the Plunket Society, the B.M.A., and many other interested bodies and individuals. Their report has been published.

The recommendations of the Committee relate mainly to the arrangements considered necessary for the maintenance of the existing and developing services of the Plunket Society in regard both to its Karitane hospitals and its activities in the field of infant health. The Department is in agreement with many of these recommendations. All are currently under consideration and it is confidently expected that agreement will have been reached with the Plunket Society by the time this report is published.

### Staff

The number of medical officers remains substantially the same as in previous years, though several medical officers have been absent for part of the year overseas. The inadequacy of the medical staff to carry out the supervision of pre-school and school children continues to be a matter for concern. The child population of this country has nearly doubled in the past 15 years, yet the numbers of medical officers on the staff of the Division has remained static. Nevertheless, the ground that has been covered is substantial. There has been an increase of 2,555 pre-school and 25,088 school children examined by medical officers and nurses.

The work is attractive to those with a preventive medicine outlook and the majority of the medical officers of the Division are well experienced in this particular field. Many have had years of experience in general practice. Of the 20 full-time medical officers, nine have higher qualifications and three have paediatric diplomas. Of the 26 part-time medical officers, three have paediatric diplomas. In addition, eight of the leading paediatric specialists in New Zealand are attached to the Child Health Clinics. The Department has a panel of child-health experts, unequalled by any other organisation in the country, to advise it.

The shortage of medical officers, however, has made it necessary to rely on nurses to carry out the supervision of the health of Maori pre-school children, and the screening of school children. Some loss of

contact between the schools and the medical officers has consequently developed. This is unfortunate, as head teachers are tending to rely increasingly on allied professions such as the psychologists, visiting teachers, and speech therapists of the Education Department, instead of consulting in the first place with the medical officers on the various problems which crop up among the children under their care.

With the easing up of the poliomyelitis immunisation campaign it is hoped to restore closer liaison between teachers and medical officers.

As far as the European population is concerned, nowadays most physical defects are usually noticed by the parents or teachers, and treatment is sought at an early stage. (Unfortunately this is not often the case among the Maoris.) Medical officers report an increase in problem children who suffer from psychological mal-adjustment and emotional disturbances, as well as those with such conditions as asthma and allergy, which are usually associated with profound psychological disturbance in the family relationships. All these conditions need prolonged counselling of parents by doctors who are experienced in this type of thing and who are prepared to give the necessary time to it. Much help in this direction has been given by the child health medical officers to parents and children. There is increasing cooperation in these conditions with the family doctors who find the special experience and particular knowledge of the medical officers of the educational set-up extremely helpful. But this work is time consuming and more help from private doctors, as recommended by the Consultative Committee, is badly needed.

**Pre-school Children**

The estimated number of pre-school children at 31 December 1959 was nearly 300,000, of whom over 30,000 were Maoris, The present policy of the Division is for pre-school children to be seen twice before they begin school, once at the age of two and again during the fourth year. These examinations enable defects to be discovered, arrangements to be made with private doctors for treatment, and the mother to be advised on general matters of health maintenance. The objects of this policy are to prevent or eliminate as far as possible all defects so that the child can benefit to the utmost from his school education.

Children are seen at clinics of the Plunket Society, at clinics arranged by public health nurses at kindergartens, and at schools when their elder brothers and sisters are having school examinations. During the year 26,426 European and 683 Maori children attended these pre-school clinics. Particulars of the defects found are shown in table 24, Appendix II.

The children seen are given a thorough medical examination and information is obtained from the mothers on such subjects as sleep, appetite, and behaviour. Tests of vision and hearing are carried out and immunisation procedures are advised and, if necessary, administered.

Where defects are found, the mothers are urged to seek treatment from their own doctors. When there appears to be no doctor mothers are advised to take children to the doctor nearest to them. Such children are followed up to ensure that treatment has been sought and is effective. In many cases the medical officers contact the private doctors personally so that full details of the child's medical condition can be imparted.

### School Children

There are approximately 550,000 children between the ages of 5 and 16 attending schools in New Zealand. The policy of the Division is for medical officers to see and examine all new entrants who have not been already examined during their fourth or fifth years. Other children are examined by nurses, and those considered to have defects are referred to medical officers for examination, together with any other children whom the head teacher or the parents wish to have examined. Every effort is made to persuade the mothers to be present at these examinations so that full details can be obtained of the child's past history and present home habits, and helpful advice can be given. Children found to have defects are referred to their family doctors for treatment, except those with refractive errors who are referred directly to specialist eye surgeons or to the ophthalmic departments of public hospitals.

Table 24, Appendix II, shows the defects found in school children. Refractive errors are common and can be more readily picked up in this age group than in pre-school children. Undernourishment hardly exists and is being replaced by obesity, which is due to the over-consumption of sugary carbohydrates and soft drinks. As a consequence not only do teeth suffer but an unbalanced diet interferes with the general state of nutrition and development of the child.

The total number of children seen at school examinations was 104,899, of whom 10,309 were Maoris.

### Audiometry

One of the most successful efforts of the Department has been the introduction of audiometric surveys to discover the incidence of deafness in school children. Gramophone audiometry is gradually being superseded by pure tone audiometry which is more accurate and permits of younger children being tested. Medical officers and public health nurses have been shown how very young children can be tested. New audiology clinics have been set up at Whangarei and Hamilton.

The Board of Health has set up a committee of experts and those interested in deafness to give further consideration to the problems and difficulties which arise in the diagnosis and treatment of hearing losses in all sections of the population, and to advise on a comprehensive scheme to cover all cases of deafness.

### Maori Children

As mentioned in previous reports, the main problems with these children are staphylococcal infections causing impetigo and other septic infections, and upper respiratory diseases. They do not seem to suffer from enuresis, asthma, or emotional disturbances to the same extent as European children. In some of the more rural areas there appears to be considerable ignorance on health matters. For instance, discharging ears are considered to be normal and in one case of a Maori child with severe chronic nasal infection the medical officer was told by the mother that she thought treatment would be useless before the age of five. In one Maori school 48 out of 62 children had ear, nose, and/or throat defects. On the other hand, medical officers report instances where Maori children are well looked after and better nourished than European

children from the same area. A special effort has been made by medical officers to see more of these Maori children in the pre-school stages of their lives and to give the mothers health education but it is difficult to get the mothers sufficiently interested to attend clinics. On the whole, however, the statistics show considerable improvement on previous years.

### Child Health Clinics

These clinics are concerned primarily with emotionally disturbed and psychologically maladjusted children. In recent years physical defects have become less of a problem for the child health medical officers, and increasing importance is being paid to defects in the social attitudes and behaviour of children.

Such a wide variety of conditions as petty thieving, enuresis, truantism, and other anti-social conduct, as well as allergy and suspected mental defects are dealt with at these clinics.

It is in cases of this kind that medical officers and private doctors most need help in diagnosis and management. The bulk of children are referred from private doctors, but the medical officers and the Child Welfare Department are frequently the prime movers in getting children referred.

The investigation of these children requires not only a full medical examination, and a psychological assessment, but also some inquiry into the home background. Very frequently the fault is found to lie with some aspect of the home or the parents, one of whom may be psychopathic or alcoholic. The habitual absence of parents when children return home from school is a frequent finding among the cases that are investigated.

Child Health Clinics have been established at Auckland, Wellington, Christchurch, Hamilton, Whangarei, and Palmerston North. The established staff of each clinic comprises a specialist paediatrician who is the head of the team of workers, a psychiatrist, an educational psychologist, a play therapist, a social worker, and a secretary. Unfortunately, owing to the lack of sufficient trained personnel, it is not possible as yet in some clinics to have a full establishment. The educational psychologist is of great assistance, apart from his professional activity, in promoting close liaison between the schools and the clinics, while the social workers investigate the home conditions. Case conferences are held regularly when all members of the team contribute towards the diagnosis and treatment of the children under review.

Other Health Districts have asked for the establishment of Child Health Clinics in their areas. This has so far proved impossible owing to the difficulty of getting suitably trained staff.

The work of these clinics was most favourably commented on by the Consultative Committee on Pre-school and Infant Services, and they commended the fact that they were separate from public hospitals. The service that they provide is unique because both educational and medical experience combine to deal with these so-called problem children.

## 3. TUBERCULOSIS

### New Notifications

The satisfactory downward trend in overall morbidity noted in recent years has been maintained. There were 292 fewer notifications of tuberculosis in 1959 than in the previous year.

When the incidence of disease is compared in the two races – European and Maori – interesting facts emerge. The European rate has over the last decade fallen steadily from 8·6 to 4·18 per 10,000 population. However, the Maori rate shows less improvement over the same period, from 48·6 to 31·3 per 10,000 population. The Maori people therefore have an incidence of the disease approximately eight times that of Europeans.

### Registered Cases

The number of registered cases is 12,080. As a case once notified is seldom deregistered under a period of five years, some time must elapse before the downward trend of new cases is reflected in the state of the register. For the second year in succession the numbers of tuberculosis cases in the register have shown a slight decrease.

### Mortality

The mortality from all forms of tuberculosis reached the low figure of 5·9 per 100,000 population.

As has been noted with regard to new notifications of disease, the Maori race is in a much less favourable position than the European. The death rate from tuberculosis in the Maori was approximately six times that in the European. The overall position in the Maori, however, shows a great improvement over the last decade. The Maori mortality from tuberculosis was 224·3 per 100,000 population in 1950. Last year this rate had been reduced to 25·3 per 100,000, i.e., a nine-fold decrease.

### Mass X-ray

The number of Mass X-ray Units operating throughout New Zealand remains at nine. X-ray examinations were performed on 256,332 persons. During the year more time has been spent on the examination of people residing in the rural and more remote areas.

Some 279 active cases of tuberculosis were found, in addition to other conditions of the lungs and heart. This represents a rate of 1·08 active cases of tuberculosis per 1,000 persons examined. The units were responsible for the discovery of 23·19 per cent of the new notifications of pulmonary tuberculosis for the year.

### BCG Vaccination

The vaccination campaign against tuberculosis was continued. A total of 34,669 vaccinations were performed, the majority in the age group 10 to 14 years.

### General

From the statistical tables 25 to 30 in Appendix II it will be seen that the steady improvement in tuberculosis mortality and morbidity has been maintained. Major gains for the future must come from intensified work with the Maori people.

## 4. DENTAL HEALTH

The most notable event for the Division during the past year was the opening of the School for Dental Nurses, Christchurch. This saw the completion of an expansion of the facilities for training student dental

nurses, commenced, in the first instance, with the opening of the School for Dental Nurses in Auckland in 1952. Up to that time the annual intake of students had been limited to two drafts of 55 students, the maximum capacity of the Dominion School for Dental Nurses, Wellington. The establishment of the Auckland school allowed the annual intake of students to be increased to 165 a year, and now that the new school in Christchurch has been opened it is possible to accept 220 to 224 new students a year, with a probable 200 graduates at the end of the two-year course of training.

The total number of children now attending school dental clinics is 374,116, compared with 344,546 at 31 March 1959, and 226,636 in 1950. During this same period, however, there has been a rapid increase in the pre-school and primary-school population, so much so that even if from now on the output of graduates can be maintained at 200 per year, several years must elapse before the whole primary-school population can receive dental attention in school dental clinics.

**Staff**

On 31 March 1960 the professional and technical staff of the Dental Division, excluding those seconded to other services and foreign students studying in this country, numbered 1,399, comprising 60 dental officers, four matrons, 33 dental nurse inspectors and dental tutor sisters, 896 school dental nurses (of whom 46 are part-time), 384 student dental nurses, and 22 dental attendants.

The conditions of service for dental officers engaged in teaching duties are improved, and now include provision for selected officers to travel overseas for further study in those branches of dentistry where post-graduate experience would be of advantage in their work in this Service. This has brought applications from dentists of senior standing with suitable qualifications and experience and for the first time in many years practically all senior posts on the teaching staff are filled on a permanent basis.

**Adolescent Dental Service**

Free dental care for children from the time treatment ceases at a school dental clinic up to 16 years of age continues to be provided, partly by salaried dental officers working in the Department's adolescent clinics, but in the main by private practitioners treating children on a fee-for-service basis.

At the time the service for adolescents was inaugurated in 1947 insufficient adolescent dental clinics had been established to provide dental attention for all those children eligible for free treatment. At the request of the Department the New Zealand Dental Association agreed that its members should assist in treating adolescents by providing treatment on a fee-for-service basis as a temporary measure until such time as a full-scale salaried dental service could be developed.

In the past 13 years the salaried adolescent dental service has made little progress, while on the other hand the fee-for-service treatment has proved acceptable to the dental profession. In the light of this experience it is now the expressed desire of the New Zealand Dental Association that

the Social Security (Dental Benefits) fee-for-service scheme should be accepted by the Department as the permanent basis for treatment for adolescents.

(a) *Treatment by Salaried Dental Officers*

No new adolescent dental clinics designed for dental officers have been established during the year.

The following are the statistics for the year under review for clinics in the Division of Dental Hygiene controlled by dental officers (figures for the previous year in parentheses):

| | | |
|---|---|---|
| Number of dental officers | 25 | (30) |
| Number of dental attendants | 22 | (29) |
| Number of treatment centres (including sub-bases) | 28 | (28) |
| Number of schools under treatment | 30 | (37) |
| Number of children under regular treatment | 11,328 | (12,412) |
| Operative dental treatment— | | |
| Total number of fillings | 46,476 | (50,304) |
| Total number of teeth extracted | 3,263 | (3,620) |
| Total number of operations | 74,222 | (78,405) |

(b) *Treatment by Private Dental Practitioners*

Statistics relating to treatment rendered under the Social Security dental benefits for the year under review, are as follows (figures for the previous year in parentheses):

| | | |
|---|---|---|
| Number of children enrolled for general dental benefits as at 31 March 1960 | 160,121 | (165,956) |
| Number of children who ceased to be enrolled for general dental benefits on attaining 16 years of age | 27,711 | (25,358) |
| Total amount paid private dental practitioners for treatment rendered under general dental benefits | £988,873 | (£929,694) |
| Number of completed treatments in respect of which the above sum was paid | 269,636 | (270,730) |
| Average cost per completed treatment for general dental benefits | £3 13s. 4d. | (£3 8s. 8d.) |

Of the 858 private dental practitioners holding annual practising certificates as at 31 March 1960, 589 had contracted as principals to provide treatment under the dental benefit system. As has been pointed out in previous reports, this latter figure does not include those dentists who are employed as assistants by contracting dentists or contracting authorities such as hospital boards, and therefore does not represent the total number of dentists providing dental benefit treatment. In fact, with the exception of those dentists engaging solely in specialist treatment, the great majority of all dentists render treatment under dental benefits.

The aim of the dental benefit plan is to give a complete treatment at approximately six-monthly intervals to every child enrolled for general dental benefits. The cost of this treatment, as shown in the table below, has risen steadily over the last six years, in part at least as the result of increases in the scale of fees in 1955 and in 1956. The average cost of each completed treatment in the year 1959–60 – £3 13s. 4d. – is 6·8 per cent higher than 1958–59 and 34·8 per cent higher than in 1955.

## General Dental Benefits

| Year Ending 31 March | Number of Contracting Dentists and Authorities | Total Number of Children Enrolled | Total Number of Completed Treatments | Average Payment per Completed Treatment |
|---|---|---|---|---|
| | | | | £ s. d. |
| 1954 .. .. .. | 540 | 168,496 | 243,400 | 2 14 4 |
| 1955 .. .. .. | 552 | 162,699 | 260,089 | 2 14 5 |
| 1956 .. .. .. | 558 | 172,379 | 273,764 | 2 17 10 |
| 1957 .. .. .. | 571 | 172,724 | 278,111 | 3 4 9 |
| 1958 .. .. .. | 588 | 169,482 | 272,020 | 3 7 9 |
| 1959 .. .. .. | 591 | 165,956 | 270,730 | 3 8 8 |
| 1960 .. .. .. | 593 | 160,121 | 269,636 | 3 13 4 |

Two treatments are not necessarily made each year, thus the average annual cost per child is less than twice the average payment per completed treatment.

## Dental Benefits Central Advisory Committee

Following the introduction of Social Security dental benefits in 1947, a Dental Benefits Central Advisory Committee was set up under section 83 of the Social Security Act 1938.

Over a period of 13 years this Committee has served a very useful purpose in ensuring that Social Security dental benefits should operate at maximum efficiency and with full cooperation between the Department, the New Zealand Dental Association, and contracting dentists.

In 1959, at the request of the New Zealand Dental Association, the Minister of Health approved a reconstitution of the Committee. The personnel now consists of the Director (Chairman), the Deputy Director, and the Senior Executive Officer of the Division of Dental Health, four members of the dental profession nominated by the New Zealand Dental Association and approved by the Minister, and one member nominated by the Minister. The newly constituted committee met for the first time on 26 June 1959.

## School Dental Nurse Service

As shown by the statistics relating to the work of the School Dental Nurse Service the year under review has seen a substantial increase in the number of treatment centres, the number of school dental nurses, and in the total number of patients enrolled at school dental clinics.

| | 1960 | 1959 |
|---|---|---|
| Number of school dental nurses .. .. .. .. | 896 | (830) |
| Number of treatment centres (including sub-bases) .. | 875 | (852) |
| Number of schools under treatment .. .. .. | 2,475 | (2,464) |
| Number of children under regular treatment .. .. | 374,116 | (344,546) |
| Operative dental treatment— | | |
| Total number of fillings .. .. .. .. | 1,905,120 | (1,749,764) |
| Number of carious permanent teeth extracted .. .. | 890 | (779) |
| Number of carious deciduous teeth extracted .. .. | 69,585 | (69,137) |
| Total number of carious teeth extracted .. .. | 70,475 | (69,916) |
| Total number of operations .. .. .. .. | 2,973,394 | (2,738,180) |

The total number of fillings, amounting to 1,905,120, is to be contrasted with 70,475 teeth removed as unsavable. This latter figure, together with 1,653 teeth extracted for School Dental Service patients by contracting dentists under dental benefits, represents a ratio of 3·8 teeth extracted because unsavable to every 100 fillings. Since the inception of the Service there has been a steady decrease in the ratio of teeth extracted to the number saved by filling. This is clearly shown in the following table:

| Year | Fillings | Extractions | Ratio of Extractions per 100 Fillings |
|---|---|---|---|
| 1925 .. .. .. | 59,322 | 43,181 | 72·6 |
| 1930 .. .. .. | 190,934 | 71,128 | 37·2 |
| 1935 .. .. .. | 399,560 | 70,207 | 17·5 |
| 1940 .. .. .. | 615,514 | 75,993 | 12·3 |
| 1945 .. .. .. | 1,017,290 | 76,335 | 7·5 |
| 1950 .. .. .. | 1,301,840 | 91,458 | 7·0 |
| 1955 .. .. .. | 1,440,245 | 83,247 | 5·8 |
| 1960 .. .. .. | 1,905,120 | 72,128 | 3·8 |

(a) *Treatment of Pre-school Children*

In recent years school dental nurses have made increasing endeavour to enrol as many pre-school children (two and a half to five years of age) as possible. The response from parents has been remarkable, and it is now not unusual to find districts where every new entrant to the local school or schools has already attended the school dental clinic for treatment before enrolling at the school itself. The total number of pre-school children receiving treatment at school dental clinics has increased from 61,498 in 1959 to 63,018 in 1960. This figure is now close to 44 per cent of all pre-school children in New Zealand.

(b) *New School Clinics*

During the year under review excellent progress has been made in the provision of new clinics and in the adaptation of existing accommodation for the increasing school dental nurse staff. The total number of new clinics built was 45, while 13 existing buildings were enlarged to provide accommodation for extra staff. All education boards have worked closely with the principal dental officers in charge of dental districts and at all times have assisted this Division in every possible way.

(c) *Dental Clinic Committees*

One of the most pleasing features of the work of the School Dental Service is the able and willing manner in which dental clinic committees voluntarily assist in the local administration of clinics and cooperate with the Department in furthering the dental health of children. There are now more than 875 treatment centres in New Zealand, and with very few exceptions – and these mostly because of unusual circumstances – there is a dental clinic committee established at each such centre.

Formerly the chief responsibility of a committee was to raise the necessary funds to meet wholly or in part the cost of erecting a clinic, and when built to meet expenses incurred in its operation. Now funds are made available by the Department to meet such expenses. Clinic

committees administer these funds and at the same time provide an organisation to whom the school dental nurse can turn when she requires assistance in local administrative matters, and serve as an essential liaison between the Department and the local community.

**Schools for Dental Nurses**

The schools for dental nurses at Wellington, Auckland, and Christchurch respectively have all continued to function efficiently and well. As already mentioned, the new school building in Christchurch was occupied in 1959. This now provides the same high standard of facilities for the treatment of children as already existed in Wellington and Auckland.

A total of 14,741 children from 68 State and private primary schools attend the three schools, but this is still much below the number that could be treated with the facilities available.

The number of students in training at 31 March 1960 (together with six from Hong Kong, Thailand, and Sarawak) was 390. During the 12 months 191 student dental nurses completed training and a further 192 new trainees were appointed. This latter figure is 29 less than last year and 32 below the necessary intake if the required 200 graduates a year is to be attained.

**Refresher Course**

One refresher course was organised and held in Wellington at the Dominion School for Dental Nurses in May 1959. This was attended by 24 nurses, all of whom had graduated seven years or more previously. The success of such courses is undoubted. They are a means of bringing long-service field staff up to date in clinical treatment and introducing new technical procedures and the use of new drugs and materials. Apart from this the effect of meeting together in Wellington as a group and renewing interest in service affairs has psychological value and is a stimulus to morale.

**Health Education**

As in past years, a very considerable amount of time has been devoted to health education activities by all school dental nurses. For this effort to be a success it calls not only for knowledge of the subject but also imagination, sustained enthusiasm, and for the gift of arousing and holding the interest of the listeners. To assist school dental nurses in health education activities the Division's two dental health education tutor sisters have continued to visit the larger centres in New Zealand, where they have arranged special courses for groups of field staff. They have also given series of lectures to student dental nurses in the three schools for dental nurses, and have engaged in the production of teaching aids, class talks, etc., useful for the school dental nurse when giving class instruction.

Apart from many other activities carried out in the field of dental health education during the year, school dental nurses gave more than 8,200 lectures and addresses to parents and children, and prepared 513 health exhibits and health stalls at school and public functions. Many of these efforts involved much of the nurse's own time and considerable personal expense.

### Colombo Plan and WHO

Among the visiting Colombo Plan and WHO Fellows who were attached to the Division of Dental Hygiene for varying periods during the past 12 months were Mrs Tan Hwie Kiat and Miss Azinar Asikin from the School Dental Service, Indonesia. Mr Gunatilaka and Miss K. Wijisinghe from the School for Dental Nurses, Ceylon, are at present with the Division, and student dental nurses from Thailand, Sarawak, North Borneo, and Hong Kong are in training at the Auckland and Wellington schools. New Zealand has also continued to assist the establishment of Dental Services in the Colombo Plan area by providing trained New Zealand school dental nurse staff. Two tutor sisters are attached to the School for Dental Nurses, Colombo, and two are working in the Brunei School Service.

### Dental Research

A member of the dental research staff of the Medical Research Council, Mr T. G. Ludwig, is attached to the Division of Dental Hygiene for the purpose of carrying out epidemological studies on behalf of the Council. His activities over the past 12 months have centred chiefly on an investigation of caries-soil relationship.

## 5. HEALTH EDUCATION

The diploma course for health education officers mentioned in the 1959 annual report has completed its first year and two health educators have returned to their districts with their diplomas. Three more candidates are taking the course in 1960.

Health education programmes on a national scale have been directed particularly at hydatid disease, prevention of burns, and fluoridation of water supplies. This last programme was cut across by the decision of eight local authorities to take a referendum on the subject during the local bodies elections in November. Despite hard work by the district offices concerned and by local voluntary committees the public made it clear that they are not yet ready for this public health measure. Hydatid education has become the particular concern of the National Hydatid Council. The Director of Health Education is now the Health Department's representative on the Council and is Chairman of its Public Relations Committee.

The campaign against burns had wide coverage and was particularly effective in country areas where electricity has been installed recently.

Preliminary publicity has been given to a programme that is being developed against cigarette smoking and during 1960 it is planned to work with the Department of Education to discover the present smoking habits of school children. Adults will be encouraged to stop or, at least, reduce cigarette smoking, but they will particularly be asked to assist in discouraging youngsters from developing the smoking habit.

District offices have supported the three national health education programmes mentioned above and have continued to develop local programmes to meet local needs. These range from small programmes directed at particular types of food handlers to quite elaborate exhibits bringing health information to the public. Several districts have given special attention to dangers from poisons in the home, in industry, and on the farm.

All the health education activities outlined in last year's report have been continued this year and a number of them, such as lectures in service training courses, have been expanded. There has also been another successful year working on the Joint Committee of the Departments of Labour and Health on Occupational Health, Safety, and Welfare.

Health education was the subject for the technical discussions at the Twelfth World Health Assembly in May 1959, and the report on the discussions records the encouraging statement that "Health education is the most powerful weapon we have in the field of health."

## 6. PUBLIC HEALTH NURSING

The shortage of public health nursing staff has been a matter of serious concern during the year and no health district has been able to fill its establishment at any time during the year.

Every effort is made to make the living conditions of these nurses as attractive as possible by improving their housing and amenities, particularly in the rural areas.

An improved salary scale was inaugurated during the year and it is hoped that this will attract more staff to this most important work in the public health field, the scope of which is continually being widened as new programmes are instituted. Much of the earlier work with the school child and with the family unit is becoming more detailed and the problems to be dealt with more complex.

Nurse inspectors have had a busy year. They have had new staff to supervise and arrange programmes for. They have continued to inspect private hospitals and small maternity hospitals, advise managers, matrons, and licensees on nursing matters, and in addition advise on planning and alterations to private hospitals. Investigations into cases of puerperal sepsis and pyrexia have been carried out as formerly.

District health offices are becoming better known as centres of information where persons, including nurses, seek the help of the nurse inspectors on professional and health matters. In some of the larger city areas some reorganisation of the nurse inspector's work may have to be considered on this account.

Bursaries have been granted during the year to public health nurses for maternity training (4), Plunket training (9) and post-graduate experience (7).

## 7. MEDICAL STATISTICS

### Publications

Strenuous efforts have been made during the year to bring the publication of the *Annual Report on the Medical Statistics of New Zealand* up to date. Although statistics for each year have always been available by the middle of the succeeding year, for various reasons, mainly arising out of delays caused by staff and printing problems during the post-war years, the actual publication of these statistics has for many years been considerably in arrears.

With the excellent cooperation of the Government Printer, this year has seen the printing of two *Annual Reports* in quick succession and the 1957 and 1958 reports are now available. Preparation of the 1959 report is being pressed on and it is anticipated that in future the *Annual Report on the Medical Statistics of New Zealand* will be available within the year following that to which the figures refer.

Special statistical studies on various medical problems have again been undertaken during the year and several of these are now ready for publication. To facilitate the issuing of these statistical studies a new "Special Report Series" has been inaugurated. The first of these, *Maori-European Standards of Health,* has already appeared and extracts from this study are included further on in this report. To a certain extent these special studies will take the place of material of this nature formerly included in the introductory notes to the *Annual Report of the Medical Statistician on the Medical Statistics of New Zealand.* It is hoped by this means to bring such studies to the notice of those interested in medical statistics at an earlier date than has been possible hitherto through the ordinary means of publication.

Another regular feature of the work of the Medical Statistics Branch is the *Annual Report on the Mental Health Statistics of New Zealand.* Previously issued since 1955 in two parts – Part I, text, and Part II, statistical tables – the latest issue of this report for 1958 has been published in one volume for greater convenience. This report, in addition to covering the general statistics of mental hospital population movements, also gives comprehensive figures relating to the incidence and underlying causes of mental illness in New Zealand and the results of treatment in people leaving mental hospitals.

**Statistical Studies**

Special statistical surveys completed or inaugurated during the year in addition to those mentioned above include studies on accidents, hydatid disease, infant mortality, carcinoma of the cervix, smoking by school children, experience of general practitioner service, etc.

The usual assistance in statistical projects has been given to medical officers of health, Directors of Divisions of the Department, and a host of private inquirers and research workers, both in New Zealand and overseas, while a considerable quantity of medical statistical material has been supplied to the World Health Organisation.

**Training Programmes**

A highlight of the year was the visit to the Branch of Dr S. K. Quo, Regional Statistician and Programme Evaluator of the Regional Office for the Western Pacific Area of the World Health Organisation. It was the result of Dr Quo's evaluation of the medical statistics system in New Zealand that this country has been selected for the training of students from eastern countries. Two such students were trained during the year on the Medical Statistics Branch. Lectures on medical statistics are also given by the Branch to fifth-year medical students at the Dunedin Medical School, the Hospital Officers' Association, Nurses' Postgraduate School, health inspectors, hospital medical records personnel, etc.

**Statistical Survey for 1959**

The number of live births recorded during 1959 shows an increase of over 1,000 from the previous year, while the birthrate sustained the relatively high rate of recent years. The figures for 1959 are: European, 54,739; Maori, 7,130; total, 61,869. The birthrate for 1959 is: European, 25·10; Maori, 46·28; combined, 26·50. These figures compare with 25·16, 46·24, and 26·53 for the previous year. The continued rise in the Maori birthrate on a general level much higher than the European poses some interesting population problems for the future.

The still-birth rate per 1,000 total births is 14·49 for Europeans and 18·85 for Maoris, giving a combined figure of 15·00. The Maori rate rose in 1959, but the European and the combined rate are the lowest yet recorded.

The infant-mortality rate (deaths under one year of age per 1,000 live births) is 19·89 for Europeans and 54·42 for Maoris, giving a combined rate of 23·87. With the exception of an appreciable rise in the Maori infant-mortality rate in 1957, all three rates have remained at a very steady level for the last four years. The neo-natal death rate (deaths in the first month per 1,000 live births) is 13·94 for Europeans and 19·21 for Maoris. The European rate shows a slight rise in 1959 as compared with 1958, but the Maori figure and the combined rate both show a decrease.

**Principal Causes of Death**

Certain causes of death and the rates per 1,000,000 of the population for Europeans and Maoris combined over a period of five years are shown in table 7, Appendix II. The causes of death have been classified in accordance with the International Classification of Diseases, Injuries, and Causes of Death (1955 revision), but for the purposes of these tables have been grouped to show the causes of death that are mainly responsible for mortality in New Zealand in recent years. All figures are provisional and are subject to minor alteration.

Maoris have been included in all figures contained in this report as it is considered that a summarised statistical survey should cover the whole population of New Zealand. In cases where race characteristics are important, separate figures can be obtained from the detailed statistics contained in the *Annual Report on Medical Statistics.*

Once again deaths from all forms of tuberculosis reached an all time low level with a decrease of 63, or 32 per cent, in numbers and of 28 per 1,000,000 of population, or 32 per cent, in the death rate as compared with 1958. There was only one death from poliomyelitis during 1959, and all other infectious diseases maintained much the same level as in 1958. In actual numbers, deaths from malignant neoplasms continue to increase substantially and are now well over 3,000 per annum (3,368 in 1959). The death rate, however, appears to have become fairly stable and has shown little movement during the last four years. Cancer being a disease of older life, this situation probably reflects the gradual ageing of the population whereby more and more people are reaching the cancer-danger period. At the other end of the human life span births are steadily increasing, while infant mortality maintains a steady level so

that the total population increase more than balances the loss in the declining years. Other degenerative diseases such as general heart disease show a marked increase in both number and rate in 1959. Influenza was spread fairly uniformly through the country and showed two peak periods during the year, when deaths were unusually high. These were in January to February, and again in May to August. In proportion to population Nelson and Timaru health districts were the severest hit as regards death rates from influenza. As is usual in a year when influenza deaths are high, the death rate from pneumonia was also heavy.

**Peri-natal and Infant Mortality**

By peri-natal mortality is meant the deaths that occur before birth, during labour, or shortly after birth.

Neo-natal deaths, or deaths of live-born infants during the first 28 days of life, are closely related to the causes of still birth. Even more so are the deaths of infants during the first week of life. A death rate combining the still births and deaths during the first week of life gives a measure of peri-natal mortality. The deaths of infants after the first 28 days of life and before the end of the first year of life constitute the residual infant mortality. These rates for the years 1955 to 1959 are given in table 8, Appendix II.

New Zealand has always been noted for its low infant-mortality rate. The European rate is especially low and in comparison with other countries represents the fourth lowest figure in the world. When Maoris are included New Zealand drops back to sixth place in the international picture. Table 9 in Appendix II shows the quinquennial average infant-mortality rates for various countries for the latest years available.

In the early history of New Zealand the efforts made to reduce the infant-mortality rate were directed mainly towards those diseases that occurred in the later portion of the first year of life. This resulted in a steady decline in the death rate for infants between one and 12 months of age. Neo-natal mortality (deaths under one month), on the other hand, remained persistently stubborn until the 1920s. Since then the neo-natal mortality rate has shown a fairly steady decline. These remarks apply principally to the European rate.

The Maori total infant-mortality rate has been extraordinarily high for the greater part of the recorded history of Maori infant mortality. In recent years, however, a great improvement has been achieved in this rate, which for the year 1959 was 54·42 per 1,000 live births, as compared with the European rate of 19·89. Twenty years ago the Maori rate was 114·92 and the European rate 31·14. The movement in the Maori infant-mortality rate has followed the pattern of the European, with most of the reduction that has taken place during the 20-year period occurring in the one and under 12 months' group. As with European infants, more recent years have seen a stabilising period for this group and a definite improvement in the neo-natal death rate. In the five years 1955 to 1959 the European neo-natal rate has dropped by 1·4 per cent while the Maori has decreased by 2·1 per cent.

European still births (late foetal deaths) were first registered in New Zealand in 1914. Figures of Maori still births are available only from 1942. The trend of the still-birth rate may be seen from the following quinquennial summary.

| Period | Rates per 1,000 Total Births | | |
|---|---|---|---|
| | Europeans and Maoris | Europeans | Maoris |
| 1955–59 .. .. .. | 15·74 | 15·55 | 17·20 |
| 1950–54 .. .. .. | 18·44 | 18·23 | 20·27 |
| 1945–49 .. .. .. | 19·87 | 20·16 | 18·44 |
| 1940–44 .. .. .. | 23·93 (1940–42) | 26·17 | 15·45 (1940–42) |
| 1935–39 .. .. .. | * | 28·75 | * |
| 1930–34 .. .. .. | * | 29·23 | * |
| 1925–29 .. .. .. | * | 30·36 | * |
| 1920–24 .. .. .. | * | 29·35 | * |
| 1915–19 .. .. .. | * | 25·25 | * |

*Not available.

The European still-birth rate showed a decrease during 1959, with a rate of 14·49 as compared with 15·00 in 1958. The 1959 figure is the lowest on record. The Maori still-birth rate rose to 18·85 in 1959 from 16·20 in 1958. This is the second year in succession in which there has been an increase in the Maori still-birth rate.

The peri-natal death rate (still births plus deaths under one week), has shown little movement during the last five years. For Europeans this rate (per 1,000 total births) has decreased from 27·32 in 1955 to 26·43 in 1959, a fall of 3·3 per cent. The Maori rate, however, increased by 3·6 per cent, from 32·53 to 33·71 during the period.

A comparison of European and Maori infant mortality over a number of years is given in table 10 in Appendix II.

Had the infant death rate of 1940 prevailed in 1959 with the same number of births there would have been a loss of 800 more babies than actually occurred in 1959.

The principal causes of infant mortality (European and Maori combined) are shown in table 11 in Appendix II.

In common with the increase in influenza and pneumonia deaths in the general population these diseases exacted a heavier toll of infant life during 1959 than in 1958. There was little movement in the other principal causes of infant deaths with the exception of prematurity, which was responsible for 22 more deaths in 1959 than in 1958. On the whole the infant mortality rate from this cause has remained fairly constant in recent years. However, when all deaths in which prematurity was specified as a contributory cause are added to the total recorded as due to prematurity alone (as shown in table 12, Appendix II), there is a decrease of 12 in 1959 as compared with 1958.

**Maori-European Standards of Health**

As mentioned earlier, a special statistical report series has been inaugurated, and the first study in this series, *Maori-European Standards of Health*, by R. J. Rose of the Medical Statistics Branch, has just been published. This report may be obtained from the Department of Health. A summary of the report is now given.

An important finding is that the Maori is affected to an even greater extent than the pakeha in many diseases which occur in late middle life or in old age. These conditions, commonly described as degenerative conditions, are associated with the wearing out of the human machine. There has been a misconception common among physicians and health workers that the Maori is comparatively free from these types of disease.

The reason for this misconception is that there are very few Maoris in the total population at the ages when these conditions are likely to occur.

Numerically the Maori population is not only small (156,839 as at 31 December 1959) in comparison with the pakeha population (2,202,907) but it is settled mainly in scattered rural groups in certain parts of the North Island, with very small numbers dispersed throughout the South and Chatham Islands.

### The Toll of Infective Disease in the Maori

It is well known that there is a very high loss of life from all types of infectious and epidemic disease among the younger section of our Maori population. The most striking example is, of course, tuberculosis. Not so well known, perhaps, is that these same infectious conditions exact a heavy toll of life in the middle and even older age groups of the Maori people. There is a great disparity in these types of condition between the European and the Maori, the Maori death rate being in the vicinity of ninefold in most age groups.

### High Toll of Other Types of Disease in the Maori

In addition to the infectious, in almost all other types of disease the Maori age-specific mortality rates compare most unfavourably with the European equivalent. While it could reasonably be anticipated that in diseases of an acute or inflammatory nature such as rheumatic fever, meningitis, pneumonia, and enteritis, the Maori death rates would be at a somewhat higher level than the rates for the same diseases in the European, there is no ready explanation for the disproportionately higher loss of life in the Maori which shows up in almost every other condition. These include cancer, diabetes, and all the major cardio-vascular and renal conditions.

There is some comfort in the fact that while the death rates for the Maori are so much higher than the European in almost all diseases there is some indication of a downward trend. Particularly is this so as regards the Maori death rate from tuberculosis, which has shown substantial improvement in recent years.

### Is the Maori as a Race More Susceptible to Disease?

In the earliest period of the settlement of New Zealand by Europeans the native race was ravaged by a number of diseases with which it had had no previous contact. Today, after well over 100 years of association with the European, it is questionable whether any marked degree of susceptibility to these contagious conditions can still remain. There is, indeed, no conclusive evidence that infection, whether bacterial or viral, is affecting the Maori of today to a greater degree because of a constitutional lack of body defences against disease.

### High Accident Rates in the Maori

In addition to most forms of disease, the Maori loss of life from accidental causes is very much higher than the European. The explanation lies partly in lower standards of home care and home equipment and partly in the additional hazards of backblock life. In addition, a high proportion of Maori workers engage in various types of outdoor and indoor work which involve a degree of occupational risk.

### High Maori Incidence in Diseases Treated in Public Hospitals

Death rates serve as a fairly reliable guide to the incidence or prevalence of many diseases in the community.

The public-hospital figures compiled confirm the unfavourable situation as regards Maori health as disclosed by death rates. Unfortunately there are certain qualifications to Maori hospitalisation figures as available at present. Firstly, the decision as to the race of the patient is based in the main on the opinion of the medical officer or clerk admitting the patient, secondly, the proportion of

readmission patients is likely to be higher in the Maori group due to transfers from district hospitals to base hospitals, and thirdly, the Maori person is the more likely to be treated in a public hospital than in a private hospital.

The hospital inpatient picture as presented by an analysis of the 1956 figures shows an unduly high incidence of many forms of illness in the Maori. Diseases for which Maori cases were admitted to hospital more frequently than European were respiratory and non-respiratory tuberculosis, almost all the epidemic and infectious conditions, influenza, bronchitis and pneumonia, diabetes, otitis media and mastoiditis, rheumatic fever and chronic rheumatic heart disease, dental disorders, gastro-enteritis, skin infections, osteomyelitis, nephritis and nephrosis, and varicose veins and phlebitis. In addition there were a disproportionate number of Maori admissions for injuries resulting from accidents, poisonings, and violence. Diseases for which the Maori hospitalisation rates were lower than the non-Maori were enlarged tonsils and adenoids, appendicitis, peptic ulcers, psychoneurotic disorders, arteriosclerotic and degenerative heart disease, hypertrophy of the prostate, and gall-bladder disease.

### What is a Maori?

For all statistical purposes, including the taking of the Census and in the registration of births and deaths, a Maori is defined as a person with half or more Maori blood. This means that the child of a union between a Maori of full blood and a European is a Maori, but should the Maori parent possess even a small proportion of European blood then the offspring is technically a European. As a result there are many in this study included as "European" who have a proportion of Maori blood, and conversely many in the group described as "Maori" who possess some degree of European blood.

The dilution of Maori blood with European blood is not nearly so complete as some would have us believe, and there is, contrary to the opinions held by many persons, a fairly high proportion of full-blooded Maoris (or very close to full blood) in the total Maori population. In the 1956 Census 65 per cent, or nearly two-thirds of those counted as Maoris, described themselves as being of pure blood, a further 14 per cent described themselves as three-quarter-caste Maori, and 21 per cent described themselves as half-caste. The proportion of pure or close to pure Maori stock tends to decline but slowly – 71 per cent of those counted as Maori were stated to be of full-blood in 1926 with a reduction to 68 per cent in 1936. Each Census the number of quarter-caste Maoris (these are, of course, counted in the population as "European") increases markedly, i.e., in the Census of 1951 there were 18,421 Maori-European quarter-castes and the number in this category had risen sharply to 25,108 in the 1956 count of the population. Among those with a small proportion of Maori blood there are undoubtedly many who are unaware that they possess Maori ancestry.

### The Contrasting Age Structures of the European and Maori Populations

The estimated Maori population at 31 December 1958 was 151,136 and the European 2,164,764 – a ratio of 14·3 to 1 in favour of the European. However, there were 3,150 persons aged 65 and over in the Maori total and 200,250 at these ages in the European total, a ratio of 63·6 to 1 in favour of the European. These figures are eloquent in themselves and illustrate the very marked differences which exist in the age structures of the two races which predominate in the New Zealand population.

The first 20 years of this century saw a steady recovery in the Maori population, largely, it is presumed, because of a combination of improvement in the birthrate and the lower death toll. From the 1930s up to the present time Maori birthrates have been very buoyant and have outpaced the European, particularly during the depression years, when in contrast to the European the Maori birthrate continued to increase.

The net effect of all these influences is a Maori population with large numbers in the younger age groups in comparison with the relatively small numbers at the older ages.

The non-Maori population on the other hand has been affected in its growth by an entirely different set of circumstances – principally very high birthrates in the vicinity of 42 per 1,000 in the years around 1878 and record low birthrates in the depression years centred around 1935. Secondary to these main influences of fluctuating birthrates have been the greater effect on the European population of the two World Wars and also the occasional waves of migration.

**Measures of Mortality**

1. *Expectation of Life*

The New Zealand Life Tables, 1950–52, show the expectation of life at age 0 as being 54 years for the Maori person and 68 for the non-Maori. Put another way, out of a hypothetical 100,000 children born in each race, in the vicinity of 53,000 of them would in the Maori survive to age 60 as opposed to round about 80,000 in the non-Maori. These figures were based on the 1950–52 death rates and a calculation on the current rates of mortality would show an improvement on the above position, but the relative position between the two races would remain very much the same.

2. *Crude Death Rates*

The most widely used rate for measuring the decrease in a population due to death is the crude rate. The reason for the wide employment of this rate is that it is readily calculated, requiring as it does only the total number of deaths, whether in the whole population or attributable to a particular disease, and the total number of people in the population at risk. The rate is expressed for the total population as a proportion per 1,000 and for a specific disease as a proportion either per 10,000 or per 100,000.

Generally speaking the crude rate is valid for comparisons between one year and another since changes in the age composition of a population occur very slowly, but where significant differences exist in the age structures as between two different populations then the crude rate can be most misleading.

The reason why the crude rate is misleading under circumstances where the age structures of two populations being compared are dissimilar is that mortality varies with age and the crude rate must obviously conceal this differential. A population such as the European population of New Zealand, which contains a higher proportion of persons at older ages, will naturally tend to show a higher crude death rate than a population such as the Maori, which has a much younger distribution in its population. Put another way, using crude rates any high death rates in the Maori occurring among the small numbers and proportion of persons at the higher ages in the Maori population will tend to be masked when compared with the European, and this is what is actually happening, with misleading conclusions.

It is clear then that in order to compare properly the death toll in the two races by utilising a single figure (the alternative, of course, is rates applicable to an age group or an age section only) it will be necessary to adjust either the Maori rate or the European rate to bring the mortality figures to a common denominator.

3. *Adjusted Death Rates*

The standardised or age-adjusted rate is calculated for the Maori only, the European crude rate being the figure with which it becomes directly comparable. The Maori age-adjusted rate is a fictional figure which represents what would be the loss from death in a Maori population similar in all respects as regards age and sex distribution to the European.

The Maori adjusted rates are in most instances very much larger than the Maori crude rates. In the total or all causes rate, for example, the effect is to inflate the crude rate almost exactly twofold. In particular diseases the degree of correction varies, but is usually upward.

It is appropriate to mention here that the growth of the Maori population is phenomenal, the rate of natural increase having been more than twice that of the European for a long period of time. As a result the proportion of Maoris in the total population has increased from a ratio of 1 in 21 in 1926 to 1 in 14 in 1958. This means that the proportion of persons in the community with a much higher rate of sickness and mortality is increasing and in due course considerable strain could be imposed on New Zealand's hospital and medical services unless they are developed at a higher rate than at present in order to cope with a very much higher number of patients presenting themselves for treatment or diagnosis.

4. *Specific Age Rates*

The death rate for a section of the population according to age is termed a "specific" death rate and is calculated for age by dividing the number of deaths in the population at these ages for all deaths or for any particular

disease by the number of persons in the population at these ages. It is a rate which has many advantages over a "crude" rate and is usually expressed as a ratio per 100,000.

In calculating the specific age rates as the first step towards the compilation of age-adjusted rates a five-yearly breakdown was used up to age 75 years and over. However, the absolute number of deaths in the Maori in such a detailed breakdown is very often small for individual diseases and the rates tend to become erratic, even over a five-year period. For this reason and for the sake of convenience the age specific death rate for each cause was calculated in six broad age bands, each of particular interest in a disease comparison as follows:

| | |
|---|---|
| Under 5 .. .. .. | The pre-school ages. |
| 5 to 14 .. .. .. | The school ages. |
| 15 to 24 .. .. .. | Adolescent and early working years. |
| 25 to 44 .. .. .. | The middle working years. |
| 45 to 64 .. .. .. | The later working years. |
| 65 years and over .. .. | The years of retirement. |

**Total deaths**

1. *Numbers and Rates, 1954 to 1958*

Set out in table 13, Appendix II, are the absolute numbers of deaths in each sex for both the European and Maori for each year during the period 1954 to 1958. The rates quoted are the crude rates for both races and also the Maori rate adjusted to the age distribution of the European population. The effect of this age adjustment is to make the created Maori rate directly comparable with the European crude rate, both in each sex and in the total for both sexes.

It will be noted that with the crude rates the Maori male rate is in each year significantly higher than the Maori female but the effect of age adjustment is to bring the female rate up to a higher level than the male in three of the last five years. The explanation is that there are fundamental differences in the ratio of males to females in the two races, principally that whereas in the European population females outnumber males from the age of 60 onwards the reverse is the case with the Maori.

The net effect of the adjustment on the rates for the respective sexes is to inflate the female crude rate to a greater degree than the male rate.

There has been no significant movement in the Maori death rate over the last five years and the reduction in 1958 followed an upsurge in the previous year, 1957.

The effect of age adjustment is well illustrated in the case of 1958, where for the first time in history the Maori both-sexes crude rate was lower than the European. The true relative position is revealed by the age-adjusted rate of 17 per 1,000 which compares with the European 9 per 1,000 of population. In 1958 in the female sex the Maori crude rate recorded was at 7·7, slightly lower than the European at 8·1 per 1,000. The true mortality position is that the Maori loss of life in the female was twice as high as in the European female.

In the pre-school child more than three Maoris die proportionately to every non-Maori child; the female ratio in this under-five group is larger than the male.

Children at school age are at the healthiest stage of their lives yet even here the Maori figures of death are proportionately just under four times those of the European. In adolescence and early adult life (15–24 years) the Maori rate for men is but double the European whereas in women of these ages the Maori rate is four times that of the European. It is in these ages that tuberculosis exacts a heavy toll in young Maori women.

The ages 25–44 years show comparatively low rates in the European, but with rates treble those of the European this age-period is one in which the mortality is substantial in the Maori.

As age increases after 45 years the excess of Maori deaths over European declines, the disparity being lower in the male sex.

At all ages the Maori female shows the wider gap when compared with the European figure than is the case in the male sex.

**Comparison by Disease**

A list of 64 cause-of-death titles has been selected for the full racial comparison. These represent all the major causes of death, with the exception that diseases peculiar to early infancy such as immaturity, birth injury, etc., have been omitted.

Some are single disease titles and some are groups of diseases, e.g., tuberculosis is broken down into "respiratory system" as well as "other forms", and then both are combined into "all forms". This pattern is repeated throughout with such diseases as malignant neoplasms, the major cardiovascular diseases, accidents, etc.

In each disease or disease group the comparison between the mortality experience in the Maori and the European has been effected by calculating a Maori all-ages rate adjusted to the European population. This has been done for each sex separately and for both sexes combined. The European all-ages rate is the crude rate. In addition a comparison is provided in six age groups by means of specific age rates also by sex.

The rates, both total and age specific, for the full list of 64 diseases are published in the full report as an appendix. This full disease table also contains the crude Maori death rates in addition to the adjusted rates, thereby providing an indication of the extent to which the crude rate has been affected when adjusted to the European population.

**Summary**

1. The Health of the Maori and European is compared by means of mortality and morbidity studies. In comparison with the European, very low standards of health exist in the Maori as revealed by these figures.

2. The radical differences which exist in the respective age structures of the Maori and European sections of the New Zealand population disguise the very much higher overall mortality in the Maori. In 1958 the Maori both-sexes crude-total death rate was slightly lower than that for the European, whereas when allowance is made for age differences the Maori total rate is near to double that of the European.

3. In actual numbers the total of Maori persons at the older ages is small. There are only approximately 3,200 Maori persons in the whole of New Zealand population at ages upward of 65 years. As a result of their small numbers an erroneous impression is gained that forms of disease common in old age are seldom seen in a Maori.

4. The greatest disparity between the Maori and pakeha death rates is in children up to 14 years of age. The gap is still wide in early and middle adult life but is lowest at ages over 65 years. Apparently only the more hardy Maori has survived to old age.

5. In addition to the group of epidemic and infectious diseases as well as all the acute types of respiratory and gastro-intestinal diseases, the Maori is much more susceptible than the European to death from one of the so-called degenerative conditions such as cancer, diabetes, cerebral vascular lesions, heart disease, and chronic forms of nephritis.

6. Diseases in this broad group termed "degenerative conditions" tend to appear in the Maori at an earlier age than they do in the European.

7. Cancer mortality is high in the Maori, particularly in the various parts of the digestive tract, the respiratory organs, as well as the uterus and other female genital organs. It is not considered that this high mortality is associated with high cancer incidence but rather that more cancer goes untreated in the Maori.

8. It is probable that some of this excess in bronchogenic cancer is in accordance with the greater vulnerability of the Maori to all types of lung disease.

9. The death rates from leukaemia are much higher in Maori children and young adults as opposed to the rates in the European. It is perhaps significant that anaemia death rates are also high among Maori infants.

10. Mortality figures indicate a higher incidence of heart disease in both sexes in the Maori, but more especially in Maori women.

11. Coronary heart disease in the Maori male does not show the excess in the death toll over the European which is manifest in all other heart conditions. However, as a native race whose male workers are predominantly employed in jobs entailing hard physical work the incidence of coronary heart disease would be expected to be lower than that in the male European. Maori women have a higher mortality from coronary artery disease at all ages between 25 and 64 years.

12. Hypertension with or without heart involvement appears more commonly as a cause of death in Maori women in comparison to the frequency among European women.

13. Respiratory conditions, acute and chronic, tuberculous and non-tuberculous, are extremely prevalent in the Maori. Bronchitis, bronchiectasis, and similar forms of chronic pulmonary disease can be disseminated by overcrowding due to bad housing and also encouraged by lack of adequate clothing and deficiencies in the diet of young children.

14. Many more Maori children in actual numbers die in the first four years of life from pneumonia than do pakeha children. A proportion of these acute lung infections would, it seems, have as their underlying pathology unsuspected subacute or chronic lung disease.

15. Accidental deaths and also homicidal deaths are very much more frequent among Maoris of both sexes. Of particular note are the high Maori fatality rates recorded in road accidents.

16. Suicide is only slightly less relatively common among Maori men than among European men, but is a very rare event among Maori women.

17. There is a disproportionate number of Maori admissions to public hospitals for treatment. In almost all diseases the Maori incidence appears to be unduly high. In one of the more common diseases, enlargement of the tonsils and adenoids, in which the Maori admission rates were proportionately lower than the European, it is suspected that the condition is equally prevalent in the Maori but all too frequently receives no medical treatment.

18. By reason of the high birthrates the proportion of Maoris in the population is increasing. If Maori standards of health continue to be substantially lower than the European, hospital and medical services would need to be expanded at an increasing rate to meet the increase in the numbers seeking medical treatment.

19. There would appear to be considerable scope for a vigorous health campaign among the Maori people.

# PART III—BUREAU OF MEDICAL SERVICES

## 1. HOSPITALS

### Introduction

The year under review has been the second since the Hospitals Act 1957 came into force, and it may reasonably be stated that the Act has operated as was envisaged when it was drafted and that hospital boards and the Division are working within its framework in close cooperation. The problems of any hospital service are many and complex, and there are no easy criteria of efficiency or success either in New Zealand or elsewhere. Hospital costs here and overseas have risen alarmingly and as a social service the hospital service requires large tax contributions where it is a national service. A heavy financial burden is imposed on the individual where he must meet his own hospital expenses. The United Kingdom and New Zealand are examples of the former system, the United States an example of the latter, and in the United Kingdom and the United States current publications indicate concern with the same difficult problems which face the service in New Zealand.

A recent United States survey, for example, quotes a rise in the daily cost per patient at a large, fully equipped general hospital in the eastern States from $10.60 in 1946 to $35.45 in 1957. In New Zealand over the same period average costs for all general hospitals of 200 occupied beds daily rose—

| | 1945–46 | | 1956–57 |
|---|---|---|---|
| From £1 2s. to | .. | .. | £2 18s. per available bed per day; |
| From £1 3s. to | .. | .. | £3 11s. per occupied bed per day; |
| From £25 10s. to | .. | .. | £63 10s. per patient treated; |

and proportionately these rates of increases are lower than the example quoted in the United States.

The first national cost comes from the building of hospital beds and hospital services. A hospital bed built as part of a hospital scheme with all its services now costs about £5,000 to build and nearly £4 a day to operate, and having regard to relative price and wage levels there is no evidence that these are out of line with costs in other countries. It was pointed out in the report for the year ended 31 March 1959 that on a projected national population of 2·7 million in 1968 one bed per 1,000 of population would represent 2,700 beds, which would cost up to £13 million to build and £3·5 million per annum to maintain. The importance of making the best use of existing beds and reducing the need for additional beds will be evident to any taxpayer. Substantial achievements of the hospital service in these directions have already been quoted previously, and over a period of years when the national population increased by over 20 per cent the hospital treatment needs of this increased population were met essentially by improved efficiency as shown in better utilisation of existing beds, a reduction of the

average length of stay in hospital, by public health preventive measures, and by the continued development of outpatient services and domiciliary services, and only to a limited extent by increases in beds.

The recent release by the Board of Health of its report on the proper scope and future development of hospital outpatient services in relation to other health services in the community highlights and emphasises action which, if taken on a national basis, could continue to limit the need for more hospital beds. The report recommends the appointment at hospitals of 300 beds of a medical man possessing a diploma of Public Health with an emphasis on hospital administration to function under the medical superintendent of the hospital as a director of outpatient services. His main duty is envisaged as organising and supervising, with necessary assistance, the following services of the hospital:

(1) Casualty services.

(2) Specialised clinic services.

(3) Screening and follow-up clinics.

(4) Admissions and discharges of inpatients.

(5) Their subsequent domiciliary care with:

General medical practitioners.
District nurses.
Medical social workers.
Occupational therapists and physiotherapists and any voluntary agencies interested in providing this care.

The Committee quoted the principles expressed in the Technical Report Series No. 122 of the World Health Organisation (page 20) which states:

"The various specialties of inpatient services of the hospital should have their counterparts in the outpatient department and, as far as possible, the same doctors should be in charge of both so as to provide continuity of care.

"An outpatient department of a general hospital should be planned, staffed, and equipped to provide a comprehensive diagnostic service and specialised treatment beyond the capacity of a general practitioner or health centre. A well organised outpatient department can do much to save valuable hospital beds, by advising upon and supervising home treatment, and by undertaking the detailed clinical investigations of non-urgent cases prior to admission."

The Committee also placed great emphasis on the need for continuing research and pilot studies on the more effective use of hospital beds and this is an aspect in hospital administration in New Zealand which has become of increasing importance since Government assumed the responsibility for public hospital policy and finance.

In the United Kingdom the Ministry of Health has substantial research and investigation staffs, but apart from the Ministry itself such bodies as the Nuffield Provincial Hospitals Trust, King Edward's Hospital Fund, and the Acton Society Trust have undertaken many planning, research, and investigation projects and have made major contributions to hospital policy. A unit equipped to do this work is

missing from the New Zealand scene. The Hospitals Division is essentially an operational branch of the Department and its resources are already fully extended. There is a real need for an organisation perhaps as part of the National Health Institute and able to draw on the knowledge and experience possessed by hospital board officers to undertake in New Zealand studies comparable to those undertaken both by the Ministry of Health and by the independent organisations mentioned above in the United Kingdom.

A comment from the report of the Committee on New Zealand Universities could apply equally to the hospital service.

> "At the moment New Zealand's attitude towards its universities and colleges is similar to that of most other young and developing countries not far removed from a pioneer tradition, which is prepared to cater for the needs of today and tomorrow but doubts the value of planning too far ahead and which tends to prefer practice without theory. To say this is not to be critical of the pioneer tradition in its time and place but to doubt whether the continuance of that tradition will longer serve New Zealand's needs in a world where scientific, social, and technological change have become a norm and where planning ahead is as accepted a part of public policy as it is of personal policy."

In a service which in 1960–61 will cost about £25 million there is a real need, no less than in the universities, to accept and provide for forward planning as a part of public policy.

**Hospitals Advisory Council**

The Hospitals Advisory Council, whose establishment and functions were described by the Director-General in last year's annual report, continued to meet at regular intervals during the year and five meetings were held.

Mr T. H. C. Caughey, Chairman of the Auckland Hospital Board, was appointed to the Council as the representative of the North Island hospital boards in succession to Mr J. Grierson, who retired during the year.

A wide range of activities concerning hospital boards were again considered and matters which were the subject of recommendations to the Minister were the reviews made of representation on hospital boards, the provision of patients library services and nurses recreation halls, the closing of Waipiro Bay Maternity Home, Waiapu, and Marinoto Convalescent Hospital, Dunedin, the establishment of spinal injury centres and a third neurosurgical unit, mention of which is made later in this report.

The subjects reviewed by the Council included Hospitals Appointments Regulations, the control of hospital-staff establishments, the distribution and coverage of various specialist services such as clinical photography, radiology, and thoracic surgery, charges made to practitioners attending patients in boards' open maternity wards, the building of small community hospitals, and the development of extra-mural services, medical research in public hospitals, and the Council was also required to submit evidence to the Local Bills Committee of the House of Representatives, which is inquiring into the structure of local government.

Matters currently under review include the transport of hospital patients, hospital board insurances, charges by hospital boards for the maintenance of persons not receiving hospital treatment, superannuation of hospital board staffs, the scope of hospital board dental services, and the feasibility of taking a census of hospital patients.

The Director-General's prediction in last year's annual report that the role of the Hospitals Advisory Council would be an increasingly important one has been amply borne out by the activities covered during the past 12 months and the range of problems affecting hospital boards which have been under consideration.

## Institutional Beds, Patients, and Services

### Public and Departmental Institutions

Hospital board and departmental institutions (exclusive of mental hospitals) at 31 March 1960 numbered 223, consisting of 69 general hospitals, 101 maternity hospitals, 26 special hospitals, 22 old people's homes, and five Government institutions.

Five new institutions were opened during the year; one general, two maternity, one special, and one old people's home. One maternity hospital, one special institution, and one Government institution were closed during the year.

The numbers of beds at 31 March 1959, of all description, available for patients or inmates in all public institutions and licensed private hospitals together with the ratio per 1,000 of population is shown in the following table:

| Type of Bed | Public Institutions (Including Government) | | Private Licensed Institutions: Number of Available Beds | Total Number of Available Beds |
|---|---|---|---|---|
| | Number of Available Beds | Average Number of Occupied Beds per Day | | |
| General .. .. .. | 12,758 | 9,584·3 | 2,180 | 14,938 |
| Per 1,000 of population .. | 5·5 | 4·2 | 1·0 | 6·5 |
| Maternity .. .. .. | 2,463 | 1,677·2 | 400 | 2,863 |
| Per 1,000 of population .. | 1·1 | 0·7 | 0·1 | 1·2 |
| Total hospital beds .. .. | 15,221 | 11,261·5 | 2,580 | 17,801 |
| Per 1,000 of population .. | 6·6 | 4·9 | 1·1 | 7·7 |
| Non-hospital beds .. .. | 1,144 | 1,073·2 | .. | 1,144 |
| Grand totals .. .. | 16,365 | 12,334·7 | 2,580 | 18,945 |

In previous years, statistics relating to "other institutions" (old people's homes) have been compiled separately from those relating to hospitals. No such distinction is now made and for this reason and the fact that certain institutions have been reclassified the figures are not comparable with those quoted in previous years.

The total number of available hospital beds in public institutions at 31 March 1959 was 15,221 (6·6 per 1,000 of population). The average occupancy per day during the year was 11,261·5. Private licensed hospitals provided 2,580 beds. The overall ratio of hospital beds per 1,000 of population was 7·7 (6·5 general and 1·2 maternity).

## Private Hospitals

The following table shows the number of private hospitals and beds as at 31 December 1959. The comparable position as at 31 December 1958 is shown by the figures in parentheses.

| Type of Hospital | Number of Hospitals | Number of Licensed Beds |
|---|---|---|
| Maternity .. .. .. | 36 (33) | 313 (292) |
| Medical and surgical .. .. | 49 (50) | 955 (968) |
| Medical .. .. .. | 66 (62) | 903 (870) |
| Psychiatric .. .. .. | 1 (..) | 17 (..) |
| Mixed .. .. .. | 7 (8) | 425* (435)* |
| Totals .. .. | 159 (153) | 2,613 (2,565) |

*Consists of 91 maternity beds and 334 medical and surgical beds in 1959 and 100 maternity beds and 335 medical and surgical beds in 1958.

Several large hospitals are in the course of planning or building but progress on some of these has been slow and this has meant that finance set aside for them has not been utilised. When the proposals now provided for on the approved programme have been completed, however, there will be several private hospitals contributing an appreciable number of medical, surgical, and maternity beds to the overall hospital needs.

A draft schedule of standards and planning bases has been prepared for the several types of private hospitals provided for in the Hospitals Act and after consideration by persons working in the field of private-hospital administration they will be adopted as the official schedule of requirements.

The existence of these standards will facilitate administration at all levels in new hospitals and will also serve as the standards up to which existing hospitals will be brought as soon as possible.

By the very nature of the type of administration adopted for private hospitals in New Zealand there is minimal official interference, and although subsidised by the Government they remain fundamentally independent of Government control and are, in fact, private hospitals in the true sense of the word. Some inspection is, of course, necessary, but this is in the interests of the licensees, managers, and the Department alike since all are concerned with ensuring a satisfactory standard of accommodation and patient care.

Unlike public hospitals no statistical data is available regarding patients in private hospitals and there is, therefore, no evidence of the types of use being made of these hospitals and impressions only can be gained as to the range of conditions for which patients are admitted.

## Persons Being Treated or Maintained in Public Hospitals

The number of persons who were treated or maintained in public institutions during the year was 245,509, which is equivalent to 10·7 per cent of the population of this country. The number of attendances by outpatients was 1,866,257, including 82,364 attendances by dental outpatients.

In institutions classified as "general" hospitals (i.e., hospitals concerned mainly with the treatment of medical and surgical cases) 200,795 patients were treated during the year. The average occupancy per day during the year was 8,886·2 so that the average turnover of patients treated per occupied bed was 22·6.

In the following table figures relating to general hospitals are given for the last two years and the two proceeding quinquennia.

| Year | Available Beds | | Occupied Beds | | Percentage of Occupied Beds to Available Beds |
|---|---|---|---|---|---|
| | Number | Proportion per 1,000 of Population | Number | Proportion per 1,000 of Population | |
| 1949 .. .. .. | 10,947 | 5·9 | 8,407·4 | 4·5 | 76·8 |
| 1954 .. .. .. | 11,290 | 5·5 | 9,164·1 | 4·4 | 81·2 |
| 1958 .. .. .. | 11,550 | 5·1 | 8,860·0 | 3·9 | 76·7 |
| 1959 .. .. .. | 11,557 | 5·0 | 8,886·2 | 3·9 | 76·9 |

| Year | Inpatients Treated | | | Outpatient Attendances, Including Dental: Number | Proportion per 1,000 of Population |
|---|---|---|---|---|---|
| | Number | Proportion per 1,000 of Population | Average Turnover per Occupied Bed | | |
| 1949 .. .. .. | 154,195 | 83·3 | 18·3 | 1,308,635 | 706·9 |
| 1954 .. .. .. | 178,591 | 86·6 | 19·5 | 1,597,039 | 774·7 |
| 1958 .. .. .. | 194,588 | 86·6 | 22·0 | 1,647,668 | 733·6 |
| 1959 .. .. .. | 200,795 | 87·3 | 22·6 | 1,758,644 | 765·0 |

Figures quoted in previous reports have related to all institutions classed as public hospitals, including many small maternity hospitals and certain special hospitals. While some of the general hospitals include a maternity ward or annexe or special wards with long-stay patients, the figures presented in this table provide a more accurate picture of all the hospitals primarily concerned with the treatment of medical and surgical cases.

## Special Departments and Specialist Services in Public Hospitals

Summarised totals (inpatients and outpatients combined) of the work done by special departments in all hospitals are as follows:

| | Year Ended 31 March | | |
|---|---|---|---|
| | 1953 (000) | 1958 (000) | 1959 (000) |
| X-ray diagnostic: Number of examinations .. | 543 | 614 | 595 |
| X-ray therapy: Number of treatments .. .. | 80 | 72 | 79 |
| Physiotherapy: Number of treatments .. .. | 718 | 953 | 1,060 |
| Pathology— | | | |
| Number of reports .. .. .. | 652 | 1,088 | 1,223 |
| | No. | No. | No. |
| Number of post-mortems .. .. .. | 2,488 | 4,010 | 3,973 |

## Neurosurgical Services

A review of neurosurgical services was submitted to the Hospitals Advisory Council, which accepted the recommendation that, when required, a third neurosurgical unit should be established to serve the

southern part of the North Island. An important policy decision is involved in the actual location of the unit and concerns the siting of such specialty units which must be regarded on a national basis. It can well be held that provision of such a speciality as neurosurgery need not be made except in a limited number of strategic areas where suitably located hospitals with trained staff and adequate facilities will enable ancillary staff at these hospitals to share and become proficient in this type of restricted medical work.

### Spinal Injury Centres

The provision of spinal injury centres was also investigated and the establishment of units at Auckland and Christchurch has been approved in principle. With the provision of these spinal injury centres it will be possible to provide early, edequate medical care for a group of patients suffering from paralysis of the lower limbs. These two centres, when established, should be invaluable from the point of view of curative medical treatment and active rehabilitation of the patients to their homes or occupations. A special medical committee has been set up to consider the form of medical administration which should be adopted for these units.

### Psychiatric Services in Public Hospitals

The Director represented the Division on the Board of Health committee set up to consider and report on psychiatric services in public hospitals. Reference to the report published in February is made elsewhere in the Director-General's report.

The report is a valuable guide in developing this important aspect of hospital work but it is realised that there will be some difficulty and possible delay in obtaining the necessary trained staff for those hospitals which have been recommended in the report to establish such psychiatric units.

## Staff in Public Hospitals

The total of employees of all hospital boards and departmental hospitals (other than mental hospitals) at 31 March 1959 was 907 more than the previous year. The main increases were in nursing (413) and domestic (316) staff.

Institutional staffs, i.e., excluding administration, district nursing, farm, and miscellaneous staff, employed at 31 March 1959 totalled 21,819 for the total of 16,365 beds in hospitals and old people's homes. Of these beds 12,335 were occupied daily and the staff engaged averaged 1·8 per occupied bed. Nursing staff engaged averaged 0·8 per occupied bed the same as the previous year.

### Staff Employed

The number of staff employed in public hospitals and other institutions and activities controlled by Hospital Boards and the Department at 31 March 1959 and the actual payments of remuneration for the

year which ended on that date, with the corresponding figures in parentheses for the previous year were as shown below:

| | Numbers Employed at 31 March 1959 | | Salaries and Wages Payments for 1958–59 | |
|---|---|---|---|---|
| | | | £(000) | £(000) |
| Institutional medical (whole time and part time) .. .. .. .. | 1,278 | (1,239) | 1,111 | (1,097) |
| Other professional and technical .. | 1,534 | (1,437) | 986 | (915) |
| Nursing .. .. .. .. | 10,151 | (9,738) | 3,853 | (3,735) |
| Other treatment staff .. .. .. | 383 | (324) | 293 | (234) |
| Domestic and other institutional staff .. | 8,473 | (8,157) | 4,937 | (4,659) |
| Administrative staff .. .. .. | 506 | (500) | 418 | (403) |
| District nursing .. .. .. | 186 | (177) | 127 | (131) |
| Farm (including vegetable gardening) .. | 50 | (61) | 34 | (39) |
| Miscellaneous .. .. .. | 181 | (202) | 101 | (117) |
| Total .. .. .. | 22,742 | (21,835) | £11,920 | £11,330 |

The above groups are mainly self-explanatory except, possibly, "Other professional and technical" and "Other treatment staff." The first-mentioned group includes dental officers and technicians, X-ray laboratory workers, physiotherapists and students, clinical photographers, orthopaedic technicians, occupational therapists and aids, pharmacists and apprentices, and other technical staff such as physicists, hearing-aid technicians, and the like "Other treatment staff" includes theatre attendants and medical orderlies.

## Medical Staff

The following table shows the number of whole-time and part-time medical staff employed by hospital boards at 31 March 1960. The hours of visiting medical officers have been converted to show the number of whole-time employees required to give an equivalent service.

The figures in this table differ from those in the previous table as positions temporarily vacant, final-year students acting as house surgeons, and visiting medical officers not performing regular weekly hours have been excluded.

| — | Whole Time | Part Time | Whole Time Equivalent | Total |
|---|---|---|---|---|
| Medical administrators .. .. | 48 | 22 | 11 | 59 |
| Physicians— | | | | |
| General .. .. .. .. | 24 | 101 | 33 | 57 |
| Tuberculosis .. .. .. | 14 | 7 | 4 | 18 |
| Others .. .. .. .. | 6 | 55 | 17 | 23 |
| Surgeons— | | | | |
| General .. .. .. .. | 20 | 96 | 33 | 53 |
| Others .. .. .. .. | 15 | 124 | 38 | 53 |
| Pathologists .. .. .. .. | 31 | 2 | 1 | 32 |
| Radiologists and radiotherapists .. | 32 | 35 | 14 | 46 |
| Anaesthetists .. .. .. | 23 | 136 | 33 | 56 |
| Other medical staff .. .. .. | 5 | 47 | 12 | 17 |
| | 218 | 625 | 196 | 414 |
| Registrars .. .. .. .. | 108 | .. | .. | 108 |
| House surgeons and house physicians .. | 174 | .. | .. | 174 |
| | 500 | 625 | 196 | 696 |

### House Surgeons and Registrars

As indicated in previous reports hospital boards have in recent years experienced considerable difficulty in recruiting and retaining sufficient junior medical officers.

In an effort to meet the situation the Minister established a special committee representative of the Hospital Boards' Association, the Medical Superintendents' Association, and the Department of Health to review the situation and to suggest ways in which the present difficulties could be alleviated.

The report of the committee was under consideration at the date of this report.

### Overseas Post-graduate Study Leave

Leave on pay and assistance with fares for overseas study in 1960 was granted to nine whole-time and 10 part-time medical officers. Since the scheme was introduced in 1952 the distribution of grants to medical officers in various specialties has been as follows:

| | Number of Medical Officers Granted Assistance | |
|---|---|---|
| | Whole-time | Part-time |
| Type of Specialist— | | |
| Administrators | 5 | .. |
| Anaesthetists | 3 | 2 |
| Cardiologists | 3 | 3 |
| Chest physicians | 4 | .. |
| Ear, eye, nose, and throat surgeons | .. | 9 |
| Gastrologists | .. | 1 |
| General physicians | 2 | 8 |
| General surgeons | 9 | 12 |
| Neurologists | .. | 1 |
| Neurosurgeons | 1 | 2 |
| Obstetricians and gynaecologists | .. | 6 |
| Orthopaedic surgeons | 1 | 3 |
| Paediatricians | 1 | 5 |
| Pathologists | 11 | .. |
| Psychiatrists | .. | 1 |
| Physical medicine physicians | 1 | .. |
| Plastic surgeons | .. | 2 |
| Radiologists and radiotherapists | 9 | 1 |
| Thoracic and cardiac surgeons | 2 | 3 |
| Urologists | .. | 2 |
| | 52 | 61 |

## Hospital Works and Development

The continued development of hospital building with ancillary services and equipment, throughout the country, constitutes a large and demanding programme of work to be dealt with by the Division in collaboration with the appropriate hospital boards and has also called extensively upon the time and consideration of the Hospital Works Committee.

### Hospital Building Works and Equipment

The figures set out in table 31 in Appendix II are indicative of the considerable volume of hospital works projects under construction or in planning. An estimate from all boards (as given in last year's reports) of £6·4 million for estimated expenditure in 1959–60 was

reduced after consideration by the Department and by Ministry of Works to £4·6 million and the indications are that actual expenditure will be very close to the departmental figure.

Table 30 is again compiled from returns and estimates by boards of works in progress or planning, at various stages, and the cost is as accurate as at present possible. The figures, however, when amended to coordinate them with the known capacity of contractors, availability of labour, materials, and similar factors, are expected again to be considerably reduced. However, many of the large projects planned in earlier years are now being built and it is expected that expenditure for 1960–61 must exceed the figure of £4·6 million assessed for this year. A period of building progress is now in evidence in which commitments assumed at various stages are proceeding concurrently and coming to charge together.

The Hospital Works Committee recognised this in its forward planning a year ago, and then considered provision for increased expenditure would be necessary in 1960–61.

Details of hospital building works appear in table 32 in Appendix II.

**Hospital Works Committee**

In dealing with projects of a value of over £10,000, the Hospital Works Committee, in its advisory capacity at 26 meetings held during the past year, dealt with the following items:

| | |
|---|---|
| Hospital board— | |
| Building projects .. .. .. | 160 |
| Development schemes .. .. .. | 11 |
| Land purchase .. .. .. .. | 6 |
| Private hospital applications .. .. | 3 |
| Old people's homes .. .. .. | 15 |
| General items .. .. .. .. | 47 |

The estimated costs of hospital board building projects are detailed in table 31 of this report.

**Planning Bases and Architectural Services**

The volume of work handled by the Architectural Section during the past 12 months has shown an increase over previous years due mainly to the detailed planning undertaken by the departmental architects for the Cromwell Hospital, now nearing completion, and the examination required of several large hospital projects.

This has had the effect of delaying progress on the production of planning bases but it is intended to concentrate this year, on the revision of those for Maternity Hospitals to be followed by the sections concerning outpatient departments and other clinical services. Indications from hospital boards and architects are that planning bases are of considerable value in establishing standards and reducing the work in planning.

**St. Helens Hospitals**

*Auckland*—The architects have been briefed for the preparation of the working drawings for the new hospital at Chamberlain Park, and the working drawings for the new nurses' home are nearing completion.

In view of the substandard accommodation at present available for the nursing staff at Pitt Street Hospital the construction of the new nurses' home will be commenced as early as possible.

Improvements have been made to the ante-natal accommodation in the old hospital, which will be maintained at a satisfactory standard to give and provide adequate service until the new hospital is commissioned.

*Wellington*—Minor alterations and additions have been made to the existing hospital which have considerably improved working conditions and construction is expected to commence shortly on additional sisters' accommodation.

Working drawings are well advanced for the new hospital and it is expected that tenders will be called later this year.

*Christchurch*—Foundations for the new hospital wing and nurses' accommodation are near completion and working drawings are being prepared for these projects.

## Consents to Capital Expenditure

Increases or decreases in the value of consents issued in any particular financial year do not necessarily indicate corresponding changes in annual rates of expenditure, but merely the point of time at which formal consent to undertake future expenditure is given in accordance with the provisions of the Hospitals Act.

*Buildings*—During 1959–60 consents were granted to hospital boards to undertake building projects (with 1958–59 figures for comparison) as follows:

| | 1958–59 | 1959–60 |
|---|---|---|
| | £(000) | £(000) |
| Major works exceeding £20,000 | 4,275 | 3,003 |
| Consents ranging from £10,000 to £20,000 | 273 | 308 |
| Consents ranging from £5,000 to £10,000 | 242 | 341 |
| Consents ranging from £250 to £5,000 | 376 | 495 |
| | £5,166 | £4,147 |

*Hospital Equipment and Furnishings*—In the same period approvals were issued to boards for expenditure of £432,000 for items of equipment and furnishings costing more than £250, compared with £490,000 in the preceding year. Details are as follows:

| | 1958–59 | 1959–60 |
|---|---|---|
| | £(000) | £(000) |
| Motor vehicles: Ambulances, trucks, cars | 48 | 50 |
| X-ray equipment | 84 | 36 |
| Furniture: Nurses homes, staff accommodation | 33 | 25 |
| Ward equipment | 33 | 31 |
| Surgical and specialist equipment | 64 | 59 |
| Laundry equipment | 109 | 89 |
| Hospital equipment, including dietary, maintenance, and electrical standby equipment | 119 | 142 |
| | £490 | £432 |

## Finance

Actual expenditure of hospital boards and Department of Health institutions (other than mental hospitals) in 1958–59 for both capital and maintenance purposes (inclusive of expenditure from loans but exclusive of amounts paid between boards or to Government institutions) totalled nearly £27 million and is summarised thus:

| — | 1957–58 | | | 1958–59 | | |
|---|---|---|---|---|---|---|
| | Hospital Boards | Departmental Institutions | Total | Hospital Boards | Departmental Institutions | Total |
| | £(000) | £(000) | £(000) | £(000) | £(000) | £(000) |
| Maintenance .. | 18,810 | 491 | 19,301 | 19,919 | 518 | 20,437 |
| Capital .. | 5,445 | 19 | 5,464 | 6,294 | 21 | 6,315 |
| Total .. | 24,255 | 510 | 24,765 | 26,213 | 539 | 26,752 |

### Maintenance Expenditure

A summary of maintenance expenditure of hospital boards for 1958–59, with the figures for 1957–58 for comparison, is given below.

| — | 1957–58 | | 1958–59 | |
|---|---|---|---|---|
| | Amount | Percentage of Total | Amount | Percentage of Total |
| | £(000) | | £(000) | |
| Institutional maintenance .. .. | 16,937 | 90·0 | 17,831 | 89·5 |
| Outdoor relief .. .. .. | 33 | 0·2 | 48 | 0·2 |
| Grants, private hospitals, etc. .. .. | 37 | 0·2 | 47 | 0·2 |
| District nursing (including grants) .. | 194 | 1·0 | 209 | 1·0 |
| Transport of patients (including grants) .. | 195 | 1·0 | 223 | 1·1 |
| Miscellaneous .. .. .. | 146 | 0·8 | 133 | 0·9 |
| Administration .. .. .. | 502 | 2·7 | 523 | 2·6 |
| Interest on loans .. .. .. | 619 | 3·3 | 758 | 3·8 |
| Superannuation .. .. .. | 147 | 0·8 | 147 | 0·7 |
| Totals .. .. .. | 18,810 | 100·0 | 19,919 | 100·0 |

### Inpatient Expenditure – General Hospitals

In the year 1958–59 the average daily expenditure for individual inpatients treated in hospitals classed as general hospitals was £3 19s. 8d., or in other words, with a daily average of 8,886 patients in general hospitals outgoings totalled over £35,000 each day for resident patients. On the average each inpatient cost £64 8s. as compared with £63 13s. in the previous year.

Expenditure per inpatient in general hospitals was made up of:

| | 1954–55 | 1957–58 | 1958–59 |
|---|---|---|---|
| Treatment expenditure— | £ s. d. | £ s. d. | £ s. d. |
| Salaries and wages— | | | |
| Medical | 0 3 4 | 0 4 4 | 0 4 4 |
| Nursing | 0 12 1 | 0 16 7 | 0 17 0 |
| Technical and other treatment staff | 0 1 4 | 0 1 10 | 0 1 10 |
| Total | 0 16 9 | 1 2 9 | 1 3 2 |
| Special departments (e.g., X-ray laboratory) | 0 2 2 | 0 2 11 | 0 3 2 |
| Supplies and expenses | 0 3 11 | 0 4 8 | 0 5 0 |
| Subtotal treatment | 1 2 10 | 1 10 4 | 1 11 4 |
| Institutional administration | 0 4 11 | 0 5 11 | 0 6 2 |
| Heat, light, power, and water | 0 5 5 | 0 6 7 | 0 6 10 |
| Household (housekeeping, dietary, laundry) | 1 4 4 | 1 9 5 | 1 11 0 |
| Buildings and grounds | 0 3 5 | 0 4 4 | 0 4 4 |
| Subtotal, non-treatment | 1 18 1 | 2 6 3 | 2 8 4 |
| Total daily expenditure | £3 0 11 | £3 16 7 | £3 19 8 |

The increase in expenditure can be accounted for largely by increased costs of wages, fuel, power, food, materials, and other commodities.

Inpatients in hospitals classed as general hospitals now stay in hospital an average of 16 days, and the total expenditure per inpatient was made up as follows:

| | 1954–55 | 1957–58 | 1958–59 |
|---|---|---|---|
| | £ s. d. | £ s. d. | £ s. d. |
| Treatment | 20 15 0 | 25 2 0 | 25 6 0 |
| Institutional administration | 4 10 0 | 4 19 0 | 5 0 0 |
| Heat, light, power, and water | 4 19 0 | 5 9 0 | 5 10 0 |
| Household | 22 2 0 | 24 9 0 | 25 1 0 |
| Buildings and grounds | 3 2 0 | 3 13 0 | 3 10 0 |
| Miscellaneous | 0 1 0 | 0 1 0 | 0 1 0 |
| Total | £55 9 0 | £63 13 0 | £64 8 0 |

Figures for 1954–55 are given in the above tables for comparison, that year being the first for which figures were published under the new system of accounts.

## Inspection and Advisory Services

The inspection of hospital board activities has been continued during the past year. Prior to his retirement Dr Cairney and the Director visited most North Island hospitals, and since Dr Turbott's appointment visits have been paid to boards in both the North and South Islands. Many institutions were visited and discussions were held with board members and officers on local problems.

The three Assistant Directors also visited the majority of hospitals in their areas, chiefly in connection with building and development proposals and medical activities. These visits are of considerable value to both hospital boards and the Department, enabling proposals to be examined with a good knowledge of the circumstances and generally accelerating development. Other activities of hospital boards which are the subject of regular inspection and advice are the nursing services

by the Nursing Division inspectors, dietary services by the inspecting dietitian, and physiotherapy departments by the inspecting physiotherapist. The Department's architect and his staff and the advisory engineer are constantly required to inspect and advise on architectural problems and engineering services, and the occupational therapy service is now covered by the appointment during the year of an inspecting occupational therapist.

Valuable reports and advice are received from several pathologists of the larger hospital boards who report on the laboratories at other hospitals and the district nurse inspectors' reports on maternity hospitals in their districts are also of value.

**Administration**

Fourteen hospital board areas were visited during the year by the advisory officers and advisory house managers. The administrative services and activities of the hospitals in these areas were the subject of valuable reports. In addition, two special visits to advise hospitals on laundry services, particularly in connection with the handling of foul linen and the pooling of linen, were made by the advisory house manager.

The method of compiling the Appendix III to the annual report, and its format containing hospital and relief statistics, was studied during the year. Discussions were held with hospital board officers and the next Appendix III will include some useful alterations. Further investigations are proceeding.

Six sections of the *Hospitals' Manual,* designed to facilitate reference to departmental requirements and to assist officers in hospital administration procedures, have been drafted and submitted to selected hospital board officers for perusal and comment. The *Manual* has been divided into 10 sections, and the remaining four are in various stages of drafting. When the *Manuals* are published they should be of considerable assistance to departmental and hospital officers and will provide a ready reference on various aspects of hospital administration.

**Dietary**

Regular advisory visits have been made throughout the year by the departmental dietary staff and assistance continues to be given in the detail of planning and selection of equipment for the food-service units of public hospitals, maternity hospitals, old people's homes, and mental hospitals.

A reduction of two months in the length of training time required of dietitians qualifying for registration in New Zealand has resulted in an increased number of students entering for training in 1960, namely, 14 for 1960 compared with six for 1959.

**Physiotherapy**

During the year arrangements have been made for commencement of part-time physiotherapy services at Kawakawa and Taihape; services at Hokitika Hospital have recommenced and new departments have opened at Princess Margaret Hospital, Christchurch, and at Westown Hospital, New Plymouth.

The inspector of physiotherapy had opportunities of observing services and facilities in Great Britain, Scandinavia, and some Continental countries during the course of a WHO fellowship.

### Occupational Therapy

Visits to hospitals by the inspecting occupational therapist have shown that both staff and accommodation are kept fully occupied, and there is a rapidly growing appreciation of the value of occupational therapy. However, there is not always a full realisation of the scope of the work, especially in regard to remedial work and rehabilitation. These aspects have developed considerably in recent years, especially in regard to the rehabilitation of the disabled housewife and re-education in activities of daily living. There is a lack of space in many hospitals for occupational work and consequently these activities cannot be developed, but it is hoped that future alterations and expansions will provide the desired facilities.

Another expanding service provided by occupational therapy departments is home visiting, but this is limited because of the acute shortage of staff.

## Ambulance Services

### Ambulance Transport Advisory Board

The Board met on three occasions during the year, and in addition, the Working Committee met on a number of occasions at irregular intervals.

### Air Ambulance Services

During the year a further three aircraft were approved for air ambulance purposes, making a total of 13 operated by aero clubs and private operators. Air ambulance facilities are also provided by NAC and RNZAF when necessary.

The Ambulance Equipment Committee of the Standards Institute met on 10 March to consider the results of a series of trials of a standard kitset of interchangeable air/road ambulance equipment to facilitate transfers of patients. A report is not yet available, but present indications are that the standard kit could be adopted with only minor alterations.

### Road Ambulances

It is a statutory function of hospital boards to provide ambulance facilities for the transport of patients, either by the operation of their own services or with the aid of subsidised organisations which carry out this work on behalf of hospital boards.

Road ambulance services are operated with 177 vehicles from 103 stations throughout the Dominion. Additional stations which came into operation during the past year are located at Chateau Tongariro, Edgecumbe, Piopio, Temuka, Roxburgh, and Bluff. The ambulance at Chateau Tongariro is operated by the National Park Board and the remainder form part of the St. John Ambulance Association organisation.

The hospital boards operate 42 stations with 63 vehicles, representing 33·9 per cent of the ambulance vehicles and the remainder are operated by the Order of St. John, the Wellington Free Ambulance, and a number of smaller voluntary organisations.

In recommending approval to the establishment of additional ambulance services, the Ambulance Transport Advisory Board is guided by the principle of encouraging voluntary effort on the part of subsidised

organisations, but it also is concerned to see that these services can be justified on economic grounds and do not conflict with services already in existence.

**Finance**

Grants made by hospital boards to subsidised organisations as their agents during the year amounted to £133,000 for maintenance purposes and £10,981 for capital purposes, the greater part of which was for nine new vehicles. Ambulance services operated by hospital boards incurred expenditure of £56,159 in 1958–59 for maintenance, and approvals totalling £10,432 were given for capital expenditure for replacement of five vehicles.

Grants made this year are slightly less in total than for the previous year, but payments for category "A" services, i.e., inter-hospital transfers (non-chargeable) are not now treated as grants in many cases and will ultimately be excluded from grants. The overall payments to subsidised organisations would therefore be greater than last year, but the amount involved is not yet available.

**Future Policy**

The Board is at present actively concerned with personnel training, revision of standard specifications for ambulances and medical standards for ambulance drivers.

A proposed syllabus for personnel training is at present with the Order of St. John for study and comment.

The Standards Institute has been asked to formulate standard specifications for ambulance bodies and chassis. It is understood that this will involve the setting up of a special working subcommittee to consider drafting a standard specification for ambulance chassis and bodies for (a) metropolitan, (b) country use, and for ambulance equipment.

The Board has recommended to hospital boards and subsidised organisations that all ambulance drivers, whether full- or part-time, become holders of passenger service vehicle drivers' licences. This is the correct type of licence for an ambulance driver to hold, and it requires the holder to have an annual medical examination to determine his physical fitness for driving duties. This aspect is considered to be an important factor in ensuring the safety of patients.

As a policy measure the Ambulance Transport Advisory Board is opposed to the retention of ambulance vehicles, for which grants have been made to buy replacements, in the ambulance services. In the Board's opinion such vehicles should be sold out of the ambulance service and the proceeds used to assist in meeting the cost of replacement ambulances. It is regarded as undesirable to retain in service a vehicle which has been declared unsuitable for ambulance transport, even for emergency use.

**Statistics**

Set out in table 33 in Appendix II are statistics on the number of patients carried, milage, etc., of hospital board and Order of St. John Ambulance services. In addition, statistics on services given by subsidised ambulance organisations, other than St. John, together with those relating to services operated and maintained by some large State Departments are also shown in an endeavour to present as complete a picture as possible of ambulance services within the Dominion.

## 2. PHYSICAL MEDICINE

The Division of Physical Medicine administers the Queen Elizabeth Hospital, Rotorua, for the treatment of rheumatic diseases and cerebral palsy and coordinates the physiotherapy and occupational therapy services of the Dominion.

### Rheumatic Diseases

The prevalence of these diseases in New Zealand has not yet been fully established. New Zealand is unlikely to differ much in the prevalence of these conditions from other countries with a temperate climate, and the estimates of the Metropolitan Life Insurance Co. of New York would probably apply here. The company rates rheumatic diseases as first in frequency, second as a cause of invalidity, and fourth as a cause of mortality.

No major advances in the treatment of these diseases have occurred during the year, and the combination of rest, graduated exercise, and aspirin to control pain continues to produce the best results at the Queen Elizabeth Hospital. This is similar to what has been found by rheumatism experts of the Medical Research Council in the United Kingdom. Prevention of deformity by splintage and physiotherapy and hydrotherapy is essential, and surgical correction of unavoidable deformities is well worth while. This is particularly so in respect of deformities of the feet. Special training to enable those disabled by the disease to carry out their daily activities such as dressing, undressing, bathing, feeding, etc., is given by occupational therapists.

Research work by the Queen Elizabeth Hospital staff has been limited because of staff shortage. Long-term research work on the prevalence of rheumatic disorders and the factors affecting it continues.

The possibility of having a reliable serological test to confirm the clinical diagnosis of rheumatoid arthritis has been under investigation for many years. The Rose-Waaler test, which depends on the agglutination of sensitised sheeps' red blood cells gives about 70 per cent positive results in clinically certain cases of rheumatoid arthritis, but requires special techniques which are not available in most hospitals. Research has been carried out at the Queen Elizabeth Hospital on the use of a similar test using latex particles. This work has shown that the latter test is slightly more reliable than the Rose-Waaler test, and is so simple to carry out that it can be performed in any laboratory in a few minutes.

An article on "Gout in Maoris" has been accepted for publication by the *Annals of Rheumatic Diseases,* which is the recognised medium of communication among rheumatologists. Other publications have included an article on arthritis research for the *New Zealand Science Review*. Papers have also been presented to the annual conference of the New Zealand Rheumatism Association and the New Zealand Paediatric Society. Lectures and talks have been given to various clinical societies and to the College of General Practitioners. This work has helped to foster the knowledge of rheumatic diseases among members of the medical profession and has encouraged the preservation of the existing good relationships between the staff of the Queen Elizabeth Hospital and their professional colleagues outside it.

**Cerebral Palsy**

While no accurate figures are available as to the prevalence of this condition, recent advances in our knowledge as to its causation have enabled many cases to be prevented, and we can confidently expect a diminution in the numbers of patients requiring treatment. It was formerly believed that most cases of cerebral palsy, particularly where spasticity was a main feature, resulted from mechanical birth injury. There is increasing evidence that cerebral palsy results from three main causes—

(i) Prematurity;

(ii) Anoxia at birth (insufficient oxygenation of the brain);

(iii) Kernicterus (a severe form of jaundice in the new born).

Exchange blood transfusions can prevent the last-named condition, and most maternity hospitals now have facilities for carrying out this treatment. Increasing obstetric skill and knowledge is preventing many cases of anoxia, but the causes of prematurity are still relatively obscure. Brain damage causing such conditions as mental defect and deafness, which are often associated with cerebral palsy, can also be prevented by these methods.

The successful treatment of established cerebral palsy depends on discovery and diagnosis in early infancy. A special study has been made by Miss M. Hartridge, the visiting cerebral palsy therapist attached to the Christchurch office, on the early signs of brain damage in young babies. This study has been made possible by the cooperation of the staff of St. Helen's Hospital, Christchurch, who have provided the material for it. It has been possible to make a film showing the different ways in which normal and brain-damaged children react at each age stage to various stimuli. The film, however, although it has been shown widely to many interested groups, is silent, and no copies exist. It is hoped to make a new film with sound track, professionally, so that this knowledge can be spread more rapidly throughout the country.

Specialist physiotherapy methods of treatment such as those described by Bobath and Kabat are becoming increasingly popular. These methods, however, demand a long training in the underlying neuro-physiology and a familiarity with the procedures involved. A few hours or days spent observing these methods do not qualify people to carry them out – and failure and possible harm are likely to result.

Facilities exist for the treatment of cerebral palsy as follows:

(i) A residential unit for 20 children at the Queen Elizabeth Hospital, Rotorua.

(ii) The Wilson Home, Auckland.

(iii) The Home of Compassion, Carterton.

(iv) Cerebral palsy day schools situated at Auckland, Wellington, Christchurch, Dunedin, and Invercargill.

(v) Visiting cerebral palsy therapists attached to Palmerston North, Wellington, and Christchurch District Offices.

In addition, facilities are, of course, available to cerebral palsy children as outpatients at public hospitals.

The success of the visiting cerebral palsy therapist scheme in the Canterbury area (where the therapist visits the homes of the children and advises the mother on general management and treatment) has led to the extension of the scheme to other areas of the country. Unfortunately it has not been possible to get sufficient suitably trained and experienced therapists to do this work, but during the year two occupational therapists with special experience and training in cerebral palsy were appointed to Palmerston North and Wellington District Offices.

**Physiotherapy**

In view of the increase in numbers of suitable applicants the Otago Hospital Board agreed to accept a higher number of students than usual – 69 instead of 64 last year. There were no new Colombo Plan awards. The number of new bursaries awarded was 55 and the total number of bursars in training at 31 March 1960 was 128. The total number of physiotherapy students who graduated during the year was 37.

Of the Colombo Plan students, three have already graduated (two men and one girl, all from Ceylon). There are eight girls and two men still in training.

During the year 12 English-trained and seven Australian-trained physiotherapists were registered. Of this number, 13 are still practising in New Zealand.

Owing to the increase in work of the Physiotherapy Section of the Division, an assistant inspector of physiotherapy was appointed to the Department. This will enable more frequent visits of inspection to the physiotherapy departments of public hospitals.

**Occupational Therapy**

The year has seen considerable changes and developments in the occupational therapy field. The position of Inspecting Occupational Therapist and Registrar to the Occupational Therapy Board was created, and Miss M. L. Bamford was appointed, taking up duties at Head Office in September last.

In January the Occupational Therapy Amendment Act 1959 came into force, giving occupational therapists increased representation on the Occupational Therapy Board.

A new syllabus of training was introduced by the Occupational Therapy Board and the course has been extended to three years.

The Occupational Therapy Training School, in the past year has had an intake of 32 students, giving a total of approximately 80 students in training; in December 1960 this number will increase to approximately 96 as a result of the extra term in the new syllabus. In June 1959, 15 students passed their final examination, and in December 1959, 10 students passed their final and two gained partial passes.

During the year the Board granted registration to six occupational therapists trained overseas.

There are at present employed in New Zealand approximately 105 occupational therapists, of whom 12 were trained overseas. Existing vacancies number approximately 28. In addition to these, it would be difficult to say how many potential vacancies exist, i.e., where the existing establishment would be increased or departments opened, if the employing authority thought that trained staff would be available.

Reports from all types of institutions where occupational therapists are employed indicate that occupational therapy programmes are curtailed, or possible development prevented, by lack of staff and suitable accommodation.

An aspect of occupational therapy that is steadily developing is home visiting. With the policy of keeping people out of hospital as far as possible, and because of early discharge of patients from hospital, this is an expanding field. A home visiting service, on which staff are employed full- or part-time, has been established in most of the larger centres, and to a more limited extent in other districts, and constant requests are received from district nurses for this service. The only factor limiting immediate expansion of this service is lack of trained staff.

**Queen Elizabeth Hospital**

This hospital has 100 beds for rheumatic diseases. Although there is always a waiting list for admission, it has not been possible during the year to keep the beds fully occupied, owing to shortages of nursing and physiotherapy staff. This hospital is more vulnerable to shortage of physiotherapy staff than public hospitals, as physiotherapy forms such an essential part of treatment. Unless patients can get proper treatment, it is useless to admit them.

The good reputation in the rheumatic field which the hospital has built up, both in New Zealand and overseas, has led to an increasing demand for patient consultations with the specialist medical staff. Owing, however, to the other calls on the time of the specialists (in treating inpatients and carrying out their research programme) it is not always possible for those patients to be seen immediately they arrive. People coming to Rotorua for examination (often from overseas countries), without making appointments before arrival, are disappointed when they have to wait. The construction of a proper outpatient department with adequate dressing-room accommodation would improve the number of patients that can be seen in a given time. The appointment of an additional whole-time registrar or junior physician, which has been agreed to, will also help in this matter.

Cooperation with the Public Hospital, Rotorua, in the sharing of services is increasing. Owing to the successful results of surgical treatment in appropriate cases more demands are being made on the Public Hospital for the services of orthopaedic and anaesthetic staff, while the Queen Elizabeth Hospital has undertaken the provision of surgical appliances and surgical boots for the Public Hospital.

A special ward was opened up during the year for the investigation, diagnosis, and treatment of children with rheumatic diseases. Children suffering from the more chronic types of acute rheumatism who are fit enough to travel, cases of juvenile rheumatoid arthritis, and other cases of arthritis of uncertain aetiology are being admitted.

During the year ending 31 December 1959, 726 inpatients were treated compared with 740 in the previous year. The number of outpatients seen was 1,589 which is nearly three times the number (535) seen in the previous year. This has been possible because the medical superintendent has not had to spend so much time on epidemiological work as in the previous year.

Arrangements were completed during the year for the purchase from the Rotorua Borough Council of the site upon which the hospital stands.

The Bath House continues to provide a service. During the year a total of 2,161 patients were treated under social security (i.e., without payment) (total number of treatments, 14,820). A little over half these patients were treated on general practitioner prescriptions, the remainder being inpatients or outpatients sent over for treatment by the staff of the Queen Elizabeth Hospital. In addition, 18,401 treatments were given to casual visitors, who paid for them.

**Cerebral Palsy Unit**

Additional schoolroom accommodation was provided during the year and this increased the space available for physiotherapy and occupational therapy. The average age of the children under treatment during the year was six and a half. Continued cooperation with the Rotorua Primary School enabled some children from the Unit to attend there for one half-day weekly throughout the year. This helped in developing social adjustment of the children from the Unit and counteracted the disadvantages of segregation which are to some extent unavoidable in their management.

Staff changes continue to be too frequent for smooth running and continuity. The supervisor, Miss R. Tipping, resigned at the end of the year at the conclusion of her contract. A new appointee, Miss E. Thompson, who was formerly at Westerlea Cerebral Palsy School, Edinburgh, will take over charge of the Unit in April 1960.

**Pukeora Home for the Disabled**

This former tuberculosis sanatorium was opened in 1957 for the reception of young permanently disabled people for whom no further medical or surgical treatment was possible. The home at present has 39 residents. The conditions for admission are that—

(1) The applicant should be at the time of admission between the ages of 16 and 35;
(2) That he should be permanently disabled, but not requiring any active medical or surgical treatment; and
(3) That there should be no intellectual handicap.

Such people when it became impossible for various reasons for them to be looked after in their own homes had only the chronic wards of public hospitals as an alternative.

The home is now fully occupied and facilities exist for occupational therapy, education, some vocational training, and some sheltered employment. Experience has shown that with additional education and good occupational therapy supervision apparently quite helpless patients are able to carry out useful and remunerative occupations. This adds not only to their happiness, and increases their morale, but enables them to benefit financially. The atmosphere of the home is a happy one and a committee of the residents is responsible for general conduct and behaviour.

The waiting list for admission is steadily building up.

## 3. CLINICAL SERVICES

This Division administers the various health benefits. Total expenditure this year amounted to £19,891,627, an increase of £1,241,026 over last year. Nearly 70 per cent of this increase was due to the rising cost of pharmaceutical benefits.

Details of expenditure on all health benefits will be found in tables 2–4, Appendix II.

### Pharmaceutical Benefits

This has been, as usual, the Division's main preoccupation during the year. The rising cost of this item has often been criticised, principally because it is the one form of benefit in relation to which, theoretically, it should be possible to control expenditure without detriment to the community.

In the first quarter of the year (April to June) there was a sharp rise in costs, amounting to no less than 26 per cent over the same period last year. The number of prescriptions issued had risen by 9·3 per cent, their average cost had gone up by 7·7 per cent. Further investigation showed that an important factor was a growing tendency for doctors to order extended supplies for one month's treatment or more, instead of the normal 10 days' supply.

It was found, for example, that in the four main centres the percentage of prescription forms which included an extended supplies prescription was as follows:

| | Forms Ordering an Extended Supply Per Cent | Average Prescription Cost, First Quarter s. d. |
|---|---|---|
| Auckland .. | 49 | 8 8 |
| Wellington .. | 32 | 8 2½ |
| Christchurch .. | 18 | 7 10½ |
| Dunedin .. .. | 27 | 8 3¾ |

It will be noted that the average cost per prescription in each area (second column) followed a somewhat similar pattern to that shown in the first column. It seemed, therefore, that the excessive ordering of extended supplies was probably an important factor in the rise in costs. It was difficult to believe that every second patient in Auckland, and every third in Wellington, was suffering from some condition requiring at least a month's supply of drugs at a time, in view of the fact that Christchurch seemed to get along quite well with extended supplies for only one patient in five.

There was evidence, however, that there was also an unusual amount of sickness this winter, and that part of the rise in cost was artificial, being due to the clearance of arrears of payments to chemists. Even if due allowance was made for these factors, it was still clear that the year's expenditure would far exceed the estimates. These had provided for a rise of nearly £420,000 (8 per cent); the actual increase seemed likely to be considerably more than £1,000,000.

The situation called for drastic action. An emergency combined meeting was called of the two advisory committees most concerned; the Pharmacology and Therapeutics Committee (medical) and the

Pharmaceutical Advisory Committee (chemists). The following action was unanimously agreed upon:

(a) Ordinary prescriptions to be restricted to a maximum of seven days' supply, plus one "repeat". (Instead of 10 days.)
(b) Extended supplies, unless specially approved for individual patients, to be restricted to certain named drugs.

These measures were put into effect on 1 September.

The reaction was immediate and violent. Resentment on the part of many doctors was intense, and the Department and the advisory committees came in for a great deal of acrimonious criticism. The advisory committees, having had all the facts before them, fully appreciated the necessity for action along these lines; but the situation was too complicated to be explained, except in brief outline, to the profession at large. So not unnaturally they were unwilling to accept it.

A revised version of the extended supplies list was issued on 1 October, and on 1 April it was considerably widened.

These restrictions appear to have met with some success. At the end of September the most optimistic projection of drug costs indicated a probable increase of about £1,073,500 over the previous year. The actual increase was £843,959.

Critics had predicted that any saving in this direction would be outweighed by an increase in doctors' claims for general medical services. This did not happen. There was an unusual amount of illness early in the year, and by the end of September it looked as if the cost of general medical services would go up by about £283,400. In fact, however, the increase was only £250,753. So taking drugs and payments to doctors together, instead of an expected increase of £1,356,900, the figure was £1,094,712, an improvement to the tune of more than a quarter of a million pounds. Much of this was due, however, to a lessened prevalence of illness in the latter half of the year.

It is worth noting, incidentally, that while the drug bill was close on £6 million (£5,956,302) payments to doctors for general medical services came to less than £4 million (£3,931,273).

Prescriptions passed for payment totalled 13,684,657, as compared with 12,847,773 last year. This equals 5·9 per head of population (5·6 last year). The average cost per prescription was 8s. 3d. (7s. 11½d. last year) and the cost per head of population was £2 11s. 0d.

### Time to Think Again

The pharmaceutical benefits scheme has now been in operation for about 18 years. Nobody is very happy about the present situation, and the time is ripe for a careful reappraisal of the entire scheme. This is being arranged.

Two widespread beliefs may be examined briefly:

(a) That the rising cost is largely due to the existence of the "free medicine" scheme. ("New Zealand is becoming a nation of pill swallowers and medicine guzzlers", etc.)
(b) That a charge on prescriptions would help to control the cost.

The experience of two other British countries is of interest.

In Australia the "free list" has until recently been strictly limited to "life saving" and "disease preventing" drugs. In the past seven years, however, the total cost of the Australian drug scheme has risen even

faster than ours; by 176 per cent, as compared with 112 per cent here.* In 1958–59 their limited scheme cost about £(A)2 4s. per head of population; ours, with its much wider range and coverage cost £2 4s. 11d.

In Canada there is no scheme for free medicine in private practice. Doctors' fees are very high – the equivalent of 30s. per consultation in the surgery, or double that for a home visit. Competition between doctors (which is generally believed to have effects on prescribing habits, reflecting the doctor's desire to please the patient) is stated to be "fierce"†. Yet in 17 years the total cost of prescriptions dispensed by chemists in Canada has risen from 12 million dollars in 1942, to 112 million last year‡ – an increase of 833 per cent. The cost per head of population in Canada last year was equal to £2 8s., which is not far off our figure of £2 11s. 0d. The average prescription in Canada costs 2·7 dollars, or about £1; the average cost here was 8s. 3d.

A similar situation exists in the United States and in Britain – in fact, in all developed countries§.

In the United States, in the five years up to 1957–58, the rise of expenditure on "drugs and medicaments" was 120 per cent (as compared with 48 per cent in those years here) and in 1957–58 the average cost per head of prescribed items alone was equal to about £4 10s‖. (The figure for New Zealand in that year was £2.)

In England and Wales in the first eight complete years of the National Health Service (commenced 1948) the total cost doubled, and the cost per head very nearly did likewise¶. This was closely similar to our recent experience here. In 1956 the 1s. charge per prescription form was converted into a 1s. charge for each prescription. This was expected to yield a net saving of £4½ million in the first year. Instead, the net cost rose by £1¼ million.**

It is a fair inference from these facts that:

(a) New Zealand's rising drug bill is part of a world-wide pattern, and is *not* due to the existence of the "free medicine" scheme.

(b) A charge on prescriptions would be unlikely to have any marked effect in combating rising costs. (If it is thought that Britain's experience with a moderate charge is not convincing, what about Canada, with what amounts to a "100 per cent charge on prescriptions"?)

A fact that is seldom appreciated is that the attitude of the public towards drug treatment has completely changed in less than a generation. It is true that twenty years ago doctors had to be careful not to write expensive prescriptions, lest the patient complained about the cost. But at that time all that most patients desired was a "bottle of medicine". The public knew little about drugs, and had only limited faith in their power to do good. Today they have been educated, largely through the popular press, to believe that there is a specific remedy for every ill, and they know that potent drugs are often very costly. So in countries where they cannot get them "free on the Fund" they are quite prepared to pay for them.

*Based on figures quoted in *Med. J. of Aust. 1959, II,* 697.
†Boyd, E. *Brit. Med. J. 1959, I,* 1469.
‡*Pharm. J. 1959, II,* 451.
§Seale, J. R. *Lancet, 1959, II,* 555, and I.L.O. Report on Cost of Medical Care, 1959.
‖Leader, *Pharmaceutical Journal, 1960, I,* 231.
¶Final Report on the Hinchliffe Committee, 1959, p. 27.
**Martin, J. P., Williams, S. *Lancet, 1959, I,* 36.

These facts will have to be taken into account when the position is re-examined.

### Medical Benefits

At the request of the British Medical Association a special committee has been set up to report on the availability and distribution of private practitioners in New Zealand. The committee first met on 17 December.

As a preliminary, the Director of the Division of Clinical Services made a detailed survey of the distribution and remuneration of private practitioners as at 1 June 1959. He summarised his findings as follows:

(a) There are 1,664 active private practitioners in New Zealand. Of these, 69 per cent are general practitioners, 8 per cent are G.P.s with specialist interests, and 23 per cent are specialists.

(b) Only 24 per cent practise on the refund system. In general, claims on the Fund by schedule doctors are about 47 per cent higher than those of refund doctors in the same class.

(c) There is one active practitioner to 1,367 population for the whole country. The "effective" population per G.P. (all types) is 1,669. Per schedule G.P. it is 1,732 for the Dominion, 1,624 in urban areas. There are wide variations from district to district. Some 70 per cent of all doctors practise in urban areas, serving (for G.P. purposes) not more than 58 per cent of the total population.

(d) Throughout the country, as the available population per doctor falls, the number of schedule services per head tends to rise. The result is that on the whole it makes little difference to the average schedule doctor's income from the Fund whether his practice is a large or a small one.

(e) Reasons are given for believing that at present anything much greater than an average of four services a head of population suggests either an abnormal amount of sickness or a tendency to "inflate" schedule services.

(f) Oversupply of doctors appears to be leading to "inflation" in the following urban areas: Nelson, Napier, Auckland, Hamilton, and Dunedin. Three urban areas (Hutt, Palmerston North, and Invercargill) could still support some additional doctors. In the remainder the number of doctors appears to have reached, or exceeded, the desirable maximum under present conditions.

(g) Schedule G.P.s who do substantial maternity work draw more from the Fund than any other class of practitioner, but their average *net* income (including extra direct charges to patients) is only about £2,556. There are about 620 doctors (37 per cent) in this class. Net incomes of the remainder are considerably lower.

(NOTE—"Active practitioners" means those claiming £300 or more for general medical services in the year ending 31 March 1959. "'Effective' population per G.P." means the population available per general practitioner when allowance is made for G.P. work done by specialists. The "effective" population per schedule G.P. takes into account, in addition, the work done by refund G.P.s.)

## 4. NURSING SERVICES IN HOSPITALS

During the year there has been a shortage of registered nursing staff in many hospitals and it is difficult to foresee any easing of this situation for at least two years. For several years until 1957 the intake of student nurses into all hospital schools of nursing was much lower than the number required for the care of patients and it was necessary to introduce several measures, e.g., the cadet scheme, to supplement the care given by student nurses.

The resultant effect of this low intake has been a corresponding decrease in the number of nurses qualifying and consequently a shortage of trained staff must be expected throughout the Dominion for a few years. However, with the increased numbers now coming forward it is anticipated that, despite an expected loss of approximately 25 per cent of recently qualified nurses to marriage, the number of trained staff in both general and obstetrical hospitals will show a definite increase within the near future.

The lowering of the age of registration in this country should also have an effect on the number of trained staff available as newly qualified nurses will not be able to obtain registration overseas in future until they are 21 years of age and may well be available for staff nurse positions for longer periods. This should affect both general and obstetrical hospitals from December 1960, as the majority of nurses then qualifying will be doubly certificated.

The Department expresses its gratitude to the nurses of this country who have continued to give their service to the community, often under conditions of extreme staff shortage, and particularly to the married nurses who have served on the full-time or part-time staff and whose contribution has been of great value in combatting this shortage.

Health of nursing staff, which naturally affects the number of staff available in any one day in a hospital, must be kept under constant review in order to reduce the number suffering from preventable illness. Such conditions as gastro enteritis or dysentery, common colds, and influenza have reached a high incidence in particular hospitals, but tuberculosis amongst nursing staff maintains a satisfactory low level. The only infectious disease which showed a slight increase on last year's figures was rubella. The figures in relation to staphlococcal infection whilst not yet complete, indicate that the incidence in student nurses is higher than amongst trained staff and it is apparent that all necessary precautions must be taken to ensure that student nurses adopt the correct aseptic procedures such as hand washing, proper wearing and handling of masks, and the employment of non-touch technique in the dressing of wounds to prevent its occurrence.

Regional study days for trained staff, arranged either by boards or the Registered Nurses Association, have been held in many areas and have been well attended, but the importance of planned in-service education, particularly for newly qualified nurses, should not be underestimated. The Nursing Division will introduce regular short courses for staff nurses and ward sisters in addition to the course already conducted by the Post-graduate School, when premises are available. Introductory courses which have been held for public health nurses and district nurses for many years and which have filled a much felt need will be instituted for hospital staffs on a national basis in the future. With this in view two of the instructors from the Post-graduate School

have been sent overseas; Miss E. B. Orbell on a Government bursary and Miss A. Cathie on a World Health Fellowship, for additional education in nursing services and nursing education programmes.

## 5. MATERNAL WELFARE

New Zealand mothers continue to give birth to a greater number of babies each year and over the past 10 years the number has increased by 40 per cent for Europeans and 45 per cent for Maoris. The total number of live births for 1959 was 61,869 (including 7,130 Maori births).

Table 35, Appendix II, has been compiled as rates for the first time and this will be continued in the future so that comparisons may readily be made of the three main types of maternity units, i.e., public, private, and St. Helens.

### Home and Hospital Confinements

The pattern of maternity services in New Zealand was set in 1923 following a public inquiry into an outbreak of puerperal sepsis. The staff of the Health Department at that time was strengthened to include an inspector of maternity hospitals, a consulting obstetrician, and a medical officer to be in charge of ante-natal clinics. Three of the main recommendations were:

(1) The establishment of free ante-natal clinics.
(2) The establishment of well equipped public maternity hospitals.
(3) The introduction of "an aseptic technique for midwifery that would be recognised and accepted as a standard by the medical profession generally".

All three of the above have been developed and at the same time an increasing number of mothers have had their babies in a hospital. In 1927 the figure was under 59 per cent, by 1938 it was over 87 per cent, and the position in 1959 was as follows:

Births, including stillbirths, registered during 1959 according to place of confinement:

| Place of Confinement | European | | Maori | |
|---|---|---|---|---|
| | Number | Per Cent | Number | Per Cent |
| At home .. .. .. .. | 363 | 0·7 | 678 | 9·3 |
| In a private institution .. .. | 8,813 | 15·9 | 209 | 2·9 |
| In a public institution .. .. | 46,338 | 83·4 | 6,370 | 87·7 |
| Other .. .. .. .. | 30 | 0·05 | 10 | 0·1 |
| Total .. .. .. | 55,544 | 100·0 | 7,267 | 100·0 |

Thus over 90 per cent of Maori mothers and over 99 per cent of other mothers have their babies in hospital and table 44 shows that of the mothers (European and Maori combined) who have babies in hospital 79·1 per cent are confined at public hospitals, 14·4 per cent at private hospitals, 5·7 per cent at St. Helens hospitals and the remainder at Alexandra Home.

This trend has inevitably resulted in a decrease in the number of nurses available to do maternity work in private homes. A survey of New Zealand's 15 health districts in 1959 showed that in only six of them were domiciliary midwives working at all. The total number registered in the country was 19 and of these eight had not taken a case for over three years.

**Maternal Mortality**

The European maternal-mortality rate (excluding illegal abortion) of 0·42 per 1,000 live births is a little higher than last year and the Maori figure of 1·26 is a little lower. Maternal deaths for 1959 and subsequent years will be investigated confidentially by the Obstetrics Research Committee of the Medical Research Council. Research of this type can well lead to a reduction in the proportion of mothers lost as the result of pregnancy and the Division of Maternal Welfare is giving administrative assistance to the Medical Research Council in this research project. Once again, and for the third year in succession, there have been no Maori mothers lost from illegal abortion. On the other hand we have lost four European mothers from this cause out of a total of 27 deaths. (See table 34 in Appendix II.)

**Infant Mortality**

During the year the Medical Statistics Branch of the Department produced a statistical survey on New Zealand's infant mortality which is being published separately. It shows that for both European and Maori about 50 per cent of infants dying in the first month of life (neo-natal mortality) die in the first day and approximately 85 per cent die in the first week. These early days of life, then, continue to demand our best efforts, and improvements in ante-natal care, obstetrical management, and technique for handling immature infants have already paid a striking dividend.

At the beginning of the century (1901–1905) the neo-natal mortality (deaths under one month old) for European babies was 30·6 per 1,000 live births, by the end of the first quarter-century (1926–1930) it was 24·8, and the figure for the three years 1956–1958 was 13·6. The position is less satisfactory for our Maori babies but some improvement was shown in the three year period 1956–1958 (neo-natal mortality 20·9 per 1,000 live births) for the first time since figures became available. The figure for 1959 is 19·21 per 1,000 live births. Maori infant mortality and its causes, both direct and associated, are discussed in some detail in last year's report. In 1959 the mortality in two age subdivisions of early life for European and Maori babies was as follows:

| Age | European | | Maori | | Both Races | |
|---|---|---|---|---|---|---|
| | Number | Rate per 1,000 Live Births | Number | Rate per 1,000 Live Births | Number | Rate per 1,000 Live Births |
| Under one month .. | 763 | 13·94 | 137 | 19·21 | 900 | 14·55 |
| One month to one year .. | 326 | 5·95 | 251 | 35·20 | 577 | 9·33 |
| Total under one year .. | 1,089 | 19·89 | 388 | 54·42 | 1,477 | 23·87 |

*Number of Births per Annum, Birth Rate, Infant Mortality and Maternal Mortality Rates 1955–59*

| — | | 1955 | 1956 | 1957 | 1958 | 1959 |
|---|---|---|---|---|---|---|
| Number of live births per annum | E. | 49,869 | 50,430 | 51,852 | 53,774 | 54,739 |
| | M. | 5,807 | 6,163 | 6,632 | 6,861 | 7,130 |
| | C. | 55,676 | 56,593 | 58,484 | 60,635 | 61,869 |
| Live-birth rate .. .. | E. | 24·86 | 24·67 | 24·82 | 25·16 | 25·10 |
| | M. | 43·64 | 44·64 | 46·29 | 46·24 | 46·28 |
| | C. | 26·03 | 25·93 | 26·20 | 26·53 | 26·50 |
| Infant mortality rate per 1,000 live births | E. | 20·09 | 19·39 | 19·98 | 19·40 | 19·89 |
| | M. | 62·51 | 54·36 | 57·90 | 54·37 | 54·42 |
| | C. | 24·52 | 23·20 | 24·28 | 23·35 | 23·87 |
| Still-birth rate per 1,000 total births | E. | 15·71 | 16·73 | 15·83 | 15·00 | 14·49 |
| | M. | 16·10 | 19·72 | 15·15 | 16·20 | 18·85 |
| | C. | 15·75 | 17·06 | 15·75 | 15·14 | 15·00 |
| Neo-natal death rate per 1,000 live-births | E. | 14·14 | 13·34 | 13·89 | 13·61 | 13·94 |
| | M. | 19·63 | 19·96 | 20·81 | 22·01 | 19·21 |
| | C. | 14·71 | 14·07 | 14·67 | 14·56 | 14·55 |
| Still-birth rate and neo-natal death rate combined per 1,000 total births | E. | 29·62 | 29·85 | 29·50 | 28·41 | 28·23 |
| | M. | 35·41 | 39·29 | 35·64 | 37·85 | 37·70 |
| | C. | 30·23 | 30·89 | 30·19 | 29·48 | 29·33 |
| Maternal mortality rate (including illegal abortion) per 1,000 live births | E. | 0·44 | 0·40 | 0·67 | 0·41 | 0·49 |
| | M. | 2·07 | 1·46 | 1·36 | 1·31 | 1·26 |
| | C. | 0·61 | 0·51 | 0·75 | 0·51 | 0·58 |
| Maternal mortality rate (excluding illegal abortion) per 1,000 live births | E. | 0·36 | 0·32 | 0·62 | 0·35 | 0·42 |
| | M. | 1·89 | 1·30 | 1·36 | 1·31 | 1·26 |
| | C. | 0·52 | 0·42 | 0·70 | 0·46 | 0·52 |

## Complications

Nearly 17 per cent of all admissions were treated for one or other of the complications listed in table 35.

The highest proportion of instrumental births (expressed as a percentage of confinements) was 12·2 per cent occurring in private hospitals. The figure for public hospitals was 8·2 per cent and for St. Helens hospitals 7·0 per cent.

Caesarian sections (per 100 confinements) were, however, highest in St. Helens hospitals (2·7 per cent), followed by public hospitals (2·1 per cent), and the rate for private hospitals was 1·4 per cent. This difference could be explained by the fact that most patients requiring Caesarian section are admitted to a public or a St. Helens hospital.

## Hospital Beds

Private maternity hospital beds now comprise 14 per cent of the total beds available as compared with 19 per cent five years ago. The number of private maternity hospitals increased by three during 1959.

The proportion of available beds to every 1,000 women in the population of child-bearing age (15 to 45 years) is 64 as compared with 59 per 1,000 five years ago. These figures include Maori mothers, an increasing proportion of whom are being confined in hospital.

## 6. WELFARE SERVICES

### Care of the Aged

**Accommodation for Old People**

(a) *Introductory*—The increased financial assistance now offered by Government will no doubt accelerate the submission of proposals for hospital and residential beds in homes and dependent cottages. This emphasises the importance of investigations by the Department and the establishment of standards by which the needs of old people in a particular area can be assessed, and to determine whether proposals for further accommodation for the aged are fully warranted. To this end, the establishment by old people's welfare councils of central indices of old people in need and careful screening of waiting lists are considered necessary if resources are to be used to proper advantage. The development and coordination of domiciliary and other services, whereby old people will be able to prolong their independence in their own homes, must also receive increasing attention.

(b) *Available Accommodation*—An estimate of the accommodation available for old people in hospitals and homes run by religious and welfare organisations, hospital boards, and in pensioner flats is given below:

| — | Geriatric Hospital | Home | Dependent Cottages | Total |
|---|---|---|---|---|
| Religious and welfare organisations .. | 339 | 2,850 | 152 | 3,341 |
| Hospital boards .. .. .. | 950 | 1,000 | .. | 1,950 |
| | 1,289 | 3,850 | 152 | 5,291 |

This total of 5,291 represents 2·3 beds per 1,000 population.

| | | |
|---|---|---|
| Pensioners Flats— | | |
| Government settlements .. .. .. | 2,062 | |
| Local authorities .. .. .. .. | 1,944 | |
| | | 4,006 |

NOTE—This table does not include beds in private hospitals, rest homes, or convalescent homes.

(c) *Religious and Welfare Organisations*—Subsidies approved during the year to religious and welfare organisations to assist them in providing hospital, home, and residential accommodation are indicated below, along with details of subsidies and loans granted since inception of the present policy:

| | Total Subsidy and Grants | Number of Old People to be Accommodated |
|---|---|---|
| | £ | |
| Approved, 1959–60 .. .. .. | 256,892 | 229 |
| Approved since 1950 .. .. .. | 2,222,800 | 2,070 |
| In addition loans approved since 1950 amount to | 75,636 | .. |

(d) *Rate of Subsidy*—Under a recent decision by Government the rate of subsidy payable to religious and welfare organisations for hospital and home accommodation for old people has been increased from 75 per cent to 100 per cent of the approved capital cost of land, building,

and other eligible items. To date one scheme has been approved at the new rate, and there are a considerable number of other proposals of a major nature under consideration. If approved, a substantial rise in expenditure will arise during the year 1961–62.

(e) *Local Authorities*—Twenty-five pensioner-housing schemes submitted by local authorities have been approved during the year. When completed they will provide independent accommodation for a further 437 old people. Subsidies and loans provided by Government for these schemes are as follows:

| | Subsidies | Government Loans |
|---|---|---|
| | £ | £ |
| Year 1959–60 .. .. .. .. | 267,388 | 231,715 |
| From inception of scheme to 31 March 1960 .. | 950,111 | 1,028,929 |

A total of 1,944 old people are accommodated in cottages or flats under these approved schemes.

### Meals on Wheels

Twenty schemes are now in operation throughout New Zealand – an increase of four on the previous year. With the exception of Christchurch and a small pilot scheme in Taranaki all are operated by hospital boards. There has also been some extension of established schemes and, in all, 759 old people are being assisted with meals in their own homes.

### Laundry Service

As at 31 December 1959 there were 181 old people being regularly assisted with a laundry service through hospital boards. This is a small increase on the previous year. No new schemes commenced during the year.

### Occupational Therapy Services for Old People

Organisations concerned with the care and welfare of the aged are recognising, to an increasing extent, the need and value of keeping old people occupied. More facilities for craft and allied work are being provided for this purpose. A domiciliary scheme instituted by the Christchurch Old People's Welfare Council, with some financial assistance from Government, now provides a service for some 60 old people in their own homes and approximately 90 in residential homes. Wherever possible, this service is coordinated with the occupational therapy work of North Canterbury Hospital Board. Information has been sought recently from hospital boards as to the extent to which they are affording occupational therapy services for old people. The limited availability of occupational therapy staff calls for coordination by the various agencies in order that personnel are used to best advantage.

### Seminars on Care of the Aged

Well attended seminars, arranged specifically for board members and management committees of old people's homes and hospitals operated by religious and voluntary organisations, were held at each of the four main centres during 1959. Of two days duration, the seminars had as their theme "The Administrative Problems of an Old People's Home", and resulted in a valuable exchange and pooling of views on policy

and administration. In particular, organisations whose experience in this field is limited and others contemplating the establishment of accommodation for old people found the seminars of particular worth.

### Advisory Committee on Care of the Aged

The Committee met twice during the year. The accommodation needs of elderly single men and widowers, occupational therapy services for old people, the functions of regional welfare councils, training facilities for staff of old people's homes, and increased rates of subsidy for accommodation are the principal matters that have received the Committee's attention.

## Rehabilitation

In accordance with a request from the Inter-departmental Committee on Civilian Rehabilitation, the Department investigated and reported on the facilities available for vocational training of disabled and handicapped persons in New Zealand, the need for additional training opportunities, and the role of sheltered workshops. Arising from the recommendations which this report contained, the Inter-departmental Committee agreed that further surveys be undertaken of disabled civilians with a view to obtaining more accurately the extent of the problem and establishing, if necessary, a comprehensive and unified scheme for vocational training and sheltered workshops, possibly through the Disabled Servicemen's Re-establishment League. A working party, which was assigned the task of making further inquiries, has now reported its findings and the Committee should shortly be in a position to submit a scheme to Government for consideration. Meanwhile, the policy of establishing and developing rehabilitation services in public hospitals is being actively pursued, with the result that the nucleus of such a service now exists in most of the principal hospitals. The establishment of spinal injury centres at Auckland and Christchurch has been approved in principle, and if proceeded with should play an important role in the rehabilitation of persons suffering from paraplegia and other spinal injuries.

## Accommodation for Young People

Subsidy assistance during the year has been limited to approval of £3,288 for one scheme accommodating 17 young women. Several other larger proposals are under consideration at the date of this report. Since the Government's policy of assisting with youth hostels was commenced in 1951, subsidies amounting to £301,537 have been approved to accommodate 503 young people.

# 7. TUBERCULOSIS

In the control of tuberculosis the Department concerns itself with maintaining the tuberculosis register and with all preventive and social aspects of the disease.

In each of the four metropolitan districts a qualified chest physician is a member of the staff of the medical officer of health. It is his duty to direct the vaccination campaigns against the disease, to direct case findings through the miniature radiography, and to supervise tuberculous households and contacts. In the smaller districts these functions are carried out by the medical officer of health.

On the other hand, the diagnosis and treatment of tuberculosis are in the hands of chest physicians employed by hospital boards. Outpatient clinic facilities and hospital beds for treatment of cases are available throughout the country. There has been established the closest liaison between the Department and hospitals for the smooth running of the tuberculosis programme. The services of a thoracic surgeon are available for selected cases at the four main centres where thoracic surgery units are located. The control of tuberculosis demonstrates clearly the important part played by hospitals in preventive medicine.

In general hospitals there were available 839 beds for the treatment of persons suffering from pulmonary tuberculosis. With an increase in the use of outpatient treatment with specific drugs, these beds are more than adequate for cases requiring hospital treatment.

In addition the three tuberculosis sanatoria situated at Otaki, Christchurch, and Waipiata, together with the children's sanatorium at Wanganui, provided a total of 404 beds available for the reception of the tuberculous. In line with overseas experience in the developed countries, the demand for such sanatoria accommodation has fallen markedly, with an overall bed-occupancy rate of less than 50 per cent.

Tuberculosis statistics will be found in tables 25–30, Appendix II.

# PART IV—BUREAU OF MENTAL HEALTH SERVICES

## 1. MENTAL HEALTH

### Admissions and Discharges

During the year 15,376 persons were under care in mental hospitals and hospitals for the mentally subnormal in New Zealand at one time or another. This is approximately 400 more than last year. The average number of occupied beds was 9,964, that is, 69 more than last year.

Persons admitted numbered 4,200, an increase on the previous year of 444. Of the admissions the majority, 2,283, were voluntary boarders (418 more than last year). Those admitted by order of an authority numbered 1,917, 26 more than last year.

The total number of discharges for the year was 3,184.

It is of interest to note that the figure for voluntary admissions now exceeds those for persons admitted under any form of reception order. This is a welcome reflection of a more enlightened attitude on the part of the public and the profession towards early treatment of mental disorders. It also is a mark of confidence in the Division's hospitals. Not infrequently, comparisons are made, sometimes in highly critically vein, as to the relatively higher admission rate voluntarily in the United Kingdom. Such comparisons tend to ignore many sources of error when statistics of different countries are compared. For example, the New Zealand figures include all admissions to deficiency institutions. They also include a large group of senile cases who, in the United Kingdom, would be admitted informally: a state which it is hoped may soon obtain in this country. These two groups swell the proportion of admissions under reception order in New Zealand as compared with the United Kingdom. The true comparative figures of the two countries for voluntary admissions may well approximate very closely indeed.

The length of stay in the hospital for first admissions continues to decline, and far greater use is being made of short and longer periods of trial leave in the course of rehabilitation. The aim of the Division's hospitals is to return patients to the family and to the community as soon as can be done without imposing undue risk of relapse, with possibly serious if not fatal outcome in the patient, or undue stress to the family which may not have recovered sufficiently from previous distresses to give the appropriate welcome and understanding to the returning convalescent patient. Judgment in these matters is always one of difficulty. It is quite easy to make a fetish of early discharge if one choses to overlook possible adverse factors which are inherent in many recovering cases. Unwise reliance on heavy sedation and tranquilisers as a means of too early discharge from hospital, with symptoms masked rather than mastered, is a temptation which every experienced psychiatrist must always be alert to resist. (Statistics for patients appear in tables 36 to 39, Appendix II.)

## Staffing

### Medical Staff

At the end of the period under review there were 36 full-time and nine part-time members of medical staff on the Division's strength. During the year the Deputy Director interviewed a number of applicants to service with the Division in the United Kingdom and several appointments have been made. It is, however, unwise for any country to rely on the importation of trained academic skills to meet its needs and it is to be earnestly hoped that New Zealand medical graduates will be awakened to the very great need and interesting varied field of psychiatric endeavour which is open to them in the Division's hospitals and extra-mural services.

In November a post-graduate course in psychiatry was held at Porirua Hospital. This was primarily intended for junior members of the Division's medical staff, but an invitation was extended to, and accepted by, a number of other graduates interested in the field. It is intended to repeat this course in 1960. It is hoped also to set up at one of the larger hospitals, probably Porirua in the first instance, but later at Auckland, a training scheme for junior medical staff preparatory to their proceeding overseas on study bursary for the purpose of completing their D.P.M., either in the United Kingdom or in Australia.

### Psychologists

A number of appointments of psychologists have been made to various hospitals in the Division during 1959. It is the intention of the Division to increase the number of such appointments. The academic standard aimed at is that of the British Psychological Society. Discussions have been entered into with the department of psychology of two New Zealand universities, with a view to promoting interest of potential graduates in the important field of work open to them with the Division.

### Social Workers

As with psychiatrists and psychologists, there is a dearth of trained social workers in New Zealand. During the year the establishment for social workers has been increased and provision has been made for certain male social workers. It is hoped that the School of Social Science will be able to help with the very difficult problem of finding suitably trained persons to fill these vacancies. In social work there does appear to be a very real advantage in the social workers being of this country, whether or not their training has been in this country. Nevertheless, appointments would certainly be made of suitable applicants with overseas training in the present state of staffing, regardless of their place of origin.

### Recreation Officers

A new class of appointment, namely, that of Recreation Officer, has been instituted and appointments have been made to all the major hospitals. The primary duties of these officers will be to coordinate and to organise all forms of recreation activity and like matters relating to patients' welfare in the hospital concerned.

**Nursing Staff**

In past years great emphasis has been placed on the urgency and importance of building up nursing-staff establishments. That urgency and importance still remains. It is, however, gratifying to record that the number of nurses is somewhat better than it has been in recent years and several hospitals have begun to reap the benefits of vigorous efforts in their own communities. It is indeed an encouraging sign that there is an increasing interest on the part of senior secondary-school pupils, many of whom are now seeking vacation aide appointments which not infrequently lead to their taking up psychiatric nursing.

The problems of the tutor sisters in relation to the new curriculum are also receiving attention and it is proposed in the near future to institute a technical course for tutor sisters, to be held probably in Wellington. At most hospitals fluctuation in the size of classes for nurses in training has added to the problems of the matrons, who have to arrange the release of the student nurses from ward duties during instructional periods.

**World Mental Health Year**

There has been a welcome awakening of interest in the implications which lie behind the World Mental Health Year project of the World Federation of Mental Health. Mental health associations in New Zealand are of very recent growth and are still in an early formative stage. Nevertheless, one such association has launched a Mental Health Week which aroused considerable interest at the time. Other projects are planned for most of the major centres, including some centres in which there is no active mental health association. The Division is interested in supporting actively all such projects related to World Mental Health Year. It is, indeed, to be hoped that as an outcome of World Mental Health Year activities, prejudice and stigmatisation will be lessened. The impact of Mental Health Year activities in this respect will require to be followed up by continuing mental health education.

**Mental Deficiency Institutions**

During the year there has been a continued emphasis on a development of training activities at the Levin Hospital and Training School. The local community is responding well to the part it has been invited to play in the activities of the hospital.

The separation of Templeton Hospital and Training School administratively from Sunnyside Hospital is now virtually complete.

With the full benefit of the recent building programme coming into effect at both institutions the very great pressure on their accommodation is being slightly eased. There are, however, still very many urgent admissions to adult mental hospitals in the Auckland Province. Unless an early start is made with the development of the projected institution at Mangere, the situation may well arise in which either the existing Division's institutions have to be extended beyond their optimum size or further provision by way of accommodation will have to be made at mental hospitals, which are not the appropriate place for the setting up of training schools for the severely subnormal and moderately subnormal.

### Child Health Clinics

The need for expanding these services is fully appreciated by the Division, which continues to provide psychiatric personnel wherever this is possible. Indeed, part-time appointments have been made to meet the needs. When fully staffed, the New Zealand Health Clinic offers a variety of services and a flexibility of approach to the individual problem. The essential basis of this work for children is the team approach, and it is believed that the psychiatrist can function most effectively as a member of a team of multiple skills. This can be done without his necessarily seeing all cases referred or exercising overall control of the clinic's activities. Critics of these clinics sometimes appear to overlook the fact that their present form is an outcome of deliberate planning to meet the present needs of the New Zealand situation.

### Accommodation and New Buildings

There has been steady progress in all hospitals in the modernisation and improvement in amenities in older buildings which have the best prospect of a useful occupational life. Overall overcrowding has been further relieved. However, with a number of older buildings nearing the end of their present use, there is no cause for undue complacency in this matter. The situation is closely watched.

### Visiting Consultants

Approval has been given for visiting consultants in paediatrics and in neurology to be appointed for attendance on a sessional basis at certain of the larger mental hospitals. It is hoped to extend this type of appointment to physicians in the near future.

### Legislation

At the 1959 Medical Superintendents' Conference, a Legislative Subcommittee was appointed to inquire into and prepare draft recommendations for mental health legislation in New Zealand, as the Mental Health Act is due for consolidation in the very near future. The trend of recent Mental Health Act amendments in this country towards less formality in admission procedures and the mitigation or elimination of all such compulsory measures that can be reasonably so liberalised may be expected to be carried much further.

### Community Aspects

The great importance of a closer integration of the regional mental hospital with the medical and social activities of the region is one that cannot be too highly stressed. It is therefore with considerable pleasure that I record the time and energy which has been given by many members of the Division's staff in many regions to satisfying the increasing requests from various public organisations by way of talks, organised visits, and other important, though time-consuming, participations in the community's affairs.

Unless good contact is maintained with the community the task of rehabilitation is made more difficult. Unless the work of the hospital is made known, and made widely known, misunderstandings are likely to be perpetuated. The importance of the Division's medical staff participating in the proposed new psychiatric departments in public

hospitals is indeed a measure of recognition of the part they have played hitherto, and an assurance that there will be a lessening of what has perhaps been too great an isolation in the past. The psychiatric staff of the Division has much to offer and much to learn by such cooperation. It is hoped also that there will be wider and more frequent contacts between the Division's staff and other branches of the Health Department, especially the services of the medical officers of health.

### Chaplains

There has been a welcome and increasing interest on the part of the churches in the appointment of whole-time and part-time chaplains to the Division's hospitals. This has been paralleled by a strong movement in many centres to establish chapels in the regional mental hospitals. Every encouragement is being given to chapel committees to realise their objectives.

### Appreciation

The work of the district inspectors and official visitors is greatly appreciated. It is perhaps not sufficiently widely known how much time and patience is given by the inspectors and official visitors to the requirements of their appointments. Many organisations in all parts of New Zealand are taking an increasing interest in the social needs of the Division's patients and the extent of patient recreational activities and organised outings, both Church and secular, in the community, has greatly increased in the past three or four years. Those taking part can rest assured that their contribution is highly valued by patients and staff of all the hospitals to which they are devoting their time and interest.

## 2. EXCERPTS FROM REPORTS OF MEDICAL SUPERINTENDENTS OF MENTAL HOSPITALS

### Auckland Mental Hospital

Many of the restrictions of the past which were irksome to staff and patients alike have been removed. Entrance doors are unlocked, except in the disturbed wards, and picket fences and other barriers have been demolished.

A social club, with weekly meetings in the city for discharged patients, is run by the social workers and other helpers. It runs its own news sheet and is well attended. Apart from the social aspect, the discharged patient feels he is a member of a friendly, sympathetic group and gains confidence in re-establishing himself in the life of the community. The industrial social worker was successful in placing approximately 50 men in outside employment.

A hospital magazine is due for publication shortly, and it is hoped that an occupational therapy centre away from the hospital will be functioning next year. Rehabilitation is being vigorously pursued and there is an active and constant endeavour to get patients out of hospital quickly. In addition, several patients with long periods of hospitalisation are now in useful, remunerative employment.

Our nursing position is better than it has been for several years. I must again stress the need for a modern nurses' home.

It is recommended that plans be prepared for a modern treatment hospital for 100 patients, with every possible facility for inpatient and outpatient treatment and domiciliary service. The psychiatric needs of a rapidly growing population in Northland and Auckland will have to be met sooner or later.

The spiritual life of the hospital has been receiving greater attention and the restoration of the Chapel, which continues to be used as a dormitory, to its original purpose, will enable many of our patients to worship in a fitting atmosphere.

## Kingseat Hospital, Papakura

The average number resident was 934, some 60 in excess of planned accommodation. A new villa, completed in December 1959, was opened by the Minister of Health, the Hon. H. G. R. Mason, in the presence of a large representative gathering. This villa is used for geriatric women patients.

A 36-bed hostel for male staff should be completed in the first half of the New Year. This will release some valuable single rooms for patient accommodation.

The recreational hall, library, and canteen, it is hoped, will be completed about July of next year.

Another important project is an interdenominational Chapel, the need for which is widely felt. This has the support of all denominations. Ways of raising funds will be explored in the New Year.

We have, during the year, encouraged the visits of organisations such as the Plunket Society, St. John's Ambulance, and League of Mothers. These visits act as good liaison with the public and help to break down erroneous beliefs that our people are a group apart.

One of the patients celebrated his one hundredth birthday in July. A well attended party was held in his villa to mark the occasion. Telegrams were received from Her Majesty and the Governor-General.

I record, with pleasure, the establishment of a branch of Alcoholics Anonymous at Kingseat. This is conducted by outside members and I am grateful for their help and keenness, and I feel that nothing but good will accrue from their activities, both for the inpatient and in the subsequent follow up.

## Tokanui Hospital, Te Awamutu

Admissions and discharges for the past year showed a steep and record increase. Voluntary admissions rose from 190 in 1958 to 333 in 1959, and certified admissions from 207 to 239. Expressed as a percentage of all admissions, those entering voluntarily rose from 48 to 58. There were as well in 1959 93 transfers from other hospitals, so that altogether 665 new names appeared on the Tokanui register.

There were on 31 December 1959 not quite 1,000 occupied beds at Tokanui, and there were about 100 patients absent from the hospital on trial. Results of treatment are so good today that nearly all admissions except the senile and those badly handicapped from birth leave within weeks or months, but a great problem in all mental hospitals is the large accumulation of patients admitted before modern treatments were available and whose illnesses have now got beyond effective treatment.

The 145 patients who were admitted voluntarily during the year because they were emotionally distressed by their problems in life made heavy demands upon medical time because of their need for psychotherapy; but occupying only 23 beds at the end of the year, this group is of small importance from the accommodation viewpoint.

The modern mental hospital has two complementary functions. It must restore to the community as soon as possible those whose illness can be treated. It must also care for those so handicapped that treatments so far available fail to produce sufficient improvement for discharge. In recent years shock treatment, and more recently still, new drugs, have transferred previously unresponsive patients into the recoverable group. If a long period in any institution is accompanied by monotony, deprivation of normal social contacts, and lack of adequate emotional and intellectual stimulation there is a loss of drive, interest, and initiative even in a normal person. It is most important that this be avoided in patients who are confined by illness to a hospital year after year. Otherwise new treatments as they become available have to counteract not only the illness but the equally deadly ill effects of social and emotional deprivation.

Giving every patient as much liberty as possibe is one useful measure in preserving initiative. Of the 18 wards at Tokanui, 14 are unlocked and completely open all day; 80 per cent of patients are free to move about the hospital. New admissions no longer have the unnecessary and upsetting experience of being locked in. Such a policy has brought no untoward effects and has noticeably improved the morale and atmosphere of the hospital.

It has been deliberate policy to send as many patients as possible into the community for social, recreational, and educational purposes, and to bring as many people from the community as possible into the hospital. Members of the staff in 1959 addressed 130 meetings throughout the Waikato area on the problems of mental disorder and the needs of Tokanui patients.

Besides the inpatients, the medical staff saw 900 outpatients during the year at clinics at Hamilton, Tauranga, and Rotorua. There is a serious shortage of staff, especially nursing staff. At the end of the year there were 30 vacancies for nursing trainees, and nine for male nursing staff; we were short as well of a psychologist, a welfare worker, clerical cadets, and sundry artisans. Everybody on the staff worked enthusiastically and loyally for the good of the patients. That in spite of all difficulties so many patients left Tokanui so quicky restored to reasonable health reflects the greatest credit on everybody at Tokanui. Many expressions of gratitude are made by patients and their relatives and even trivial complaints are almost unheard of.

## Levin Hospital and Training School, Levin

The activities described in last year's report are being continued within the limits imposed by staff strength.

The sheltered industries have made good progress throughout the year. An average of about 40 boys working two and a half hours in the morning and one hour in the afternoon turn out weekly the folding of approximately 70 dozen shirt boxes, 700 stocking boxes, 3 gross of jewellery boxes, and cut 750 yards of elastic for stocking tops. This work is proving a great value in encouraging application, concentration, and a work habit, and has given them a satisfying sense of achievement.

Another important step in the training of the children is the decision by the Education Department for the establishment of a special school and the appointment of two teachers. Increasing work is being done with the pre-school-age children by an experienced kindergarten mistress appointed this year. A full staff of occupational therapists and assistants is allowing for expansion in the branch of the training.

In spite of the present nursing-staff shortage, brought about mainly by staff on transfer to mental hospitals to complete their full psychiatric training, the standard of care, supervision, and ward training of the children is being kept high.

The recent appointment of a social worker will enable us to keep more in touch with the homes and families of the children, so that their cooperation in the care and training of the children can be obtained. Two troops of Boy Scouts have been established, nine boys going up from the Cubs, and an additional five suitable older boys. The Girl Guides, Scouts, and Cubs are making good progress and we are most grateful to their leaders, who come out every week so regularly and willingly.

## Porirua Hospital, Porirua

The number of persons under care in the hospital during the year was 2,581. Admissions numbered 1,112, of which total 552 persons sought hospital admission and treatment on a voluntary basis.

Discharges numbered 856.

The medical staff has continued with extra-mural psychiatric work at the Wellington and Palmerston North general hospitals. Some 521 persons passed through general hospital psychiatric wards during the year. In all, 754 visits were made to the outpatient psychiatric clinics for examination, including cases referred by Child Welfare, Justice, Education Departments, and the Courts.

The hospital's electroencephalography department has continued to function satisfactorily. In addition to work with our own inpatients, 183 graphs and reports were made on private patients referred by medical practitioners and North Island general hospitals.

It is hoped during the year to inaugurate a residential hostel in Wellington for discharged female patients who require support, guidance, and some assistance during rehabilitation into community life and employment. Plans to implement this project are well advanced.

It is hoped to commence a "day hospital" during the year, and the villa Tiro Moana will be used for this purpose.

Nursing-staff shortage remains one of the hospital's greatest problems, particularly female-staff shortage. But for this, much of the male nursing could be undertaken, as it was in the past by female nurses. Establishment was short by 61 nurses out of 152 and 31 attendants out of 137.

Length of residence at time of discharge: Two months and under, 437; between two months and four months, 215; between four months and eight months, 105; between eight months and 12 months, 25; between one and two years, 32; between two and three years, nine; over three years, three: total, 856.

## Ngawhatu Hospital, Nelson

It may be said that the year has been one of satisfactory results, and of quiet progress generally. This hospital as a whole is split up into two widely different portions, which makes for some little difficulty in general running. One is a group in Nelson of very old buildings, housing defectives of all grades, and of all ages from infancy upwards; the other is a group of modern, up-to-date villas at Ngawhatu, some 6 miles away, intended for the accommodation and treatment of psychotics, but actually we are obliged to house there a great number of people, grown too big for Nelson, and whose degree of defect is so marked that they are quite impossible of rehabilitation, particularly as most have either no suitable relatives, or none at all.

We do, of course, reintegrate many of the lesser defects by rehabilitation, and have done so for years. Those who are suitable receive appropriate training with the artisans, on the farm, and domestically. Their jumping-off place is usually Braemar Lodge in Nelson, whence they go to work in various capacities in preparation for leaving altogether.

There is active treatment of various kinds in regular being. The infants, of course, have the training in habits and conduct usually accorded the normal children, although naturally enough progress is mostly a good deal slower. For those educable there is formal schooling by a qualified schoolmistress with many years experience in the sphere.

Some do very well, others not so well, but the minimum aimed at is the learning to read and understand simple words, to do simple sums, and to count money. A "shop" with the children acting as vendors and customers helps greatly in the reading of signs and labels and the handling of money. We have been fortunate too in having a good staff of occupational therapists, with resultant benefit to patients, both newer admissions and the longer staying ones.

## Seaview Hospital, Hokitika

During the past year the admission rate, excluding transfers from other hospitals, has risen. It is a matter for satisfaction that the percentage of voluntary boarders reached 62 per cent of total admissions.

The number of outpatient consultations has more than doubled during the past five years and 490 were carried out during 1959.

It is again gratifying to note that the great majority of local outpatients, i.e., from areas south of Greymouth and those from the north who wish help and advice between clinics, present themselves at this hospital without diffidence, and that the attitude of prejudice so often found in relation to "mental hospitals" is fast disappearing.

The liaison between public hospitals, especially the Westland, Greymouth, and ourselves, remains close.

The townspeople, including many religious and social groups, continue to take great interest in their hospital, and their expressions of interest are practical and active.

## Sunnyside Hospital and Templeton Hospital, Christchurch

The alcohol aversion unit continues to be kept busy and a reasonable number of satisfactory results have been achieved; it is felt that the unit has a useful place in the therapeutic armoury of the hospital.

Group therapy continues to be a popular treatment with patients, and is used as an adjunct to other treatments. Recently psycho drama method has been used during certain sessions to enable the "acting out" of certain mental mechanisms and the reinforcement of the verbal description.

Flats for short-term medical staff and students which will house four on the single side of the quarters, should be ready for use towards the end of 1960.

At Templeton three new villas have been opened, one for the less severely subnormal girls and two for boys.

The recreational facilities, which are common to both sexes, are grouped together in the centre of the hospital grounds. As the various villas are somewhat dispersed the services of a suitable bus is now warranted and one is being sought.

## Seacliff Hospital, Seacliff

Patients are still admitted firstly to Seacliff, as the women's reception and male reception and treatment units have been unaffected by the demolition of the 1880 buildings.

The average bed state for 1959 was: Seacliff, 477; Cherry Farm, 434; Orokonui Home, 316; total, 1,227.

The follow-up and after-care of patients by our psychiatric social workers and their attendance at our outpatient clinics in Oamaru, Dunedin, Balclutha, and Invercargill has continued, and has assisted in the rehabilitation of patients and in enabling them to be managed at home, where this is possible.

The re-employment of patients discharged from hospital receives attention from the time of their admission. After the acute stage of their illness has passed they usually graduate from occupational therapy department to pre-discharge employment within the various departments of the hospital. On discharge they are encouraged to attend the hospital clinics at Dunedin, Oamaru, Balclutha, and Invercargill.

The Cherry Farm sports ground has been very much in demand by various sporting bodies in the district. This has provided pleasant spectacles for the patients and made for good relations with the local community.

The teaching programme for undergraduates in fifth year at medical school continues as in previous years. Clinical demonstrations include an open forum at the end of the second day at which current problems in the field of mental health are brought up in discussion within the class.

## 3. PSYCHONEUROSES

### Queen Mary Hospital, Hanmer

The Medical Superintendent reports: The total number of patients admitted was 463 (447), consisting of 190 (184) males and 273 (263) females, 112 (104), or 24 per cent (23 per cent), of whom were paying patients. Discharges were 195 (177) males and 273 (272) females, with 3 (1) deaths, giving a total of 471 (450). Of the admissions, 29 per cent (31 per cent) were from the North Island.

Diagnostic categories of patients admitted during the 12 months reveal that anxiety and depression are still the main causes of admission. Figures of the main categories are: anxiety state, 36 per cent (28 per cent); depressive state, 26 per cent (31 per cent); alcoholic addiction, 11 per cent (9 per cent); medical, 7 per cent (15 per cent); hysteria, 5 per cent (4 per cent); anxiety hysteria, 3 per cent (2 per cent); surgical, 2 per cent; character disorder, 2 per cent (3 per cent); miscellaneous others, 8 per cent (8 per cent).

*Nursing*—Staff health has been good and little working time has been lost through sickness. Our numerical strength, however, has remained well below establishment and for the most part of the last 12 months we have worked at two-thirds of establishment strength. On account of medical-staff shortage, nursing staff have borne heavier duties than normal.

# PART V—SPECIAL BRANCHES

## 1. NATIONAL HEALTH INSTITUTE

This report covers the work of the National Health Institute for the year ended 31 December 1959.

### Buildings

Sketch plans have been prepared and approved for certain alterations required to adapt a part of the main building to provide a vaccine laboratory, a lecture room, laboratories and offices for the occupational health unit, and additional office accommodation for the clerical staff.

### Staff

Dr F. H. King, Specialist in Occupational Health, was appointed at the beginning of the year to the Institute staff to take charge of the occupational health unit which is being developed.

### Hospital Laboratory Advisory Committee

The work of this committee has continued to provide a considerable and increasing amount of clerical work. The committee has held three meetings during the year and studied and decided on such matters as standard methods for biochemistry examinations, accrediting for the intermediate examination, recognition of training laboratories, concessions in training, selection of examiners, conduct and organisation of examinations, and the recognition of overseas qualifications. The Institute's teaching laboratory is not now large enough to accommodate, for the practical examination, the large number of candidates presenting themselves for the examinations in hospital laboratory practice. Next year it will be necessary to hold additional examinations. Four examinations have been held during the year. Thirty-seven candidates were examined in the intermediate examination and 34 passed. All of the 22 candidates for the final examination were successful and were awarded the Certificate of Proficiency in Hospital Laboratory Practice.

### Educational Activities

**Health Inspectors' Training Course**—Eighteen health inspector trainees attended the 1959 course. Two of these trainees were from Sarawak and were being trained under the Colombo Plan arrangements; two trainees were employed by local authorities, and the remaining 14 by the Department of Health. The short course in milk technology was again held at Massey College and both the 1958 and 1959 trainees were able to attend. All of the eleven 1958 trainees passed the examination of the Royal Society of Health held in 1959.

It is a pleasure to acknowledge with thanks the Department's indebtedness to the Director and staff of the Wellington Technical College for their cooperation and assistance in running this course.

**Refresher Course for Health Inspectors**—Twenty-four health inspectors attended this year's course at Massey College which was held from 16 to 27 November 1959. Those attending included 11 departmental and 13 local body inspectors. The course continued to provide a practical means of keeping health inspectors abreast of new knowledge and developments in today's very wide field of public health.

**Trainingof Bacteriologists**—Weekly lectures and a course of practical work for the assistant bacteriologists at the Institute have been continued.

Further details of the Institute's educational activities are given in the succeeding section.

## Epidemiology

The activities of the epidemiological section for the year 1959 can be listed under the following headings:

1. The investigation of hospital cross infection and the means of its control.
2. Teaching activities.
3. Publications.

### 1. Hospital Cross Infection Investigation

During the year the following hospitals have been visited and reported upon: Wanganui, Raetihi, Waiouru, Palmerston North, Hastings, Napier. In every case, medical superintendents and their staffs were extremely cooperative and, from the experience gained in each hospital, a fund of knowledge is being built up to provide material for a booklet upon the control of cross infection in hospitals. This booklet is at present in process of preparation.

Although there is generally a greater awareness of the danger of cross infection, there is still a long way to go in ensuring that all staff adopt a safe technique for themselves as well as for the patients. In the rush of the bathing sessions of a busy nursery, for example – especially where a communal sink is used – there occur those breaches of aseptic technique which promote baby-to-baby spread of infection. Not only this but, if accepted techniques are analysed, here and there occur obvious and previously unperceived routes of cross infection. For both these reasons, the more the mother herself handles the care of her baby as in "rooming-in" the more we may expect a drop in neonatal sepsis. Use has been made of the proximity of St. Helen's Hospital to conduct various investigations in technique and the excellent facilities extended to the National Health Institute by Mr J. North, Medical Superintendent in Chief, Wellington Hospital Board, have enabled us to continue the investigation of materials, cleaning apparatus, and terminal disinfection techniques in Wellington Public Hospital.

*Testing of Materials and Equipment*—The fact that for years material such as bedding, equipment used for cleaning, chemicals for disinfection, have been employed either without laboratory checks or else those not relevant to the circumstances in which the materials are used, has necessitated continual testing. Taken in conjunction with the investigations in hospital cross infection, it means that the National Health Institute has furnished a needed hospital advisory service which, in view of the expanding hospital world, must continue to grow.

*Special Surveys*—The National Health Institute has furnished facilities for a special hospital and home survey undertaken by the staff of a district office into the question of neonatal sepsis, its origin and spread. The evidence provided by this survey should give us a picture of what is happening as regards staphylococcal sepsis in the community.

2. *Teaching*

On no occasions has a visit been undertaken to a hospital without the medical superintendent requesting the epidemiologist to address the staff on the question of hospital cross infection. Added to this, there have been numerous independent requests from hospitals and nurses' organisations. At the request of Dr Finlay, Medical Superintendent, St. Helen's Hospital, a lecture is delivered to St. Helen's Hospital trainees and this is attended by pupil nurses from other institutions. A course of lectures in epidemiology is given to nurses at the Post-graduate School. Health inspector training has continued with a course of lectures on communicable diseases delivered at the Technical College. The health inspectors refresher course is now firmly established as an annual event, with its curriculum on a solid foundation of experience. The holding of an additional course at Lincoln Agricultural College in 1960 has been made necessary by the numbers attending.

3. *Publications*

The Epidemiologist, National Health Institute, has collaborated with the Director, Division of Maternal Welfare, in the revision of booklets H. Mt. 18 and H. Mt. 20. Papers are in preparation upon handwashing, the vacuum polisher, and the nasal carriage of staphylococci by a class of nurses followed through their training.

**Occupational Health Unit**

Occupational health was one of the main features in the original concept of the National Health Institute. The need for an organisation in which specialists in the various aspects of occupational health could act as a team to conduct research and teaching and to provide services in this field has long been recognised. The first steps in developing this essential unit were taken this year with the appointment of Dr F. H. King to take charge of it and the planning of its basic requirements of laboratory and other accommodation.

The functions of the unit will be:

1. To devise methods for the protection and improvement of workers' health in collaboration with other agencies active in this field.
2. To organise courses of instruction.
3. To provide a diagnostic reference centre appropriate to industrial and occupational hazards.
4. To provide the testing necessary for departmental approval of protective equipment.
5. To conduct occupational health surveys and investigations.
6. To assist and advise the Division of Public Hygiene and medical officers of health in matters relating to occupational health.
7. To disseminate data and information.

Dr King has been engaged during the year in planning the development of the unit and in providing specialist advice to the Division of Public Hygiene, medical officers of health, other Departments, and

industry on problems of occupational health. Until the new laboratories are ready, laboratory services are limited to those which can be provided by the existing bacteriological laboratories. The organic phosphorous compounds which are now widely used as insecticides by orchardists and others are very poisonous to man and are an occupational hazard. The early effects of poisoning before symptoms develop can be detected by an estimation of the enzyme choline esterase in the blood. The provision of facilities for this test is discussed under Research. A similar diagnostic service to detect the earliest stage of poisoning by the chlorinated hydrocarbons is being set up.

The establishment of this unit is a most important step and is fully in accord with the recently published report of a joint ILO-WHO Committee on Occupational Health.

**Laboratories**

As forecast in last year's annual report, the number of specimens received decreased slightly. This decrease was due to a fall in the number of staphylococcal cultures received for typing due to the decentralisation of phage typing. Further, this slight decrease in specimens conceals a real increase in work done. The work load which should have been shed by this decentralisation was about 6,000–7,000 specimens, whereas the actual reduction in specimens received by this section of the laboratories was only 1,195, and the task of supplying phage preparations to other laboratories has proved difficult and time consuming. During the year 12,794 specimens were received, and the number from each health district for the years 1957–59 is shown below. Forty specimens were examined for other Departments, 127 for the Meat Industry Research Institute, 14 specimens were received from a United States naval vessel, and the remaining specimens originated within the Institute itself.

| Year | Whangarei | Auckland and Takapuna | Hamilton | Rotorua | Gisborne and Napier | New Plymouth | Palmerston North | Wellington | Nelson | Greymouth | Christchurch | Timaru | Dunedin | Invercargill | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1957 .. | 102 | 2,808 | 82 | 423 | 506 | 157 | 382 | 2,986 | 122 | 21 | 233 | 50 | 378 | 8 | 8,258 |
| 1958 .. | 204 | 3,377 | 186 | 421 | 403 | 136 | 167 | 4,903 | 137 | 31 | 2,465 | 87 | 513 | 64 | 13,094 |
| 1959 .. | 222 | 1,375 | 147 | 625 | 424 | 173 | 344 | 7,805 | 120 | 39 | 885 | 59 | 78 | 2 | 12,288 |

**General Bacteriology**

The general bacteriology section examined 2,656 specimens during the year.

The National Health Institute is the national Salmonella Reference Laboratory. In 1959, 476 Salmonella cultures were referred for identification. 13 different types of these food poisoning organisms were identified. Again typhimurium, of which there were 175, was the most common type. Cultures of these organisms from human sources were sent to London in a continuation of the study of their phage types for comparison with those from animal sources in New Zealand.

The National Health Institute is also the national Shigella Reference Laboratory. Of these dysentery organisms, *sonnei* was the most common type and 207 were identified.

Hospital laboratories continue to make considerable use of the leptospiral diagnostic service and 1,029 sera were received during the year. At the request of the diagnostic officer, Ruakura Animal Research Station, the Institute cooperated in the study of a leptospiral disease which had been causing losses among calves. Guinea pigs were inoculated with material from calves at Ruakura and sent to the National Health Institute where Mr Josland, Chief Bacteriologist, succeeded in isolating a strain of leptospira which was identified as *Leptospira icterohaemorrhagiae*. Although previously there has been serological evidence of human infection with this type in New Zealand, this was the first occasion on which the organism itself has been isolated and identified from calves.

### Vi Phage Typing

The Institute, which is the Enteric Vi phage typing laboratory for New Zealand, received 45 cultures of typhoid bacillus for typing. As in previous years, Ela was the most frequent infecting type; six other types (A, B1, C1, D1, E1, and 38) were also identified.

### Virus Laboratories

*Serological Tests*—The complement fixation tests carried out are shown below.

| Complement Fixation Tests for | | | | | | |
|---|---|---|---|---|---|---|
| Influenza | Adenovirus | Mumps | Psittacosis | Q Fever | LCM | Toxoplasma |
| 54 | 483 | 17 | 427 | 3 | 8 | 849 |

In addition, neutralisation tests, mainly for the presence of antibody to poliomyelitis virus, were performed on 50 sera. The cytoplasm modifying or dye test for toxoplasmosis was done on 849 sera. Material from one person arriving by air from India was examined (with negative results) for smallpox virus. An outbreak of disease among workers and the psittacine birds in their care at the zoological gardens was investigated and identified as psittacosis. Serological evidence of infection in a number of the birds was discovered.

*Virus Isolation*—Two hundred and twelve specimens, mainly material from human sources, were examined. Twelve viruses were isolated. These were three strains of influenza virus A; three strains of *Herpes febrilis* virus; three strains of adenovirus, one each of type 1, 2, and 3; two strains of poliovirus, one type I and one type II, and a Coxsackie virus type A. Also a virus was recovered from young mice of the animal colony suffering from a paralytic disease. This is an encephalitis virus presumably related to Theiler's virus and is still being studied. During experiments on the latency of adenovirus in rabbit spleen a continuous culture cell line of an epithelial-like cell has been developed from cell cultures of rabbit spleen. This cell line has been added to those maintained in the Institute.

A widespread outbreak of German measles occurred in the winter months of 1959. Because of some unusual clinical features, the Institute was asked to examine material from a number of cases. Enough negative evidence was adduced to make it likely that the disease was, in fact, true German measles and not one of the several similar infectious diseases caused by more easily identified viruses.

**Hospital Infection and Phage Typing Laboratory**

As was decided in 1958, the phage typing of staphylococcal cultures has been partly decentralised. In February a medical student was instructed in phage typing techniques for the microbiology department of the Otago Medical School, and in March a two-week course in phage typing, attended by bacteriologists from Auckland, Wellington, and Christchurch, was held. Later a bacteriologist from Palmerston North was also instructed in these techniques. Each laboratory worker attending for instruction was given a complete set of typing phages and of test staphylococcal cultures to take back to his own laboratory and these sets have been replenished as necessary since then. From April these laboratories have been undertaking their own phage typing, using the phage preparations supplied by the National Health Institute. Maintaining the supply of these phage preparations has been an onerous task and a qualified bacteriologist has been employed full time on this duty.

In the latter months of the year this section was kept very busy by the laboratory work for the special survey of staphylococcal carriage and infection in mothers and babies in hospital and home described under Epidemiology.

During the year 8,386 specimens were received. 5,708 cultures were typed with the results shown below. Second cultures from the same patient and other duplicated specimens, 918 in all, have been excluded from this analysis of the typing results. The miscellaneous category includes staphylococci isolated from radiant-heat lamps, taps, hand basins, baths, and foodstuffs.

*Distribution of Staphylococcal Phage Types*

| Source | Phage Groups | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | I | II | III | 80/81 | Untypable | Unclassifiable | IV | Total |
| Staff nasal swabs .. | 138 | 50 | 121 | 173 | 69 | 37 | 0 | 588 |
| | 23% | 8·5% | 21% | 29% | 12% | 6·3% | .. | |
| Staff infections .. .. | 17 | 24 | 21 | 183 | 11 | 9 | 1 | 266 |
| | 6·4% | 9·0% | 7·9% | 69% | 4·1% | 3·4% | 0·4% | |
| Patients' infections .. | 72 | 52 | 107 | 336 | 68 | 18 | 1 | 654 |
| | 11% | 8·0% | 16% | 51% | 10% | 2·8% | 0·2% | |
| Patients' nasal swabs .. | 176 | 63 | 160 | 94 | 117 | 40 | 3 | 653 |
| | 27% | 9·6% | 24% | 14% | 18% | 6·1% | 0·5% | |
| Babies' nasal swabs .. | 257 | 25 | 142 | 163 | 108 | 23 | 1 | 719 |
| | 36% | 3·5% | 20% | 23% | 15% | 3·2% | 0·1% | |
| Babies' umbilical swabs .. | 192 | 17 | 109 | 133 | 69 | 6 | 1 | 527 |
| | 36% | 3·2% | 21% | 25% | 13% | 1·1% | 0·2% | |
| Babies' infections .. .. | 58 | 31 | 48 | 165 | 25 | 7 | 0 | 334 |
| | 17·0% | 9·3% | 14% | 49% | 7·5% | 2·1% | .. | |
| PM swabs .. .. | 9 | 5 | 10 | 55 | 6 | 4 | 0 | 89 |
| | 10% | 5·6% | 11% | 62% | 6·7% | 4·5% | .. | |
| Dust and air .. .. | 179 | 18 | 133 | 303 | 130 | 14 | 0 | 777 |
| | 23% | 2·3% | 17% | 39% | 17% | 1·8% | .. | |
| Miscellaneous .. .. | 14 | 3 | 19 | 15 | 16 | 8 | 4 | 79 |
| | 18% | 3·8% | 24% | 19% | 20% | 10% | 5·1% | |
| Not stated .. .. | 18 | 12 | 24 | 27 | 13 | 8 | 2 | 104 |
| | 17% | 12% | 23% | 26% | 12% | 7·7% | 1·9% | |

**Research**

Research undertaken this year has been stimulated mainly by the need for a simpler blood test for choline esterase. A quicker and less cumbersome way of making this test on workers handling organic phosphorus compounds would be very valuable for protecting the health of these workers. There is an inherent difficulty, however, in that small volumes of blood will produce only small amounts of chemical change, that small chemical changes are best detected by sensitive colour reactions, and that such colour reactions in blood are masked by the blood's own intense colour.

1. *Field Test for Choline Esterase*

Much work has been undertaken with the object of developing an improved simple test for use by public health nurses and others. A test was devised which obviated many of the disadvantages of those at present in use but proved unattractive to those who were to use it. Emphasis has now shifted to simplifying methods for sending blood to the laboratory. At present, blood samples must be separated into plasma and red cells and then dispatched in a vacuum flask on ice.

2. *Laboratory Test for Choline Esterase*

Work has continued on improving the present standard laboratory test. The reagents used are not stable and have, therefore, to be made up fresh for each set of tests, which makes the method laborious and slow. A large number of chemicals have been tried and a few more-stable possible substitutes for the reagents have been found. These have now to be tested.

3. *Routine Choline Esterase Tests*

Monthly tests have continued on up to eight workers in the factory handling the organic phosphorus compound diazinon. After six months' continuous operation a slight downward trend of plasma choline esterase in the workers became apparent, but there seems little risk to the workers provided there is no change in the present methods and care.

Nine other tests on samples submitted for various reasons have been made at various times. Two of these samples were post-mortem bloods from fatal cases attributed to ingestion of TEPP and malathion respectively. Each sample lacked choline esterase activity and possessed anti-choline esterase activity demonstrable *in vitro*. A third sample was from a case showing delayed recovery after use of succinylcholine as a muscle relaxant in anaesthesia; this had an unusually low plasma choline esterase value.

4. *Selective Medium for Coagulase Positive Staphylococci*

A solid culture medium which is selective for coagulase positive staphylococci which are responsible for much of hospital cross infection has been developed. The use of this culture medium greatly facilitated the laboratory work involved in the large survey of staphylococcal infection in mothers and babies conducted in the latter months of the year.

**Vaccines**

46,100 doses of smallpox vaccine were issued.

## 2. DOMINION X-RAY AND RADIUM LABORATORY

### Introduction

The Radioactive Substances Act 1949 made provision for the safe use of radiation sources in New Zealand. The Radiological Advisory Council, established under the Act, has formulated two sets of regulations:

(a) Transport of Radioactive Substances 1951.
(b) Radiation Protection Regulations 1951 (amended and reprinted in 1954).

In 1950 the Department of Health established the Dominion X-ray and Radium Laboratory to administer the Act and the regulations, and to provide suitable technical and advisory facilities in order that the purpose of the Act, "the protecting of the health of persons likely to be exposed to harmful radiation", may be achieved.

Each radiation source in New Zealand is under the control of a licensee who is responsible for its safe use. The Laboratory provides for his assistance a free measuring and advisory service. In addition (but limited at present by the staffing situation), development work or projects are undertaken to extend the usefulness or effectiveness of the services provided, or to assess the relative hazard to the public of new or increasingly used radiation fields.

A brief review of the work carried out during 1959 is given below:

### Field Services

The success of any national radiation service will largely depend upon the willing cooperation of the radiation workers and their continuing interest in protection. It is considered that there is no effective substitute for personal visits to all places where radiation sources are used and a considerable part of the working time of five physicists is taken up with such visits, with the issuing of the resulting reports and recommendations, and with answering correspondence from the licensees on questions of dosage or protection.

The trips are so arranged that radiation therapy plants and the 20 clinical dosemeters associated with them are calibrated biannually; the users of unsealed radioactive substances, main hospital diagnostic X-ray departments, radiologists in private practice, and all fluoroscopes are visited annually; the remaining groups of other medical diagnostic centres, dental, chiropractic, shoe fitting, veterinary practices, and industrial, research, and educational institutions are visited at least once in any three years. New users are visited as soon as opportunity allows.

In five hospital radiotherapy departments biannual dosimetric calibrations and investigations are undertaken in cooperation with hospital physicists. For the X-ray therapy plants at smaller centres and all dermatological practices, together totalling two-thirds of the Dominion's therapy plants, the Laboratory provides the full physical service.

During 1959, 397 diagnostic X-ray units were visited, plant dosage measurements, checks on protective materials and accessories, were undertaken and the practitioners advised on radiation protection problems. Frequently advice during visits is supplemented by later tests with protection film surveys. The measurement of fluorescent screen brightness was made a particular feature of several visits to diagnostic X-ray centres.

In addition to the routine visits to users of radioactive substances three special trips were made. The work involved an unsuccessful search for a small cobalt-60 source, the observation of the possibility of public health hazard arising from the use of a large quantity of radioactive phosphorus in an experiment to determine sewage dispersal, and the checking of the shielding provided for a large gamma-irradiation unit.

**Laboratory Services**

(a) *Dosage Monitoring*

Most radiation workers regularly use the postal radiation test film service. The particularly low occupation exposures being received in this country made it possible to safely extend the minimum wearing period to two weeks, with a consequent saving in labour and costs. In spite of this reduction, more than 15,000 films were reported on during the year and there is a general continuation of the reduction in the average exposure received which has been a feature since the service was started.

The latest recommendation of the International Commission on Radiological Protection reduced by two-thirds the maximum permissible annual exposure of radiation workers. It has been estimated from the films returned during the year that workers with medium quality X-rays (radiographers, dentists, etc.) have an average annual exposure of only 4 per cent of the new level. The corresponding figure for persons using harder quality X-rays or Y-rays (e.g., in radiotherapy, industrial radiography, etc.) is 13 per cent.

(b) *Supply of Therapeutic Applicators*

There was a decrease this year in the demand from radiotherapists for applicators loaded with radon from the Laboratory's plant. The total activity supplied amounted to 834 millicuries at the time of use. As in previous years, most of the radon was supplied in the form of seeds, although there were several requests for needles and ointment.

The use made of the strontium-90 superficial applicators was similar to that in the previous year, totalling 239 days hire. It is considered that this demand well justifies the provision of the service. In collaboration with a hospital radiotherapy department an adaptor was developed to improve the use of one of the sources for ophthalmic applications.

(c) *Administrative Control of Radiation Sources*

Knowledge of the X-ray plants being used in the country is obtained through the requirement that they be registered and that they may be supplied only to persons holding suitable licences. In a similar way the establishment of the Laboratory as the sole importing authority ensures that radioactive isotopes are only obtained by responsible persons knowledgeable in the potential hazard involved in their use. The numbers of X-ray plants in use, of persons licensed, and of orders placed for radioactive isotopes increased by 5 per cent, 6 per cent, and 23 per cent respectively over the figures for 1958. This steady increase, which may be expected to continue, places an extra demand not only on the administrative section but on all the services provided by the Laboratory. One example of control working to the benefit of the public was the banning from use in New Zealand of an X-ray plant

which formed one exhibit of a scientific exhibition visiting this country in the course of a world tour. The equipment was antiquated and unshielded and members of the public were to be encouraged to operate it. Substantial unnecessary exposure, particularly to children, could have resulted. The manager of the exhibition was most cooperative, and it is understood that the equipment was permanently withdrawn from use.

(d) *Radiation Measurements*

In addition to providing national standards for the calibration of X-radiation and radioactive sources, measurements are undertaken to test the effectiveness of new protective materials and the radioactive content of any suspect articles available to the public.

During the year three hospital dosemeters and a micro-chamber measuring set were completely calibrated against the New Zealand X-ray standard chamber. Measurements of the radiation output of a number of gamma- and beta-ray applicators were made and a simulated source was calibrated to allow it to be used in a hospital for standardising radioiodine doses. Normally the effectiveness of leaded gloves and aprons is checked in the field, but a number of protective articles were sent to the Laboratory for testing.

A considerable number of luminous items suspected by their owners of being radio-active were delivered with a request that their potential health hazard be reported upon.

(e) *Radioactive Fall-out*

With the cessation of nuclear-weapon testing towards the end of 1958, the possibility of local or tropospheric fall-out presenting a health hazard in New Zealand or its Territories was eliminated, since this type of fall-out is complete within a few weeks of the nuclear explosion. The first part of 1959 was devoted to completing the analyses of samples of drinking water and foodstuffs supplied from the Island Territories and to making a radiochemical analysis of the rainwater collected locally at the end of 1958. The low level of radioactivity found in the Island Territories' material indicated negligible fall-out and the collection of samples was discontinued as it has been shown that this region will receive less of the world-wide stratospheric fall-out than New Zealand. A transient increase in the rainwater activity which occurred late in 1958 was shown to be due to recently produced short-lived radioisotopes which in the quantities present constituted no health hazard. In July the rainwater collecting stations established by the Department of Scientific and Industrial Research as part of the programme for the International Geophysical Year were taken over by the Laboratory. This fall-out network consists of eight sites covering New Zealand, Fiji, and Campbell Island. For some 18 months prior to this transfer the Laboratory conducted a pilot survey on the local effect of siting, using six collecting stations within 20 miles of Christchurch. Analysis of the results obtained showed that while significant differences occurred in the monthly collections, the variation in the integrated values over any reasonable length of time was sufficiently small to ensure that the present network would give a reasonable picture of the accumulation of fall-out in our part of the world.

Monthly collections from the stations are processed and the total beta-activity determined. At six-monthly intervals the accumulated radioactive residue for each site will be bulked and analysed for strontium-90 content. These values, together with soil analyses, will give the pattern of the deposition of this potentially hazardous material.

Continuous air monitoring is carried out at Christchurch and would provide a prompt warning should the radioactivity increase markedly. A level for "threshold of interest" has been set at 1 per cent of the recommended safe limit for continuous breathing by the population of a radioactive-contaminated atmosphere. On no occasion has this level been reached.

In the latter part of the year arrangements were made for the collection of representative samples of milk from seven widely separated centres. In New Zealand milk is the principle source of dietry calcium and is therefore the best indicator of the likely average uptake of strontium-90. It must be realised that persons using a diet containing little milk or dairy produce may accumulate radioactive loads in excess of this average. Initial analyses were made to check accuracy and reproducibility, using standard overseas methods. Unfortunately the measuring equipment available required that unusually large samples had to be dealt with and the consequent processing and measuring time amounted to five weeks per sample. Two newly developed ion-exchange procedures were tried, but the accuracy achieved was considered to be inadequate. A less time-consuming procedure was eventually developed and the output of results in the coming year is expected to be much improved. Results for two of the milk stations were determined by the end of the year. The values obtained are in accord with those for the northern hemisphere when allowance is made for the fact that we have less than one-third as much strontium-90 fall-out.

As soon as this project is completed a statement on the results will be issued.

(f) *Advisory Services*

Apart from the normal advisory service to licensees, which usually concerns specific topics related to the safe use of radiation sources, there is a considerable demand for information of a wider nature.

A number of plans for new or modified buildings have been sent to the Laboratory for assessment of the adequacy of the barrier protection provided, and for consideration of the exposures likely to be received not only by the radiation workers but also by any other persons. Five major designs involving supervoltage equipment, large quantities of radioisotopes, or of radium, were studied. In some cases the negotiations ranged over many weeks. About a dozen plans involving smaller radiation installations were reported upon.

Several man-weeks were spent in preparing reports or recommendations to other Departments on such matters as the radiological aspects of civil defence, codes of practice for the armed services, the hazards arising when radioactive substances are involved in major fires, and the use of radiation sources in the universities and secondary schools.

An even greater demand was made by international organisations requesting reports on special subjects, the collection of data from New Zealand, or the consideration of radiation protection codes proposed for international adoption. (The organisations involved were: IAEA, ISO, ILO, UNSCEAR, ICRU/P.)

(g) *Technical Services*

The electronics and mechanical workshop section provides for the maintenance or improvement of all the equipment and instruments used, and constructs new apparatus for projects. A few of the non-routine jobs completed during the year are, conversion of most of the portable radiation measuring instruments to operate from rechargeable miniature batteries or transistorised power supplies, production of new fall-out collection apparatus for the remote stations to allow economical concentration of the samples in the field, a new vacuum gauge for the radon extraction plant, new heavily protected drawers for the storage of radioactive material, and a variety of tissue equivalent phantom materials. Worthy of special mention is the exacting work carried out to provide the considerable quantity of special equipment and ancilliary measurements required for the World Health Organisation standard X-ray chamber intercomparison.

There were five requests from hospitals (one in Samoa) for the repair and overhaul of radiation measuring instruments. One instrument, a scintillation dosemeter, required major modification to its design and construction.

**Special Projects**

(a) *Genetic Exposure*

The survey of gonadal exposure received by children during radiography in New Zealand was completed, and a paper published in the *New Zealand Dental Journal.* ("The Gonadal Exposure Received by Children During Bitewing Radiography", by B.D.P. Williamson and A. B. Williams, *N.Z. Dent. J.*, Vol. 55, No. 262, Oct 1959, p. 180.) It was found that the average gonadal dose was 0·85 milli-roentgens per pair of bitewing exposures. It was deduced that where dentists use the more efficient radiographic techniques, the use of a lead rubber apron to protect the patient was no longer necessary.

(b) *Fluoroscopic Screens*

A simple method of measuring fluorescent screen brightness on diagnostic X-ray machines has been developed and was used on two diagnostic field tours. In two cases the screens were found to be so deficient as to require replacement. From these early tests it appears generally that the brightness of a screen is dependent upon its age, and it is hoped that when more results are available it will be possible to recommend a procedure for protecting the screens from premature deterioration and a suitable schedule for their replacement.

(c) *Luminous Indicators*

A survey was begun to investigate the radiation hazards involved in the use of radioactive luminous paint by watchmakers. Preliminary results suggest that the low activity of the paint and its relatively infrequent use make it unlikely that any watchmaker would receive more than a very small fraction of the maximum permissible exposure. As with most other projects, shortage of staff prevented continuous work on this survey. A pamphlet describing the hazards and the ways of overcoming them is being prepared.

During this survey field tests were made of the radioactive content of some watches and clocks. Several recently imported wrist watches were found to have a radioactive content greatly in excess of average. In no case was the hazard to the wearer sufficient to warrant restriction on the distribution of the watches. An article was prepared for the departmental journal, *Health,* on this subject.

(d) *Occupational Exposure*

A circular which discussed the radiation hazards associated with the holding of patients during X-ray exposures was prepared and issued to all radiologists. Recommendations were made in an appendix for measures which would reduce or avoid these hazards.

(e) *National X-ray Standards*

During 1959 the Laboratory received, on loan, the primary X-ray standard intercomparison unit, built by the United States National Bureau of Standards under an agreement with the International Committee on Radiological Units and the World Health Organisation. Following earlier Canadian intercomparisons, this was the unit's first overseas transfer. Preparations preceding this three months' measurement project included: the checking of Laboratory standard cells as voltage references, the calibration of voltage-measuring instruments, a precise intercomparison among N.B.S. and Laboratory standard condensers, the assembly of jigs and couplings to allow quick interchanges between instruments, and the construction of a special case so that transfer standards could be used with the Christchurch Hospital cobalt teletherapy plant. The Laboratory X-ray primary standard chamber and some secondary standard instruments were intercompared with the two N.B.S. transfer chambers included in the unit over the range of radiation qualities from 3 mms aluminium H.V.L. to 4·5 mms copper H.V.L. High-energy chambers which are used for dose measurements on New Zealand supervoltage therapy plants and which had been calibrated in 1956 at the N.B.S. and other overseas centres by the Director, were recalibrated against the transfer chambers for cobalt-60 radiation. General agreement to better than 2 per cent and overall agreement to better than 3 per cent was indicated. The project was valuable, not only for the primary standards intercomparison but also because it initiated investigations of a number of dosimetric problems. These problems, which were evident at harder conventional radiation qualities, 2–4·5 mms copper H.V.L., will warrant further work, particularly since few examples of primary standards data, in this region, are available overseas. The results of this project will be integrated later with the dosimetry used in New Zealand.

(f) *Radon-in-Breath*

A long term Laboratory project has been the development of a microradon determination apparatus to allow the detection of radium loads in the body at levels which are small fractions of the maximum permissible amount. This programme has been reviewed; it was decided to investigate a new approach using more recently developed detectors. Part of the time of one field physicist was made available and experimental apparatus was constructed. The initial tests showed promise of adequate sensitivity and reproducibility and modern components have been ordered from overseas for the pilot plant.

The equipment will be used to monitor the breath of those persons in New Zealand who work with hazardous amounts of radioactive luminous paint or with high-grade uranium ores.

(g) *Reactor Hazards Evaluation*

Early in the year the New Zealand Atomic Energy Committee decided that consideration of the relative hazards of a number of sites in the Wellington Province should be discontinued, and that the investigation be reduced to evaluating the safety requirements for the establishment of a proposed reactor at Gracefield. The proximity of this site to both a large centre of population and to a major earthquake fault posed some unusual difficulties.

The Radiological Advisory Council has advised the Department of Health on the levels of contamination considered allowable and that it should be ensured, as far as is foreseeable, that no member of the public should receive an emergency exposure in excess of 10 rads (this is equivalent to about 100 times the annual natural background exposure).

The Laboratory has considered a series of hazard assessment reports prepared by the Department of Scientific and Industrial Research, and has set down requirements which should be met and indicated a number of points which need further investigation. This exchange of views is still in progress and at the end of the year it appeared that the installation of extra safety facilities would provide adequate safety under normal operation but that further consideration must be given to the major problem of the necessary containment of the vast quantities of radioactive materials which may be released in the case of an accident, especially if this occurs as the result of a major earthquake.

(h) *Developments*

Preliminary planning and some work was done towards several projects which will receive special attention next year. Two of these, which involve the therapeutic application of radiation, are:

(i) A simplified system for dosage estimation in the gynaecological use of radium and

(ii) An investigation of suitable phantom materials and their use in treatment planning for markedly heterogeneous regions of the body.

**Statistics**

The following tables have been prepared and are available from the Laboratory (P.O. Box 1456, Christchurch, New Zealand):

1. *The Number of X-ray Plants Registered on 31 December 1959:* (subdivided into categories depending on the purpose for which they are used and whether the ownership is public or private).
2. *The Number of Persons Holding Licences to Use Irradiating Apparatus or Radioactive Substances on 31 December 1959:* (with subdivisions according to the purpose for which the irradiating source may be used).

3. *Detailed Analysis of Radioactive Substances Ordered During 1959:* (showing the number of orders placed, and the activity of each substance imported for hospitals and medical research laboratories, for various Government Departments, for universities and industry and services. Also shown are the costs, excluding transport).
4. *Analysis of the Exposures Received by the Radiation Test Films Evaluated During the Last Eight Years.*

## 3. CHEMICAL INSPECTORATE

### General

Mr A. C. Way, the first Chemical Inspector to be appointed under air pollution provisions of the 1956 Health Act, resigned in April to return to England. His position was taken by Mr R. T. Douglas, A.R.T.C., A.M.I.CHEM.E., A.M.I.N.Z.E. In August an additional appointment was made of Mr C. Denmead, B.SC., A.N.Z.I.C. as Chemical Inspector for Auckland and the Northern Health Districts.

Weather conditions in 1959 were probably mainly responsible for increasing public awareness of the growth of air pollution in New Zealand. In contrast to 1958 the "fumes" attacks in Auckland were severe during March and April. Minor smog conditions were also relatively marked during the winter months in Christchurch. The publicity given to these incidents has probably had a sensitising effect and there have been numerous complaints about dust and odours which in some cases have existed for a long time without attracting comment. These incidents have at least dispelled any lingering complacancy about the course of air pollution in New Zealand if allowed to grow unchecked. It is possible, however, to report significant reduction of polluting matter discharged from some scheduled industries.

In a period of rapid urbanisation and industrial development New Zealand is fortunate in being able to draw on so much overseas experience with air pollution problems. The chemical inspectors would in particular express their appreciation of the assistance given by the British Alkali Inspectorate and the Department of Health of Scotland, also of the continuing interest in our problems shown by Mr W. A. Damon and many other overseas authorities on air pollution. Nevertheless, the combination of meteorological, geographical, and social factors which engender air pollution are always unique for each country and city within it. It is, therefore, most satisfactory to report that both in Auckland and Christchurch active local air pollution advisory committees have been set up and are encouraging the carrying through of reasonably intensive surveys of local conditions. Such surveys continued over a period of years are the only sound basis for effective and economic control measures and provide the basis for planned development of industry with least loss of amenities to the public. It is probably not too soon to consider similar surveys, though on a smaller scale, for a few other centres of rapid population growth.

Legislative control of air pollution has been shown overseas to be essential. Nevertheless a merely punitive approach to the problem of air pollution cannot in the long run effectively deal with the many difficult technical and economic problems which have to be solved. The Chemical Inspectors are therefore making a special effort to obtain the cooperation of industry. The appointment during the year by three

major industries of technical committees to cooperate with the chemical inspectors is regarded as most encouraging.

In 1958 the Schedules to the British Alkali and Works Order, on which the New Zealand legislation is largely based, were substantially extended to cover 11 additional processes. These changes have been examined by the chemical inspectors in relation to the existing and developing pattern of New Zealand industry. Recommendations have been prepared for changes in the Fourth and Fifth Schedules to the Health Act where these have seemed appropriate and given effect to in Chemical Works Order 1960, S.R. 1960/43. In particular the inclusion under the regulations of such troublesome industries as the reduction of iron and aluminium from their ores would seem to be particularly desirable in view of their likely early establishment in this country. Some other industries, such as the rendering of meat wastes, are more significant in this country than overseas and should be included.

Consideration has also been given during the year to the problem of industrial smoke nuisance. The Health Act has provision for bylaws or regulations governing the discharge of smoke and one local authority has such a bylaw, while others are contemplating action. Dark smoke is certainly the most obvious form of air pollution and its control is a necessity if popular support is to be obtained for the control of more insidious, but less obvious sources of pollution. Regulations controlling smoke can aim at being constructive rather than merely limiting, as higher combustion efficiency and reduction in pollution are entirely compatible objectives. It is a common misconception however, that coal cannot be burned without making smoke. In point of fact about half the coal won in New Zealand can be particularly readily fired without producing smoke and there is no coal that cannot be burned smokelessly with the right equipment. There are, of course, still many older coal-fired boilers and furnaces which cannot measure up to today's standards, but this position is being slowly rectified. With changing patterns in fuel utilisation it may well be that the fumes from oil fires and internal combustion engines will shortly be of more significance than coal combustion, while currently wood fuel is probably the worst offender. The chemical inspectors have been considering what control measures appear to be desirable and have submitted their proposals to leading authorities overseas and a number of experienced engineers in this country.

**Auckland Fumes Problem**

With the appointment of Mr Denmead it was possible for the Department to assume greater responsibility for the coordination of efforts to investigate and ultimately to control the fumes incidents in Auckland. The need for further investigations has been criticised, but despite the work done in the past there is much still uncertain about these attacks. That the blackening of paint is the result of hydrogen sulphide generated in the polluted tidal muds is certain. Similar incidents on a smaller scale have been reported from many parts of the country. The main sources of industrial atmospheric pollutants are also known, though the significance of the contribution of each source has yet to be established. This in turn requires a knowledge of the local meteorological factors which create the problem. Special instruments are being obtained and techniques explored to obtain this basic information as large sums of private and public money will need to be spent to bring the situation

fully under control. Auckland must face the fact that their city has, and will continue to have air pollution problems. The cleaning up of certain tidal muds will undoubtedly help the situation, but will not alter the meteorological conditions which under certain circumstances quite obviously do not provide adequate ventilation for this rapidly growing city.

The chemical inspectors are therefore cooperating with other officers of the Health Department, the DSIR, Ministry of Works, Meteorological Office, and local authorities in an effort to establish the facts of the situation quantitatively rather than merely qualitatively as in the past. The immediate objective must be sufficiently detailed information for the realistic assessment of engineering projects to cover or remove the contaminated muds. Muds have been sampled for organic content over a wide area and instruments are being brought into use to identify the areas of most active gas production. Present indications are that significant sources of gases will be found at points outside the upper Mangere inlet, though this is undoubtedly the primary source of the attacks. The contribution of industrial pollutants has also to be assessed and to this end a field laboratory has been established in the Mount Wellington area where air sampling and meteorological observations will be taken. These will be supported by six other observation sites in the fumes area, and ultimately by 30 observation points over the whole city.

A vital factor to be established is the probable rate of decline of activity in the muds when gross pollution ceases late in 1960.

The chemical inspectors have a special responsibility for the scheduled chemical works. In this area the fertiliser works are the most important. At the end of the year the three works were all consistently operating within the discharges allowed in the 1957 regulations. Unfortunately the maximum demand for fertiliser develops in the "fumes" season. The significance of the total quantity of fumes discharged under conditions of minimum ventilation, even when operating within the regulations, has yet to be determined. Special instruments for this purpose have been ordered from overseas. Most of the other identified sources of industrial air pollution were not registerable during this year as chemical works but industry as a whole is recognising that it can no longer claim uncontrolled access to the atmosphere for waste disposal. Some industries have already spent a great more on trying to control their own contribution to the problem than is commonly known. That there is some secrecy is understandable where a policy of good neighbourliness may be misinterpreted as an admission of complicity. It is also understandable that where the amount of pollutant discharged is relatively small there should be a desire for assurance that control measures which can be both expensive and inconvenient will make a worth-while contribution. Under the circumstances in Auckland, however, the citizens have the right to expect, and the chemical inspectors do expect, that every factory, however small, should do all it can within the limits of practicability to minimise objectionable discharges. The chemical inspectors are available to give free advice in this respect to all factories, scheduled or not.

Short of shutting down industry altogether, however, atmospheric pollution cannot be entirely eliminated. There must be a compromise between what may be desirable and what is, in fact, practicable. It is the function of the chemical inspectors as the representatives of the

public to lay down the level at which this compromise should be made where technical problems are involved. Industry in Auckland nevertheless might be well advised at this stage to adopt the good public relationships policy of some American industries and make a greater effort to explain to the public the problems they have and how they are trying to solve them.

The Auckland Air Pollution Research Committee was reconstituted on a basis of much wider representation during the year and recognised by the Board of Health and local authorities as the coordinating committee for local air-pollution investigations. A scheme prepared by this committee for extended and continuing monitoring of air pollution, not only in the areas affected by the current fumes attacks but throughout the Auckland district, was financially supported by the majority of local authorities which go to make up greater Auckland, and should be fully operative next year.

**Christchurch**

The Christchurch Air Pollution Advisory Committee was formed at the request of the Board of Health in February with terms of reference limited to consideration of the need for and probable cost of a scientifically conducted survey of air pollution in Christchurch. It was fortunate in having available to it the results of DSIR measurements of air pollution conducted on a very limited scale over the past five years. The committee by the end of the year had concluded that a much extended survey was necessary and had prepared a detailed report on what was needed. This is under consideration by the Government and local authorities concerned.

Meteorological factors are favourable in Christchurch for the development of smog during the winter, and if there is no change in the fuel utilisation pattern it would seem to be only a question of time before continued urban growth makes the problem of air pollution serious. Domestic chimney smoke, is however, probably the major factor in the growth of air pollution and the final solution may require to be along the lines of the "smokeless" zones now becoming common in the major cities of the British Isles. Such a development would have very major financial and social implications. At present the Health Act contains no provision for control of domestic smoke. The importance of the proposed survey which it is hoped will be largely operative by the winter of 1960 is to supply information on the speed with which some such solution must be developed.

**Works Registrations**

An amendment to the Health Act passed during the year rationalised the position with regard to annual registration of chemical works. This now requires the approval of the Health Department annually, not as hitherto only on the first establishment of a chemical works as an offensive trade.

There has been a small increase in the total number of registrations but a decline in some classes where changes in processing have rendered registration unnecessary. If proposed changes of definition are adopted there will be a substantial decline in lime works registrations next year,

but this will be more than compensated for by registrations under additional categories.

| Type of Works | North Island | South Island* | Change | Total |
|---|---|---|---|---|
| Bisulphite .. .. .. | Nil | 1 | −3 | 1 |
| Cement .. .. .. | 6 | 5 | +1 | 11 |
| Chlorine .. .. .. | 2 | 3 | +3 | 5 |
| Fertiliser .. .. .. | 7 | 4 | .. | 11 |
| Gas liquor .. .. .. | 1 | 1 | +1 | 2 |
| Lead .. .. .. | 5 | 3 | +3 | 8 |
| Lime .. .. .. | 26 | 20 | +22 | 46 |
| Petroleum .. .. .. | 3 | 2 | +2 | 5 |
| Pulp and paper .. .. | 3 | .. | +1 | 3 |
| Sulphides .. .. .. | .. | .. | −3 | .. |
| Sulphuric acid .. .. | 7 | 4 | .. | 11 |
| Tar .. .. .. | 11 | 9 | +4 | 20 |
| | 71 | 52 | +31 | 123 |

*Change does not necessarily denote establishment of a new works or the shutting down of an old works for the application of the schedules is still in the process of settling down. It is probable that there are still quite a number of factories operating without registration which should be registered.

## Registered Works

*Arsenic Works*

There are no registrations under this class but the destruction of sawdust, etc., from preservative-treated wood may in some cases justify registration. This is being investigated.

*Bisulphite Works*

The decline in registrations is due to the closing down of some tanneries and the abandonment of the process involving the reduction of chrome liquors with sulphur dioxide. The remaining registration is for the production of sulphurous acid. The quantity of sulphur burned is small but the works is located in an area where close control of all pollutants discharged is particularly desirable. The reconstruction of the plant now being undertaken is accordingly welcome.

*Cement Works*

Of the registrations, one is for production of a pozzolan from diatomaceous material, three are for the wet process and three for nodulising processes, one with Lepol grate and horizontal kiln, the other two for shaft kilns. The remaining registrations are for bulk packaging plants.

There have been complaints about four of the cement-producing plants and the other three have probably only escaped attention because of isolated location. In three of these plants improvements have been made during the year, but are either not complete or it is too early yet to assess the benefits. In most of the plants there is considerable room for improvement in the control of low-level discharges from handling of cement fuel and raw materials. There is at present no statutory limit on stack discharges but it is considered most desirable that these should be periodically checked by measurement. This has been recommended to most of the works and it may be necessary to include it as part of the "best practicable means", as defined in section 115 of the Health Act 1956. Techniques and requirements are being worked out. The works have also been asked to keep records of maintenance to bag-filter plants readily available to the inspectors.

The complete elimination of dust nuisance from a cement plant close into a residential area would seem to be practically impossible. Fortunately there is no evidence that in the quantity likely to be experienced outside a cement works the dust is any danger to health. The use of shaft kilns with nodulised feed for lime or cement with the higher volatile coals presents an even more difficult control problem which is being investigated. The small plant producing pozzolans by disintegration with a steam-operated microniser is fortunately quite isolated in location as it presents rather intractable problems in dust control.

*Chlorine Works*

The increase in registrations in this class has been due to relatively small plants for manufacture of hypochlorite. They involve no problem of air pollution except in so far as there may be a failure of equipment. One additional electrolytic chlorine plant is under construction.

*Fertiliser Works*

With the low fluorine and silica content of the Pacific rocks processed there is usually no difficulty in meeting the allowed maximum den-gas exits. All plants are using den-gas washers and most of these are in good repair. The average of the discharges measured was 0·045 grain, with only one test exceeding the allowed 0·1 grain calculated as equivalent sulphur trioxide. As the inlet gases to the washers are also of comparatively low acidity average washing efficiency is only about 75 per cent, nevertheless on the two reported occasions when there was failure of den-gas washing there were immediately complaints. The significance of the silica content is also shown in the higher escapes whenever a small amount of serpentine rock has contaminated the phosphate rock.

The large amount of dust associated with the handling of the phosphate rock and serpentine is a matter that in some works requires attention.

*Gas Liquor Works*

The only problems have been with gas liquors being discharged to sewers. In general the main pollution problems arising in gas works are concerned with the handling of coal and coke rather than gas liquor or tar. The extension of the schedule definition to cover all aspects of coal-gas production has been discussed with the industry.

*Lead Works*

Registrations include four processes for the recovery of lead from accumulator batteries, two for recovery of lead from type metal and four for the manufacture of lead oxides. All the plants recovering lead from accumulator plates have been the subject of complaint. Three of these works have major schemes for modification in hand which should at least meet the requirements of the air pollution regulations with regard to lead discharge. Unfortunately these plants are each located close to residential property and have additional problems of odour control. A certain amount of organic material is unavoidably left between the battery plates, and with the type of vertical cupola furnace used is distilled under reducing conditions. The gases have to be cooled to

recover lead fumes before discharge and leaving the stack at low temperature are not readily dispersed. Thus the processes required for destruction of the organic material, recovery of the lead, and dispersion or removal of the sulphur oxides are to some extent conflicting, leading to very expensive control measures which are, nevertheless, under the operating conditions essential. At the fourth plant it has not yet been decided if the cost of the requisite control measures will allow continued operation.

*Lime Works*

Not all the works registered under this class have yet been visited. Many of them are located in the country and are of little significance. The definition of lime works has been taken to include the crushing of agricultural lime and, indeed, where lime crushing is associated with the drying of the stone the problems of dust control are similar to those associated with cement works or lime burning. It is considered, however, that the registration of works where the stone is crushed but not dried could cease and modifications to the definition of lime works to effect this are under consideration. Two small works produce shell lime which can produce an odour nuisance if any quantity of meat is left on the shells. Another works is experimenting with a nodulised lime plant. In general, the conditions of operation of most of the lime works are only tolerable because of isolation.

*Petroleum Works*

Registrations have been increased by three small plants reprocessing used lubricating oils. Modifications have been asked for in the case of three plants where there has been evidence of a nuisance. The final result of these modifications is not yet known, but there has undoubtedly been some improvement. A major oil refinery has been proposed for New Zealand but the location had not been decided at the end of the year. In the event of such a refinery being constructed near an urban area the strictest precautions to control nuisance would have to be insisted upon in view of overseas experience.

*Pulp and Paper Works*

There have been complaints about the odours from two of the three chemical-pulp plants in operation. Fortunately these plants are located in remote areas, but as pulp production increases and the local population not directly employed in the works rises, the control of odour from these plants will be increasingly necessary. It has not so far been possible to devote any appreciable attention to these works but, as potentially a very large industry located in a relatively small country, air pollution from pulp manufacture will need close watching. Technical developments such as continuous pulp digestion may help towards simpler control measures which can be applied as the need develops.

One plant not at present registerable is the source of nuisance from pulp board processing. A difficult technical problem is involved but it should not prove insolvable.

*Sulphide Works*

Three works recovering rubber from scrap material were previously regarded as registerable for hydrogen sulphide discharge. The processes used are different and significant quantities of hydrogen sulphide have

in fact been found only in one case. Pending further investigation registration of the works under this class is therefore suspended. Two of the processes nevertheless do certainly produce highly objectionable odours which will have to be controlled. Methods of control are being investigated and it is hoped some early improvement will result.

*Sulphuric Acid (Chamber Plants)*

Forty-seven tests were made of exit gases from chamber plants, of which 15 exceeded the statutory limit. Two of these escapes were of over 4 grains, but all the remainder were under 2·6 grains. The average of all escapes was 1·86 grains.

Although these results leave a good deal to be desired they represent a considerable reduction on previous years and begin to approach the 1·42 grain average for less intensively worked plants in England. Most of the infringements were from two plants only, where, despite considerable effort, acceptable operating conditions have not yet been achieved. Further modifications to these plants in hand or contemplated should, however, rectify the position in the next year.

At one plant experiments with the conversion of an intermediate Gay Lussac tower to recirculation at high rates of relatively weak acid (40 to 45 per cent) have given greatly enhanced control of the exits and a substantial reduction of total exit acidity. The same method introduced in four other plants under less satisfactory circumstances has given appreciable improvement but so far not to the extent realised in the first plant. The company and management concerned with this development are to be congratulated on the progress made and the freedom with which the technical design information has been released for the use of other works. It is to be hoped that further experience will confirm the value of this system for controlling exits at high-intensity operation, as the demand for fertiliser is subject to sharp seasonal peaks.

There has been improvement during the year in maintenance standards, though a good deal has still to be done in some plants.

One plant still operates a direct fired cascade acid concentrator. Although the two measurements of escapes made have been within the statutory limits the discharge is at low level and is not considered satisfactory. In the event of fracture of a concentration vessel very dense fume is generated. The demand for concentrated chamber acid is small and it is hoped this plant can be dispensed with in the not too distant future.

*Sulphuric Acid (Contact Plants)*

The average discharges were 2·1 grains on nine tests. There was no infringement of the 4·0 grain limit, although on two tests the required 98 per cent conversion was not attained. These plants are all comparatively new and in good condition. No excessive mist discharge has been observed and only one minor complaint received about the exit gases.

*Tar Works*

No complaints were received about the operation of tar distillation works, although the plant used in the smaller works is usually primitive. In one case the light ends are merely driven off in a portable tar boiler without any attempt at condensation. Even with very occasional batch operation this cannot be regarded as acceptable.

There have been complaints about the plants mixing road metal and tar or bitumen. The major nuisance has, however, been with dust from the crushed metal drying.

**Unregistered Plants**

*Meat Works*

The characteristic smell of a large meat works has become almost an accepted feature of life in New Zealand. The main source is the vapours from tallow rendering, though there are subsidiary sources in blood drying and casing slimes. The industry is well aware of the desirability of controlling odour from the point of view of good public relationships, and over recent years there has been considerable improvement aided by the discontinuance of really offensive operations such as pie sweating. The desirable target of no odour beyond the works fence has, however, still to be attained.

The chemical inspectors have visited a number of plants during the year and been in consultation with the Trades Wastes Committee of the industry. No entirely satisfactory method of control has yet been devised, either in this country or overseas, but where practicable the complete condensation of all vapours from rendering plants is a preliminary necessity of further control measures and may in itself be adequate. A serious difficulty in the way of extended use of condensers is the very large amount of water required which is not always readily available. If methods can be developed for utilising the considerable amount of heat lost in these vapours the position would be changed quite radically and this approach is currently being investigated at a number of works. With the larger works really offensive odours can usually be avoided by good housekeeping, as material is handled fresh. Some small boiling-down works, however, carry out the very useful function of scavengers for the surrounding area and the possibilities for really offensive odours are correspondingly increased. On the other hand some small works succeed in operating without causing any offence whatsoever.

A major difficulty in seeking improvement is the subjective nature of odour. With the cooperation of the industry, however, steady progress should be obtainable.

*Other Processes*

It has not been possible for the chemical inspectors to devote sufficient time to studying all the many problems of nuisance brought to their attention. These have included varnish and paint manufacture and utilisation, sand blasting, drycleaning solvents, wood- and coal-burning plants, and dust from the drying and handling of various minerals. Where possible help has been given, but in several cases it was clear that much more detailed investigation would have been desirable.

# PART VI—MISCELLANEOUS

## 1. BOARD OF HEALTH

The general functions and scope of the Board of Health were set out in some detail in the Director-General's report last year and it can be fairly claimed that in the calender year 1959 the activities of the Board again were in fulfilment of its true role. The Board met on three occasions and its decisions and recommendations on health policy can best be reviewed in conjunction with the work of the committees of the Board.

### The Committee on Psychiatric Services in Public Hospitals

The scope of the inquiry into psychiatric services provided in public hospitals, which was considered in relation to all other medical services, was described last year and the work of the committee first set up in 1957 came before the Board at each of its three meetings in 1959, one of these being a special meeting which dealt solely with this important subject. The outcome of the whole inquiry is a booklet published in March 1960 as the first printed report of the present Board, entitled *Psychiatric Services in Public Hospitals in New Zealand.*

### The Outpatients' Departments (Public Hospitals) Committee

The inquiry into outpatients' services in public hospitals, in relation to other health services, similarly reached fruition in 1959 in the form of a printed report. This was finally published in March 1960 by the Board, being entitled *Outpatients Services in Public Hospitals in New Zealand.*

### Services for the Deaf Committee

This committee was set up to inquire into the services which are or should be available to the deaf. Its early investigations revealed such a paucity of services that the work of the committee during the year has of necessity been confined mainly to attempting to determine what services should be provided and how best they can be established.

Audiology requires a multiplicity of electronic equipment requiring specialised advice on its purchase, maintenance, calibration, and repair. At present there is no central agency capable of supplying this service and one immediate objective of the committee is to create these basic facilities.

### Fluoridation Committee

During 1959 four meetings of the Fluoridation Committee were held.

The effectiveness of water fluoridation in preventing tooth decay has led to at least 25 countries adopting fluoridation programmes – perhaps the most significant of which, outside the United States, being in Brazil. This encouraging world trend has been reflected in New Zealand, where the city of Lower Hutt is now fluoridating its water supply and several other communities are expected to follow suit during the next year or two.

Despite the evidence from Hastings that the teeth of children are protected from decay by this form of water treatment, opposition to this public health measure continues. In November eight communities voted on whether or not to fluoridate water supplies and, in each town, the proposition was defeated. Nevertheless, this expression of public opinion did nothing to alter the fact that fluoridation will substantially improve the dental health of our children nor, unfortunately, did it reduce the urgent need to give these children the extra dental protection which water fluoridation could provide.

The task of this committee has been mainly to bring to public attention the facts about fluoridation. It obviously has much yet to do before the need for fluoridation is generally accepted.

**Local Authority Affairs Committee**

The Local Authority Affairs Committee met in July 1959 to consider the specific problems of certain local authorities in the provision of satisfactory water supplies and of proper disposal of sewage. This committee, which includes representatives of the Municipal Association of New Zealand and of the New Zealand Counties Association, holds delegated authority from the Board to exercise the power of requiring local bodies to provide sanitary works. However, no requisitions were issued in 1959, although inquiries were instituted as to progress in complying with requisitions issued previously.

**Air Pollution Committee**

The committee dealing with air pollution met twice in 1959 and maintained and extended the considerable liaison required in this work. Additional representation of both manufacturing and town-planning interests on the committee was arranged. Special attention has been given to the Auckland problem, where, with the committee's full support and encouragement a second chemical inspector in the Department is now based. A technician has also been appointed to assist with sampling. The committee has also considered what should be done in Christchurch, reviewed plans for the use of special equipment in both Auckland and Christchurch.

In the field of legislation the committee supported certain extensions to the Schedules (in the Health Act) of chemical works and noxious gases and individual members of the committee have worked on proposed regulations to control smoke density.

**Medical Examination of Young Workers**

The committee, established in November 1958 primarily to inquire into the basis for medical examinations of young workers entering factory and other employment, held a number of meetings in 1959 and made good progress towards compiling a report which should soon be available for consideration by the Board.

**Epidemiology Advisory Committee**

The Board has taken the initial steps to reconstitute an *ad hoc* advisory committee appointed to advise on influenza vaccination in order that, with an increased membership and an enlarged order of reference, an authoritative committee will be available to advise the Government on any current problems in the control of disease, infectious or otherwise.

## 2. NURSES AND MIDWIVES BOARD

The Nurses and Midwives Board met four times during the year. Dr T. F. Corkill, who has been a member of the the Board for 12 years, tendered his resignation, and Professor J. L. Wright, Professor of Obstetrics and Gynaecology at the Dunedin Medical School, was appointed in his place. The Board wishes to record its deep appreciation to Dr Corkill for his services and to congratulate him on having been awarded the Sim's Travelling Scholarship for 1960.

At the annual meeting of training school matrons various problems in relation to the operation of the curriculum were discussed and all recommendations put forward to the Board and the Department have received attention. Student nurses now receive notification of actual marks obtained in the First Professional Examination, clinitesting of urine is now being taught, suggested changes in the headings of the dangerous-drug registers have been made, and the practical Final Examination is now being conducted for the Board by individual nursing schools.

### Nurse Training Schools

It will be remembered that last year's figures showed an increase of 500 student nurses over the previous year. It is therefore very satisfactory to learn that not only has this increase been maintained this year but an additional 207 nurses have been recruited. There are now 4,602 nurses in training whereas in 1956, before the changes were made to the curriculum, we recruited only 3,204.

Reports from overseas countries indicate that approximately 25 per cent of nurses are lost to the profession either during training or immediately following the completion of training. Our figures this year indicate that this is true also for this country. The number lost this year is 956 as against 792 last year. It must be borne in mind that some of the loss in the third year will be due to nurses training under the old curriculum transferring immediately on completion of the basic course to undertake maternity training.

Registered nursing staff also show an increase of 298 on last year's figures.

The daily bed occupancy in the training schools shows a small increase but it would appear that this is adequately met by the total staff available.

The ratio of total nursing staff to patients nursed is 1 to 1·3 and the ratio of registered staff to unregistered is 1 to 2·1.

### Obstetric Training Schools

*Midwifery*

Fifty-three midwives passed the State examination in December and 45 are at present in training, making a total of 98. It has in the past been estimated that a total of 100 midwives trained in any one year would meet our requirements. However, because of the number of maternity beds now available this figure will require to be increased to 150 in the future in order to ensure adequate staffing in all maternity hospitals.

*Maternity*

Three hundred and sixty-four nurses were registered following the December examinations and 490 are at present undertaking training. This will give a total of 854 for the year.

Last year a total of 717 obtained maternity registration, which means that there will be available approximately 137 more doubly qualified nurses this year. Allowing a loss of 25 per cent of these nurses to marriage and to overseas travel there should really be an adequate number of trained staff for both obstetric and general hospitals. Of the total number of maternity nurses training during this period 187 are unregistered nurses. This figure compares very favourably with the numbers for previous years.

**Nursing Aids**

There is a total of 312 at present in training and a registered staff of 178. There was a loss of 134 during the 18 months of training, many of whom left to undertake general training so were not lost to the nursing profession.

**Male-nurse Training**

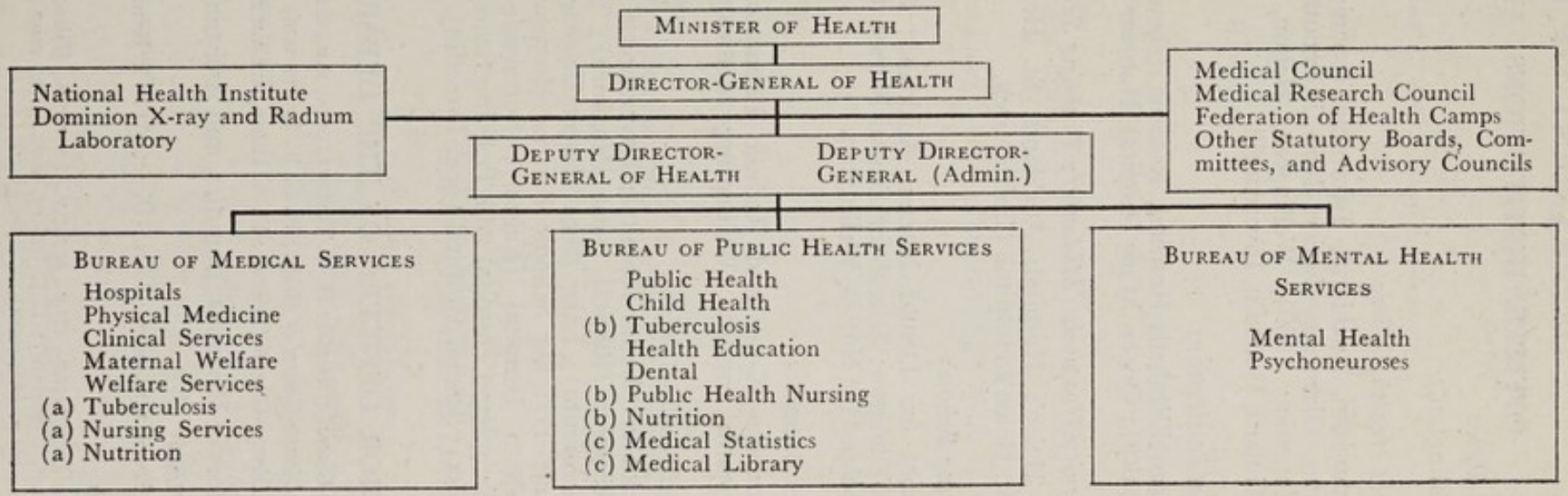
The introduction of a three-year course for male nurses does not appear to have had the desired effect in recruiting more males to this field. Only 24 are at present undergoing training. There are 220 nurses on the male-nurse register and returns show that only 45 males nurses are employed in public hospitals.

# APPENDIX I

## CONTENTS


| | Page | | Page |
|---|---|---|---|
| Head Office Organisation .. .. | .. 113 | Departmental Staff .. .. .. | .. 116 |
| Offices, Institutions, and Branches .. | .. 114 | Membership of Statutory Bodies .. .. | .. 117 |
| Senior Officers of the Department of Health | .. 114 | New Zealand Representation Abroad .. | .. 119 |


## HEAD OFFICE ORGANISATION




(a) In regard to Hospital Services. (b) In regard to Public Health Services.

(c) To service all Bureaus under direction of Bureau of Public Health Services.

# DEPARTMENT OF HEALTH

## OFFICES, INSTITUTIONS, AND BRANCHES

*Head Office*

Wellington.

*District Health Offices*

Whangarei, Auckland, Takapuna (opening 1960), Hamilton, Rotorua, Gisborne, Napier, New Plymouth, Palmerston North, Hutt (opening 1960), Wellington, Nelson, Greymouth, Christchurch, Timaru, Dunedin, Invercargill.

*Special Institutions*

Queen Elizabeth Hospital, Rotorua (rheumatic diseases and cerebral palsy); Queen Mary Hospital, Hanmer (psychoneuroses).

*Maternity Hospitals (Midwifery Training Schools)*

St. Helen's Hospital, Auckland; St. Helen's Hospital, Wellington; St. Helen's Hospital, Christchurch.

*Training Schools*

School for Dental Nurses, Auckland; School for Dental Nurses, Wellington; School for Dental Nurses, Christchurch; Post-graduate School for Nurses, Wellington.

*Special Branches*

Dominion X-ray and Radium Laboratory, Christchurch; National Health Institute, Wellington; Medical Statistics, Wellington.

*Mental Health Division*

Auckland Mental Hospital; Raventhorpe Hospital (near Papakura); Kingseat Hospital (near Papakura); Tokanui Hospital (near Te Awamutu); Lake Alice Hospital (near Marton); Levin Hospital and Training School; Porirua Hospital (near Wellington); Ngawhatu Hospital (Nelson); Sunnyside Hospital (Christchurch); Templeton Hospital and Training School; Seaview Hospital (Hokitika); Seacliff Hospital (near Dunedin).

## SENIOR OFFICERS OF THE DEPARTMENT OF HEALTH

*Director-General of Health:* H. B. Turbott, I.S.O., M.B., CH.B., D.P.H.

*Deputy Director-General of Health:* R. G. T. Lewis, M.B., CH.B.

*Deputy Director-General (Admin.):* D. A. Hunn, A.R.A.N.Z.

### Directors of Divisions, Deputies, and Assistant Directors

*Public Health*

L. S. Davis, M.B., CH.B., D.P.H. (Director); D. P. Kennedy, M.B., CH.B., D.P.H. (Deputy).

*Hospitals*

C. A. Taylor, M.B., CH.B., M.R.C.P., F.R.A.C.P., (Director); J. P. Kennedy, M.B., CH.B., D.P.H. (Assistant); I. J. Jeffery, M.SC., M.B., CH.B., D.P.H. (Assistant); V. S. Land, M.B., CH.B. (Assistant).

*Mental Health*

G. Blake-Palmer, M.R.C.S., L.R.C.P., D.P.M., L.D.S., R.C.S., (Director); S. W. P. Mirams, M.B., CH.B. (Deputy).

*Physical Medicine and Child Health*

G. A. Q. Lennane, M.A., M.B., B.CHIR., M.R.C.S., L.R.C.P. (Director).

*Dental Health*

J. B. Bibby, D.D.S. (PENN.), B.A., DIP. SOC. SC. (Director); G. H. Leslie, D.D.S. (Deputy); J. F. Williams, B.D.S. (Assistant); J. G. Espie, B.D.S. (Assistant).

*Tuberculosis and Welfare Services*

G. O. L. Dempster, M.D., D.P.H. (Director).

*Clinical Services*

A. W. S. Thompson, O.B.E., M.B., CH.B., F.R.C.P., D.P.H. (Director); T. L. Hayes, M.B., CH.B. (Assistant); S. B. Mackay, M.B., CH.B. (Assistant).

*Health Education and Maternal Welfare*

C. N. D. Taylor, M.B., CH.B., D.P.H. (Director).

*Nursing*

Miss F. J. Cameron, O.B.E., R.N., R.M., D.P.H.N. (Director); Miss A. A. H. Orbell, R.N., R.M., D.P.H.N. (Deputy).

## Directors of Special Branches

*National Health Institute*

J. D. Manning, M.D., M.R.C.S., L.R.C.P., DIP. BACT.

*Dominion X-ray and Radium Laboratory*

G. E. Roth, B.SC., M.P.H., F. INST. P. (overseas); H. J. Yeabsley, M.SC. (Acting Director).

*Medical Statistics*

C. E. V. Gardiner, Medical Statistician.

## Medical Officers of Health

Whangarei—
E. R. Dowden, M.B., CH.B., D.P.H.

Auckland—
B. W. Christmas, M.B., CH.B., D.P.H.

Takapuna—
A. C. E. Anderson, M.B., D.P.H.

Hamilton—
J. F. Dawson, M.B., B.C.H., B.A.O., D.P.H.

Rotorua—
W. C. Davidson, M.D., D.P.H.

Gisborne—
J. M. Holden, M.B., B.S., M.R.C.S., L.R.C.P., D.P.H.

Napier—
E. R. T. Overton, M.B., CH.B., D.P.H.

New Plymouth—
A. D. Warren, M.B., CH.B., D.P.H.

Palmerston North—
L. F. Jepson, M.R.C.S., L.R.C.P., D.P.H.

Hutt—
S. Hickling, M.B., B.S., D.P.H.

Wellington—
Betty J. Mackay, M.B., B.CH., D.P.H.

Nelson—
J. S. Roxburgh, M.B., CH.B., D.P.H.

Greymouth—
I. W. McDougall, M.B., CH.B., D.P.H.

Christchurch—
A. Douglas, LL.B., M.B., CH.B., D.P.H., D.T.M. AND H.

Timaru—
N. T. Barnett, M.B., D.P.H.

Dunedin—
W. Murphy, M.B., CH.B., D.P.H.

Invercargill—
A. H. Paul, M.B., CH.B., D.P.H.

## Medical Superintendents of Departmental Hospitals

Queen Elizabeth Hospital—
B. S. Rose, M.B., CH.B., M.R.C.P., D.C.H.

Queen Mary Hospital—
A. W. Wilkinson, M.B., CH.B.

Auckland Mental Hospital—
G. M. Tothill, M.R.C.S., L.R.C.P., D.P.M.

Kingseat and Raventhorpe Hospitals—
J. J. Crawshaw, M.B., CH.B.

Tokanui Hospital—
K. R. Stallworthy, M.B., CH.B., D.P.M.

Levin Hospital and Training School and Lake Alice Hospital—
F. Cameron, M.B., CH.B., F.R.C.S.

Porirua Hospital—
B. D. Hart, M.B., CH.B.

Ngawhatu Hospital—
J. U. Williams, M.D.

Sunnyside Hospital and Templeton Hospital and Training School—
J. D. Hunter, M.B., CH.B., D.P.M.

Seaview Hospital—
A. G. Couston, L.R.C.P., L.R.C.S., L.R.F.P., L.R.F.S., L.D.S., R.C.S.

Seacliff Hospital—
C. S. Moore, M.B., CH.B., D.P.M.

St. Helens' Hospitals—

Auckland—
G. D. Lindsay, M.B., CH.B., F.R.C.S.

Wellington—
G. N. Findlay, M.B., CH.B., F.R.C.S.

Christchurch—
L. C. Averill, M.D., F.R.C.S., F.R.C.O.G.

## DEPARTMENTAL STAFF

*Health*

| | | |
|---|---|---|
| Professional— | | |
| Medical | 72 | |
| Dental | 68 | |
| Others | 20 | |
| Administration | 738 | |
| Inspectors of Health | 108 | |
| Nursing | 331 | |
| School dental | 1,284 | |
| Institutional other than nurses | 74 | |
| Miscellaneous | 90 | |
| Temporary staff | 193 | |
| Casual staff | 504 | |
| Ministerial appointments (all part time) | 118 | |
| Subtotal | — | 3,600 |

*Mental Health*

| | | |
|---|---|---|
| Medical | 40 | |
| Administration | 152 | |
| Occupational Therapists | 111 | |
| Domestic | 151 | |
| Farms and gardens | 107 | |
| Trades | 204 | |
| Nursing— | | |
| Male | 921 | |
| Female | 657 | |
| Miscellaneous | 124 | |
| Temporary staff | 162 | |
| Casual staff | 115 | |
| Subtotal | — | 2,744 |
| Grand total | | 6,344 |

# MEMBERSHIP OF STATUTORY BODIES

*Board of Health*

Hon. H. G. R. Mason, Q.C., Minister of Health (Chairman).
H. B. Turbott, I.S.O., M.B., CH.B., D.P.H., Director-General of Health.
R. G. T. Lewis, M.B., CH.B., Deputy Director-General of Health.
C. A. Taylor, M.B., CH.B., M.R.C.P., F.R.A.C.P., Director, Division of Hospitals.
W. Murphy, M.D., CH.B., D.P.H., Medical Officer of Health, Dunedin.
E. G. Sayers, C.M.G., M.D., CH.B., F.R.C.P., F.R.A.C.P., F.A.C.P., D.T.M. AND H., nominated by University of Otago.
P. P. Lynch, C.B.E., M.D., CH.B., F.R.A.C.P., nominated by Medical Research Council.
A. E. Anderson, M.B.E., LL.B., representing the Municipal Association of N.Z. (Inc.)
A. E. Reid, representing the New Zealand Counties Association (Inc.)
P. V. E. Stainton, O.B.E., Hospital Board Member.
Muriel E. Bell, C.B.E., M.D., representing the interests of women and children.
F. S. Maclean, B.A., M.D., B.CHIR., M.R.C.S., L.R.C.P., D.P.H., Former Director, Division of Public Hygiene.
There are also several subcommittees of the Board.

*Hospitals Advisory Council*

H. B. Turbott (Chairman); D. W. A. Barker, B.COM., D.P.A.; C. M. Wheeler, B.E., A.M.I.C.E.; E. Bate, O.B.E., LL.M.; T. H. C. Caughey, J.P.; J. R. H. Fulton, O.B.E., M.B., CH.B., M.R.C.P.

*Hospital Works Committee*

H. B. Turbott (Chairman); D. W. A. Barker; C. M. Wheeler.

*Medical Advertisements Board*

H. B. Turbott (Chairman); J. O. Mercer, C.B.E., M.B., CH.B., F.R.C.P., F.R.A.C.P.; C. B. McDougall, M.P.S.; H. G. Calvert, J.P.

*Radiological Advisory Council*

H. B. Turbott (Chairman); E. P. Allen, M.B., CH.B., M.R.C.P., F.C.R.A., D.M.R., F.F.R.; N. F. C. Hill, B.SC., M.B., CH.B., D.M.R.; C. W. S. Jerram, M.B., CH.B., F.C.R., A.D.M.R.; T. A. Rafter, M.SC.; G. E. Roth, B.SC., M.P.H., F.INST.P.

*Medical Council*

E. G. Sayers, (Chairman); H. B. Turbott; G. Douglas Robb, C.M.G., M.D., CH.M., F.R.C.S., L.R.C.P., F.R.A.C.S.; J. O. Mercer; J. A. D. Iverach, M.C., M.B., CH.B., F.R.C.P., F.R.A.C.P.; C. L. E. L. Sheppard, E.D., B.A., M.B., CH.B., F.R.C.S.; A. J. Mason, M.B., CH.M., F.R.C.S., F.R.A.C.S.

*Medical Research Council*

H. B. Turbott (Chairman); E. G. Sayers; W. M. Hamilton, D.SC., N.D.H.; Sir Horace Smirk, K.B.E., M.D., F.R.C.P., F.R.A.C.P.; G. Douglas Robb; N. L. Edson, PH.D., B.MED.SC., M.B., CH.B., F.R.S.N.Z., F.N.Z.I.C.; G. N. Davies, D.D.S.; J. A. Keeling, M.B., CH.B., M.R.C.P., F.R.A.C.P.

*Dental Council*

Sir John Walsh, K.B.E., D.D.SC., M.B., B.S., F.D.S.R.C.S., M.D.S. (Chairman); J. Bruce Bibby, D.D.S., B.A., DIP.SOC.SC.; P. Z. Harris, B.D.S.; W. P. Sommerville, M.B.E.; M. E. Priestley, B.D.S.; W. McG. Cunningham, M.B.E., B.D.S., D.D.S.; E. F. D'Ath, M.B., CH.B., F.R.A.C.P.; P. P. Lynch.

*Nurses and Midwives Board*

H. B. Turbott (Chairman); Miss F. J. Cameron, O.B.E., R.N., R.M., P.G.; G. Blake-Palmer, M.R.C.S., L.R.C.P., D.P.M., L.D.S.; J. L. Wright, M.B., CH.B., F.R.C.S., F.R.A.C.S., F.R.C.O.G.; W. E. Bate; Miss G. D. Boyd, R.N., R.M.N., P.G.; Mrs E. M. F. Chambers, R.N., R.M.N., P.G., P.; Miss G. A. Sandford, R.N., R.M., P.G.; Miss M. E. Little, O.B.E., R.N., R.P.N.

*Dietitians Board*

H. B. Turbott (Chairman); Miss M. B. McKenzie, B.H.SC.; Miss E. Gregory, PH.D., M.H.SC.; Miss F. J. Cameron; Muriel E. Bell; J. O. Mercer; Miss D. E. Ritchie, B.H.SC.; Mrs A. L. Rees, DIP.H.SC.

*Physiotherapy Board*

G. A. Q. Lennane, M.A., M.B., B.CHIR., M.R.C.S., L.R.C.P. (Chairman); Miss J. C. McGrath, REG. PHYS.; Miss E. M. Gotts, REG. PHYS.; J. L. Meney, REG. PHYS.; K. N. Ritson, REG. PHYS.; Miss J. E. Derbridge, REG. PHYS.; Sir Alexander Gillies, K.T., M.B., CH.B., M.CH. ORTH., L.R.C.P., L.R.C.S., L.R.F.P. AND S., F.R.C.S., F.R.A.C.S., D.M.R.E.

*Opticians Board*

A. W. S. Thompson, O.B.E., M.B., CH.B., F.R.C.P., D.P.H.; H. Atkinson, S.D.O.N.Z.; R. R. Cocks, S.D.O.N.Z.; H. C. Collett, F.B.O.A., F.S.M.C.; G. G. Talbot, O.B.E., M.B., CH.B., F.R.C.S.E., F.R.C.S., F.R.A.C.S.

*Plumbers Board*

T. W. Adams, F.R.S.H. (Chairman); B. C. Lee, PH.D., B.SC., D.I.C., M.I.E.E., M.N.Z.E.E., A.C.G.I.; G. I. B. Thomas, A.M.I.C.E., A.M.N.Z.I.E., M.R.S.H.; P. Ryan; A. C. S. McMillan.

*Occupational Therapy Board*

H. B. Turbott (Chairman); G. A. Q. Lennane; Miss M. Bamford, REG. OCC. THER.; G. M. Tothill, M.R.C.S., L.R.C.P., D.P.M.; J. Cleminson, M.B., B.S., B.HY., D.P.H.; Miss F. M. Rutherford, REG. OCC. THER.; Miss P. M. Isaacs, REG. OCC. THER.; Miss J. E. Vezey, REG. OCC. THER.; Miss F. J. Cameron; I. M. Macgregor, M.R.C.S., L.R.C.P., D.P.H.

*King George V Memorial Children's Health Camps Board*

H. B. Turbott (Chairman); L. B. Haynes; T. L. Gick; E. J. Sutton-Smith; D. Markham G. Burns; A. P. Greenfield, M.B.E.; R. Merrett-Wilkinson; H. H. Barker; T. M. McKewen; W. E. Bate; S. P. Hamilton, M.A., DIP.ED.; A. R. Naish.

*Medical Services Advisory Committee*

A. W. S. Thompson (Chairman); R. F. Thomas, M.B., CH.B., M.P.C.P.; C. L. E. L. Sheppard; J. A. D. Iverach; J. M. Twhigg, D.S.O., M.D., M.B., CH.B., F.R.C.P., F.R.A.C.P.; A. R. F. Rankin.

*Subcommittees of the Medical Services Advisory Committee*

*Radiological Services Advisory Committee*

A. W. S. Thompson (Chairman); N. F. C. Hill; C. D. Costello, M.B., CH.B.; G. L. Rolleston, M.B., CH.B., D.M.R.E.; A. R. F. Rankin.

*Laboratory Services Advisory Committee*

A. W. S. Thompson (Chairman); P. P. Lynch; D. T. Stewart, M.D.; E. F. D'Ath.

*Ophthalmological Services Advisory Committee*

A. W. S. Thompson (Chairman); G. G. Talbot; Rowland Wilson, M.B., CH.B., F.R.C.S.

*Otological Services Advisory Committee*

A. W. S. Thompson (Chairman); R. Elliott, M.B., CH.B., F.R.C.S., F.R.A.C.S., D.O.; Malcolm Robertson, M.B., CH.B., F.R.C.S., F.R.A.C.S.; I. M. Rutherford, M.B., CH.B., F.R.C.S., D.L.O.

*Pharmaceutical Advisory Committee*

A. W. S. Thompson (Chairman); Eric Dash, PH.C.; D. S. Dodds, PH.C.; W. L. Hindman, PH.C.; J. A. Robertson, PH.C.; N. P. Ross, PH.C.; D. Steptoe, PH.C.; T. L. Hayes, M.B., CH.B., PH.C.; C. H. Farquharson, PH.C.; A. R. F. Rankin.

*Pharmacology and Therapeutics Committee*

A. W. S. Thompson (Chairman); E. F. D'Ath; J. H. Nind, M.B., CH.B.; K. Rees-Thomas, M.B., CH.B., F.R.C.S., F.R.A.C.S.; J. M. Twhigg; J. M. Watt, M.B., CH.B.; Morvyn Williams, M.R.C.P.

*Obstetrical Services Advisory Committee*

A. W. S. Thompson (Chairman); J. E. Giesen, M.B., B.S., M.R.C.S., L.R.C.P., F.R.A.C.S., M.R.C.O.G.; L. C. L. Averill, M.D., F.R.C.S., F.R.C.O.G.; T. F. Corkill, M.D., M.B., CH.B., F.R.C.P., F.R.C.O.G.

*Dental Benefits Central Advisory Committee*

J. Bruce Bibby (Chairman); G. H. Leslie, D.D.S.; G. W. L. Hanlon; H. S. Wilkinson, B.D.S.; K. L. Anderson, B.D.S.; C. D. Liggins, B.D.S.; A. R. McKegg, B.D.S.; K. T. Moss, B.D.S.

There are also nine Salaries Advisory Committees and seven Salaries Grading Committees set up under regulations to advise on salary questions for employees of hospital boards.

## NEW ZEALAND REPRESENTATION ABROAD

New Zealand was represented at the Twelfth General Assembly of the World Health Organisation held in Geneva during May 1959 by Dr H. B. Turbott, now Director-General of Health, as chief delegate, and Miss H. N. Hampton, First Secretary, High Commissioner's Office, London, as alternate.

Dr G. O. L. Dempster, Director of the Division of Tuberculosis and Welfare Services, represented New Zealand at the Tenth Session of the World Health Organisation Regional Committee for the Western Pacific held at Taiwan during September 1959.

Dr Turbott, together with Miss F. J. Cameron, Director of the Division of Nursing, represented New Zealand at the annual meeting of the South Pacific Board of Health at Suva during June 1959.

Dr S. W. P. Mirams, Deputy Director of the Division of Mental Hygiene, represented New Zealand at the Twelth Annual Congress of the World Federation of Mental Health held in Barcelona during September 1959.

Dr W. C. Davidson, Medical Officer of Health, Rotorua, represented New Zealand at the annual congress of the Royal Society for the Promotion of Health held in Harrogate during April 1959.

Dr D. P. Kennedy, Deputy Director, Division of Public Hygiene, attended a Casualty Section Instructor's Course at the Australian Commonwealth Civil Defence School held at Macedon during March 1960.

Dr F. H. King, Specialist in Occupational Health at the National Health Institute, by invitation represented New Zealand at the March 1960 meeting of the Industrial Hygiene Committee of the National Health and Medical Research Council of Australia held at Melbourne.

# APPENDIX II

## CONTENTS


Financial Statistics— *Page*

Table 1. Expenditure .. .. .. .. .. 121
Diagram of distribution of Net Expenditure .. 122
Table 2. Social Security Fund Medical Benefits: Expenditure Since 1 April 1950 .. .. .. 123
Graph of Expenditure on Social Security Fund, Medical, Hospital, etc., Benefits for Past Five Years .. .. .. .. .. 125
Table 3. Pharmaceutical Benefits .. .. .. 126
Table 4. Cost per Head in Health Districts, General Medical Services and Capitation, 1959–60 .. .. 127
Table 5. Bursaries .. .. .. .. .. 128
Table 6. Payments Made to Plunket Society .. .. 128

Vital Statistics—

Table 7. Principal Causes of Deaths .. .. .. 128
Table 8. Still Births and Infant-mortality Rates, 1955–59 .. 129
Table 9. Infant-mortality Rates – International Comparison 129
Table 10. Infant-mortality: European and Maori, 1940–59 .. 130
Table 11. Deaths of Infants Under One Year by Causes, 1955–59 .. .. .. .. .. 130
Table 12. Deaths of Infants Under One Year .. .. 131
Table 13. Deaths – Numbers and Rates Each Year, 1954–1958 132

Public Health Statistics—

Table 14. Poliomyelitis Vaccinations .. .. .. 133
Tables 15A–E. Notifiable Diseases .. .. .. 134
Table 16. Milk Sampling .. .. .. .. 139
Table 17. Food and Drug Sampling .. .. .. 140
Table 18. Notification of Diseases Arising from Occupation 141
Tables 19A and B. Supervision of Workers Exposed to Lead .. 142
Table 20. Supervision of Workers Engaged in Electroplating Processes .. .. .. .. .. 143
Tables 21A and B. Medical and Nursing Arrangements .. 144
Table 22. Attendances at Industrial Health Centres .. 145
Table 23. Medical Examination of Young Workers .. .. 145
Table 24. School and Pre-school Children, 1959 .. .. 146
Table 25. Mass X-ray Examinations .. .. .. 147
Table 26. Results of Mantoux Testing .. .. .. 148
Table 27. Morbidity – Notification of New Cases of Tuberculosis .. .. .. .. .. 149
Table 28. Morbidity – Cases on Tuberculosis Register .. 149
Table 29. Cases on Tuberculosis Register – Prevalence of Bacteriological and Clinical States .. .. 150
Table 30. Mortality – Deaths from Tuberculosis .. .. 151

Medical Services Statistics—

Table 31. Hospital Works Programme as at 31 March 1959 .. 152
Table 32. Hospital Buildings Works .. .. .. 152
Table 33. Statistics of Ambulance Services .. .. 154
Table 34. Maternal Deaths .. .. .. .. 156
Table 35. Maternity Services and Cases, 1959 .. .. 158

Mental Health Statistics— *Page*
Table 36. Admissions, Discharges, and Deaths, 1959 .. 159
Table 37. Admissions, Discharges, and Deaths with Mean Annual Mortality and Proportion of Recoveries .. 162
Table 38. Voluntary Boarders Discharged Recovered .. 163
Table 39. Average Cash Cost of Each Patient .. .. 163

**TABLE 1—Expenditure**

Table showing net expenditure of the Department (after allowing for departmental receipts and excluding capital expenditure from Public Works Account) for the years ended 31 March 1959 and 1960:

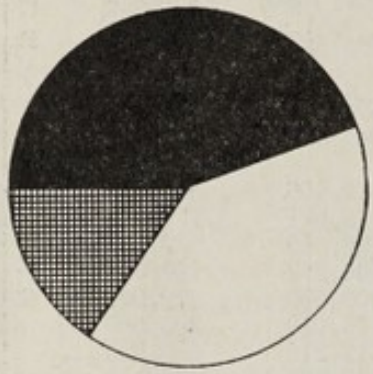
| | 1958–59 | 1959–60 | Increase |
|---|---|---|---|
| | £ | £ | £ |
| Vote "Health"— | | | |
| General health services .. .. | 1,594,342 | 1,592,907 | — 1,435 |
| Dental hygiene .. .. .. | 945,483 | 1,042,341 | 96,858 |
| Departmental hospitals and institutions (other than mental hygiene) .. | 519,466 | 562,489 | 43,023 |
| Mental hygiene .. .. .. | 3,479,621 | 3,777,632 | 298,011 |
| Health education .. .. .. | 28,655 | 29,596 | 941 |
| Medical Research Council .. .. | 104,872 | 107,623 | 2,751 |
| Homes for the aged .. .. .. | 209,539 | 479,035 | 269,496 |
| Pensioners housing: Local authorities .. | 176,019 | 203,008 | 26,989 |
| Youth hostels .. .. .. | 12,219 | 8,325 | — 3,894 |
| Plunket Society subsidies .. .. | 120,956 | 128,113 | 7,157 |
| Miscellaneous grants and subsidies .. | 90,520 | 94,778 | 4,258 |
| Bursaries .. .. .. .. | 42,594 | 42,487 | — 107 |
| Totals .. .. .. | 7,324,286 | 8,068,334 | 744,048 |
| Vote "Public Hospitals"— | | | |
| Grants to hospital boards .. .. | 15,774,324 | 17,204,751 | 1,430,427 |
| Vote "Medical, Hospital, etc., Benefits" .. | 18,650,601 | 19,886,957 | 1,236,356 |
| Grand Totals | £41,749,211 | £45,160,042 | £3,410,831 |

NOTES—Although expenditure was nearly £3½ million more than last year, it was well within the total appropriated. 21·81 per cent of the increase related to vote "Health", 41·94 per cent to vote "Public Hospitals" and 36·25 per cent to vote "Medical, Hospital, etc., Benefits". Comment on the expenditure under the last two votes will be found in the sections of this report dealing with hospitals and clinical services respectively. The major contributing factors to the increase under vote "Health" were:

| | £ | £ |
|---|---|---|
| Salaries – general wage increase from October 1959 and additions to staff.. | | 250,000 |
| Purchase of motor vehicles – late delivery of vehicles approved for 1958–59 resulted in payment being made in 1959–60 .. .. .. | | 27,000 |
| Dental stores and equipment for new clinics and increased operating expenses of dental student-nurses' hostels and training schools .. .. | | 31,000 |
| Increased operating expenses and wages at departmental hospitals and institutions .. .. .. .. .. .. .. | | 40,000 |
| Increase in subsidies paid to— | | |
| Homes for the aged .. .. .. .. .. .. | | 270,000 |
| Pensioners flats .. .. .. .. .. .. | | 27,000 |
| Increase in operating expenditure at mental hospitals— | £ | |
| Fuel, light, and power .. .. .. .. .. | 36,000 | |
| Overtime and penal rates .. .. .. .. | 81,000 | |
| Rations .. .. .. .. .. | 47,000 | |
| Drugs and instruments .. .. .. .. .. | 18,000 | |
| | | 182,000 |
| | | 827,000 |
| Less reduced expenditure on poliomyelitis campaign .. .. | | 102,000 |
| | | £725,000 |

## DEPARTMENT OF HEALTH
### Net Expenditure 1959–60

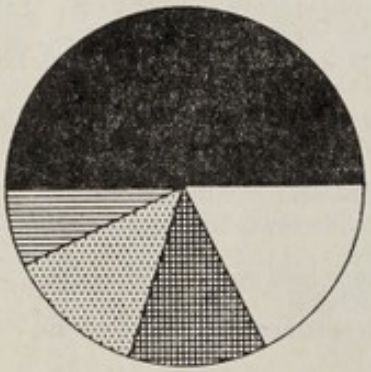
TOTAL EXPENDITURE £45,160,042 100%



SOCIAL SECURITY

| | | |
|---|---|---|
| MEDICAL, HOSPITALS, etc., BENEFITS | £19,886,957 | 44% |
| GRANTS TO HOSPITAL BOARDS | £17,204,751 | 38% |
| VOTE HEALTH | £8,068,334 | 18% |

VOTE – HEALTH £8,068,334 100%



| | | |
|---|---|---|
| MENTAL HYGIENE | £3,777,632 | 47% |
| GENERAL HEALTH SERVICES AND ADMINISTRATION | £1,592,907 | 19% |
| DENTAL HYGIENE | £1,042,341 | 13% |
| LOANS SUBSIDIES AND GRANTS | £1,092,965 | 14% |
| DEPARTMENTAL INSTITUTIONS* | £562,489 | 7% |

*These institutions include: Queen Mary Hospital, Hanmer, Queen Elizabeth Hospital, Rotorua, St. Helens Hospitals, Auckland, Wellington, Christchurch.

## TABLE 2—Social Security Fund Medical Benefits : Statement Showing Expenditure Since 1 April 1950

| —— | 1950–51 | 1951–52 | 1952–53 | 1953–54 | 1954–55 | 1955–56 | 1956–57 | 1957–58 | 1958–59 | 1959–60 |
|---|---|---|---|---|---|---|---|---|---|---|
| *Subdivision I—Maternity Benefits* | | | | | | | | | | |
| | £ | £ | £ | £ | £ | £ | £ | £ | £ | £ |
| Public hospital fees | 414,175 | 417,058 | 443,094 | 455,271 | 606,447 | 753,404 | 776,321 | 780,364 | 873,755 | 892,692 |
| Private hospital fees | 178,739 | 168,085 | 157,782 | 142,455 | 170,385 | 200,532 | 190,613 | 180,222 | 181,254 | 185,978 |
| Medical practitioners' fees | 279,191 | 281,351 | 298,222 | 296,967 | 329,481 | 396,494 | 398,848 | 440,563 | 411,661 | 432,170 |
| Medical practitioners' milage fees | 7,851 | 8,397 | 9,585 | 9,949 | 12,662 | 14,929 | 14,732 | 16,131 | 17,223 | 19,198 |
| Obstetric nurses' fees | 5,127 | 4,066 | 4,123 | 4,415 | 3,545 | 4,705 | 4,153 | 3,055 | 4,102 | 3,693 |
| Private hospital loans | .. | .. | .. | 7,500 | 15,500 | 6,500 | 30,100 | 29,024 | 54,498 | 28,130 |
| Private hospital subsidies | 233 | 5,824 | 6,616 | 8,059 | 9,287 | .. | .. | .. | .. | .. |
| | 885,316 | 884,781 | 919,422 | 924,616 | 1,147,307 | 1,376,564 | 1,414,767 | 1,449,359 | 1,542,493 | 1,561,861 |
| *Subdivision II—Medical Benefits* | | | | | | | | | | |
| Capitation fees | 6,622 | 4,519 | 5,170 | 4,792 | 4,998 | 4,412 | 4,412 | 4,411 | 4,412 | 4,411 |
| Capitation and general medical services milage | 145,396 | 155,626 | 171,716 | 169,643 | 183,039 | 197,493 | 207,292 | 219,505 | 205,362 | 214,860 |
| General Medical services | 2,453,516 | 2,529,906 | 2,784,051 | 2,835,983 | 3,092,144 | 3,275,171 | 3,510,971 | 3,626,825 | 3,680,520 | 3,931,273 |
| Special arrangements under section 82 | 42,499 | 57,223 | 65,818 | 63,746 | 64,450 | 63,470 | 69,166 | 73,019 | 76,572 | 87,094 |
| Purchase of sites and erection of residences for medical officers appointed under section 82 | 13,133 | 13,309 | 20,447 | 11,585 | 5,549 | 7,534 | 5,221 | 4,132 | 2,780 | 5,723 |
| Remuneration, allowances, and expenses of medical practitioners in areas other than those covered by section 82 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| | 2,661,166 | 2,760,583 | 3,047,202 | 3,085,749 | 3,350,180 | 3,548,080 | 3,797,062 | 3,927,892 | 3,969,646 | 4,243,361 |
| *Subdivision III—Hospital Benefits* | | | | | | | | | | |
| Treatment in public hospitals | 1,557,830 | 1,562,716 | 1,566,320 | 1,598,947 | 2,638,191 | 3,662,651 | 3,564,457 | 3,595,714 | 4,252,604 | 4,255,681 |
| Outpatient treatment | 164,508 | 152,930 | 163,719 | 175,338 | 187,406 | 341,875 | 397,716 | 414,234 | 414,602 | 414,460 |
| Treatment in private hospitals | 246,199 | 269,142 | 261,878 | 241,918 | 375,069 | 579,542 | 601,126 | 616,964 | 755,215 | 770,358 |
| Treatment in approved institutions | 43,477 | 49,264 | 50,240 | 56,107 | 76,432 | 95,453 | 107,057 | 111,789 | 117,153 | 125,275 |
| Private hospital loans | .. | .. | .. | .. | 30,282 | 68,151 | 179,368 | 180,210 | 196,423 | 64,577 |
| Private hospital subsidies | 6,949 | 68,442 | 79,726 | 97,138 | 84,547 | 3,028 | .. | .. | .. | .. |
| Grant to Royal New Zealand Society for Health of Women and Children towards operating costs Karitane hospitals | .. | 10,000 | 13,335 | 14,791 | 19,113 | 13,966 | 19,729 | 11,513 | 38,522 | 19,901 |
| | 2,018,963 | 2,112,494 | 2,135,218 | 2,184,239 | 3,411,040 | 4,764,666 | 4,869,453 | 4,930,424 | 5,774,519 | 5,650,252 |

**Table 2—Social Security Fund Medical Benefits, etc.**—*continued*

| —— | 1950–51 | 1951–52 | 1952–53 | 1953–54 | 1954–55 | 1955–56 | 1956–57 | 1957–58 | 1958–59 | 1959–60 |
|---|---|---|---|---|---|---|---|---|---|---|
| *Subdivision IV—Pharmaceutical Benefits* | | | | | | | | | | |
| Drugs supplied by— | £ | £ | £ | £ | £ | £ | £ | £ | £ | £ |
| Chemists .. .. .. .. | 2,036,990 | 2,371,769 | 2,952,773 | 2,847,919 | 2,952,269 | 3,949,164 | 4,475,606 | 4,353,752 | 4,973,558 | 5,787,684 |
| Medical practitioners .. .. .. | 6,803 | 8,287 | 9,143 | 10,267 | 10,068 | 15,951 | 17,934 | 22,463 | 27,274 | 32,126 |
| Institutions .. .. .. .. | 53,207 | 48,160 | 53,917 | 61,434 | 84,994 | 74,030 | 79,017 | 90,326 | 111,511 | 136,492 |
| | 2,097,000 | 2,428,216 | 3,015,833 | 2,919,620 | 3,047,331 | 4,039,145 | 4,572,557 | 4,466,541 | 5,112,343 | 5,956,302 |
| *Subdivision V—Supplementary Benefits* | | | | | | | | | | |
| Radiological services .. .. .. | 294,883 | 310,189 | 350,120 | 379,641 | 409,381 | 448,374 | 474,369 | 471,792 | 471,202 | 489,459 |
| Laboratory services .. .. .. | 128,546 | 149,917 | 178,892 | 189,070 | 227,914 | 277,458 | 338,673 | 414,863 | 471,795 | 585,644 |
| Physiotherapy services .. .. .. | 67,388 | 62,572 | 62,249 | 62,575 | 64,347 | 64,863 | 66,499 | 61,569 | 61,679 | 63,005 |
| Specialist service (neuro surgery) .. .. | 4,089 | 3,019 | 4,654 | 2,794 | 2,719 | 3,181 | 2,872 | 2,990 | 3,790 | 5,003 |
| District nursing services .. .. .. | 113,571 | 124,250 | 114,931 | 127,016 | 137,339 | 150,117 | 162,016 | 181,892 | 195,518 | 206,587 |
| Dental services .. .. .. .. | 385,612 | 469,989 | 545,002 | 659,570 | 716,251 | 798,756 | 906,420 | 932,451 | 940,590 | 1,000,877 |
| Domestic assistance .. .. .. | 3,520 | 4,699 | 5,943 | 7,015 | 6,071 | 7,744 | 9,977 | 12,560 | 12,365 | 14,757 |
| Grants to public servants and dependants in respect of medical, hospital, etc., expenses while stationed overseas .. .. .. .. | 795 | 1,996 | 1,960 | 2,110 | 2,703 | 2,620 | 2,275 | 4,332 | 4,562 | 5,086 |
| Ambulance benefits .. .. .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Artificial aids benefits (commenced 1 July 1947), (artificial limbs, hearing aids, contact lenses) .. | 62,534 | 55,322 | 46,981 | 61,721 | 63,000 | 63,646 | 73,229 | 82,786 | 93,782 | 107,789 |
| Payments under section 26, Social Security Amendment Act 1943 .. .. .. .. | .. | .. | 190 | 1,310 | 3,090 | 1,359 | 81,263 | 117,782 | 206 | |
| Grants to intellectually handicapped children's parents' associations .. .. .. | .. | .. | .. | .. | 251 | 581 | 1,280 | 1,074 | 885 | 1,641 |
| | 1,060,938 | 1,181,953 | 1,310,922 | 1,492,822 | 1,633,066 | 1,818,699 | 2,118,873 | 2,284,091 | 2,256,374 | 2,479,851 |
| Grand totals .. .. .. | 8,723,383 | 9,368,027 | 10,428,597 | 10,607,046 | 12,588,924 | 15,547,154 | 16,772,712 | 17,058,307 | 18,655,375 | 19,891,627 |
| Recoveries .. .. .. | 31,190 | 4,250 | 4,033 | 5,285 | 4,489 | 5,566 | 10,053 | 7,666 | 4,774 | 4,670 |
| Net totals .. .. .. | 8,692,193 | 9,363,777 | 10,424,564 | 10,601,761 | 12,584,435 | 15,541,588 | 16,762,65 | 17,050,641 | 18,650,601 | 19,886,957 |

SOCIAL SECURITY FUND HEALTH BENEFITS

Expenditure from 1955–56 to 1959–60

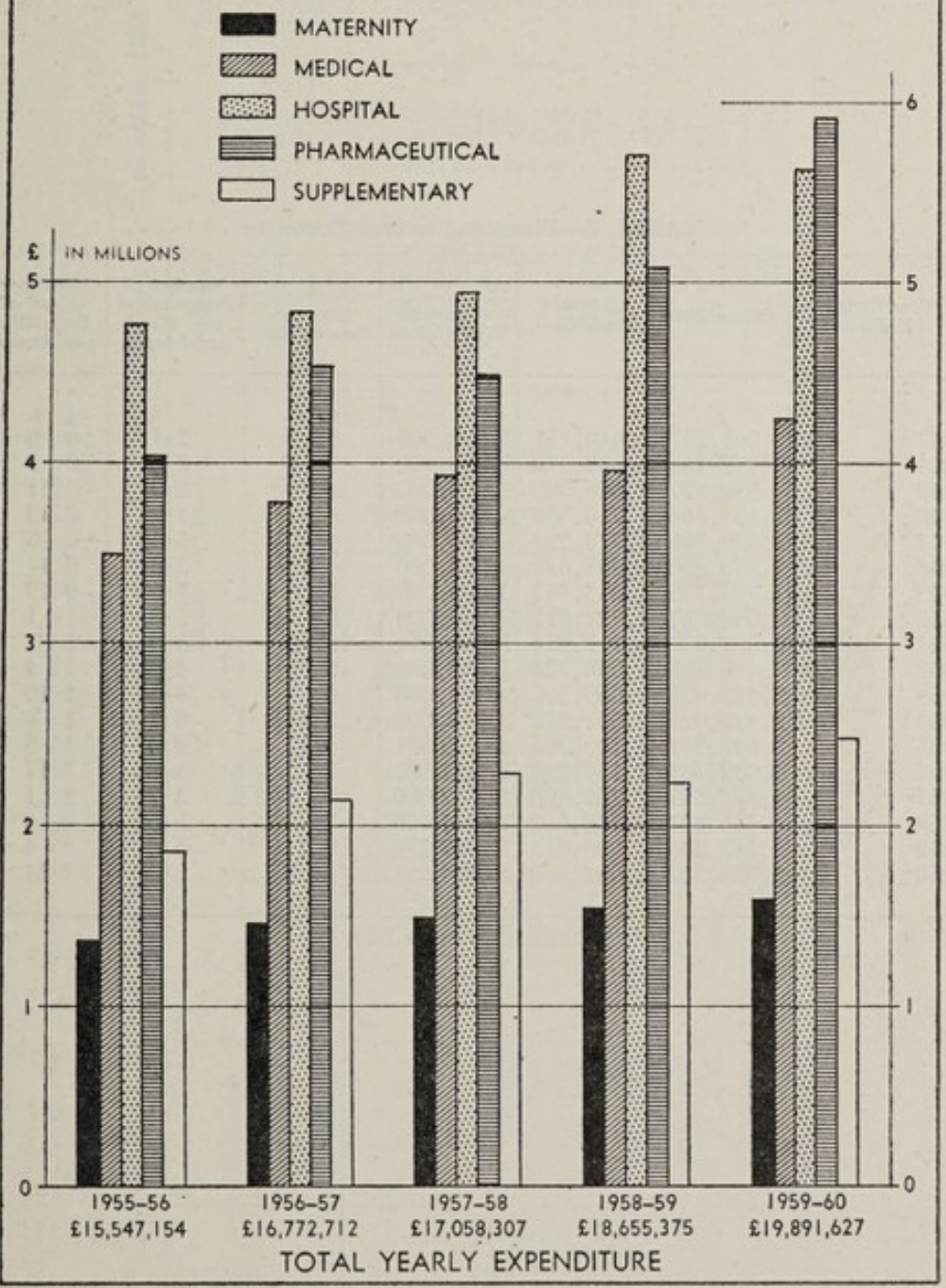


**TABLE 3—Pharmaceutical Benefits**

| Year Ended 31 March | Expenditure | Mean Population | Number of Chemists Prescriptions | Average Cost per Prescription | Number of Prescriptions per Head per Annum | Cost per Head of Population per Annum |
|---|---|---|---|---|---|---|
| | £ | | | s. d. | | £ s. d. |
| 1943 .. | 563,247 | 1,640,191 | 3,500,000 | 3 3 | 2·1 | 0 6 10 |
| 1944 .. | 762,198 | 1,637,570 | 4,250,000 | 3 7 | 2·6 | 0 9 4 |
| 1945 .. | 980,237 | 1,664,585 | 4,900,000 | 4 0 | 3·0 | 0 11 10 |
| 1946 .. | 1,133,366 | 1,710,680 | 5,400,000 | 4 2½ | 3·2 | 0 13 3 |
| 1947 .. | 1,439,686 | 1,770,291 | 6,100,000 | 4 8½ | 3·4 | 0 16 3 |
| 1948 .. | 1,558,350 | 1,807,611 | 6,300,000 | 4 11½ | 3·5 | 0 17 3 |
| 1949 .. | 1,793,159 | 1,843,767 | 6,500,000 | 5 6 | 3·5 | 0 19 5 |
| 1950 .. | 2,043,843 | 1,881,317 | 7,240,000 | 5 7½ | 3·8 | 1 1 9 |
| 1951 .. | 2,097,000 | 1,917,934 | 7,300,000 | 5 9 | 3·8 | 1 1 11 |
| 1952 .. | 2,428,216 | 1,958,729 | 7,850,000 | 6 2¼ | 4·0 | 1 4 10 |
| 1953 .. | 3,015,833 | 2,009,506 | 9,146,000 | 6 7 | 4·5 | 1 10 0 |
| 1954 .. | 2,919,620 | 2,061,376 | 9,763,000 | 5 11¾ | 4·7 | 1 8 3 |
| 1955 .. | 3,047,331 | 2,105,766 | 10,299,561 | 5 11 | 4·9 | 1 8 11 |
| 1956 .. | 4,039,145 | 2,150,290 | 11,251,100 | 7 2 | 5·3 | 1 17 8 |
| 1957 .. | 4,572,557 | 2,206,226 | 12,562,000 | 7 3½ | 5·7 | 2 1 11 |
| 1958 .. | 4,466,541 | 2,246,093 | 12,204,000 | 7 3¾ | 5·5 | 2 0 0 |
| 1959 .. | 5,112,343 | 2,298,814 | 12,847,773 | 7 11½ | 5·6 | 2 4 11 |
| 1960 .. | 5,956,302 | 2,334,609* | 13,684,657 | 8 3 | 5·9 | 2 11 0 |

* As at 31 December 1959.

**TABLE 4—Cost per Head in Health Districts, General Medical Services and Capitation, 1959–60**

| Health District | Population as at 1 April 1959 | Number of Doctors | Average Population per Doctor | Method of Claiming | | Total Cost of General Medical Services and Capitation, Excluding Milage | Average Amount Claimed per Doctor | Total Cost of General Medical Services and Capitation, Including Milage | Cost per Head of Population |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Direct | Indirect | | | | |
| | | | | Per Cent | Per Cent | £ | £ | £ | £ s. d. |
| Whangarei .. | 88,290 | 55 | 1,605 | 100 | .. | 135,843 | 2,469 | 156,286 | 1 15 5 |
| Auckland .. | 477,829 | 483 | 989 | 82 | 18 | 1,040,031 | 2,153 | 1,064,426 | 2 4 7 |
| Hamilton .. | 209,200 | 134 | 1,561 | 96 | 4 | 350,527 | 2,616 | 390,575 | 1 17 4 |
| Gisborne .. .. | 141,530 | 111 | 1,275 | 70 | 30 | 213,330 | 1,922 | 221,403 | 1 11 3 |
| New Plymouth .. | 94,470 | 60 | 1,583 | 100 | .. | 145,618 | 2,427 | 153,227 | 1 12 3 |
| Palmerston North .. | 180,900 | 106 | 1,707 | 71 | 29 | 235,572 | 2,222 | 247,628 | 1 7 5 |
| Rotorua .. .. | 137,410 | 76 | 1,808 | 100 | .. | 216,098 | 2,843 | 235,319 | 1 14 3 |
| Wellington .. | 279,880 | 239 | 1,171 | 54 | 46 | 421,071 | 1,762 | 430,021 | 1 10 9 |
| Nelson .. .. | 72,590 | 55 | 1,320 | 51 | 49 | 108,720 | 1,977 | 118,978 | 1 12 9 |
| Christchurch .. | 301,630 | 235 | 1,284 | 78 | 21 | 506,603 | 2,156 | 533,952 | 1 15 5 |
| Timaru .. .. | 97,350 | 68 | 1,432 | 85 | 15 | 149,877 | 2,204 | 162,597 | 1 13 5 |
| Dunedin .. .. | 149,180 | 120 | 1,243 | 74 | 26 | 284,761 | 2,373 | 302,523 | 2 0 7 |
| Invercargill .. | 95,370 | 60 | 1,589 | 52 | 48 | 111,827 | 1,864 | 123,455 | 1 5 10 |
| Totals .. | 2,326,129 | 1,802 | 1,291 | 77 | 23 | 3,919,878 | 2,164 | 4,140,390 | 1 15 7 |

**TABLE 5—Bursaries**

(1958 figures in parentheses)

| —— | New Awards 1959 | Renewals 1959 | Total | Amount Paid | |
|---|---|---|---|---|---|
| | | | | £ | £ |
| Dental | 7 (9) | 33 (39) | 40 (48) | 7,213 | (8,186) |
| Dietetic | 10 (13) | 13 (5) | 23 (18) | 3,452 | (2,514) |
| Post-graduate nursing | 8 (11) | .. (..) | 8 (11) | 4,534 | (4,464) |
| Medical | 14 (17) | 42 (30) | 56 (47) | 8,439 | (7,441) |
| Nursing (Infant Welfare Service) | 41 (47) | .. (..) | 41 (47) | 4,445 | (5,239) |
| Nursing (Midwifery) | .. (3) | .. (..) | .. (3) | .. | (90) |
| Physiotherapy | 45 (48) | 71 (68) | 116 (116) | 14,404 | (14,660) |
| Total | 125 (148) | 159 (142) | 284 (290) | 42,487 | (42,594) |

**TABLE 6—Plunket Society**

The following is a summary of payments made in respect of subsidies to the Plunket Society:

| | 1958–59 | 1959–60 |
|---|---|---|
| Vote "Health" | £ | £ |
| Salaries of nurses, professional, clerical staff, and travelling expenses | 104,313 | 107,902 |
| Milage allowance | 12,350 | 15,313 |
| Contribution in respect of new cars | 1,293 | 1,898 |
| Contributions to Dominion Training Centre | 3,000 | 3,000 |
| | 120,956 | 128,113 |
| Vote "Social Security" | | |
| Hospital benefits | 45,451 | 45,337 |
| £2 for £3 subsidy in respect of donations to hospitals | 15,528 | 19,901 |
| Special grant | 23,000 | .. |
| | 83,979 | 65,238 |
| Grand totals | £204,935 | £193,351 |

**TABLE 7—Principal Causes of Death**

| Causes of Deaths | Number of Deaths | | | | | Rates per 1,000,000 of Mean Population | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1959 | 1958 | 1957 | 1956 | 1955 | 1959 | 1958 | 1957 | 1956 | 1955 |
| Tuberculosis (all forms) | 137 | 200 | 254 | 238 | 293 | 59 | 87 | 113 | 109 | 137 |
| Syphilis and its sequelae | 15 | 22 | 33 | 23 | 31 | 6 | 10 | 15 | 11 | 14 |
| Acute poliomyelitis | 1 | 6 | 2 | 51 | 29 | .. | 3 | 1 | 23 | 14 |
| All other infective and parasitic diseases | 142 | 136 | 133 | 140 | 153 | 61 | 59 | 59 | 64 | 72 |
| Malignant neoplasms | 3,368 | 3,297 | 3,213 | 3,153 | 3,171 | 1,443 | 1,442 | 1,439 | 1,444 | 1,483 |
| Diabetes mellitus | 306 | 286 | 286 | 229 | 216 | 131 | 125 | 128 | 105 | 101 |
| Vascular lesions of the central nervous system | 2,573 | 2,606 | 2,519 | 2,316 | 2,325 | 1,102 | 1,140 | 1,128 | 1,061 | 1,087 |
| Rheumatic fever and chronic rheumatic heart disease | 247 | 281 | 272 | 239 | 252 | 106 | 123 | 122 | 109 | 118 |
| Other diseases of the heart and hypertension | 7,039 | 6,618 | 6,815 | 6,636 | 6,447 | 3,015 | 2,895 | 3,053 | 3,041 | 3,014 |
| Influenza | 189 | 37 | 181 | 89 | 28 | 81 | 16 | 81 | 41 | 13 |
| Pneumonia | 1,025 | 751 | 950 | 803 | 628 | 439 | 329 | 426 | 368 | 294 |
| Bronchitis | 547 | 477 | 507 | 441 | 460 | 234 | 209 | 227 | 202 | 215 |
| Ulcer of stomach and duodenum | 187 | 170 | 207 | 179 | 176 | 80 | 74 | 93 | 82 | 82 |
| Nephritis and nephrosis | 116 | 155 | 160 | 131 | 178 | 50 | 68 | 72 | 60 | 83 |
| Motor-vehicle accidents | 346 | 405 | 407 | 334 | 364 | 148 | 177 | 182 | 153 | 170 |
| Other accidents | 688 | 684 | 731 | 610 | 653 | 295 | 299 | 327 | 279 | 305 |
| All other causes | 4,202 | 4,170 | 4,192 | 4,084 | 3,821 | 1,800 | 1,824 | 1,878 | 1,871 | 1,786 |
| Totals | 21,128 | 20,301 | 20,862 | 19,696 | 19,225 | 9,050 | 8,881 | 9,344 | 9,023 | 8,988 |

**TABLE 8—Still Births and Infant-mortality Rates (European and Maori), 1955–59**

| Period | European | | | | | Maori | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Deaths per 1,000 Live Births | | | Rates per 1,000 Total Births | | Deaths per 1,000 Live Births | | | Rates per 1,000 Total Births | |
| | Under 1 Month | 1 and Under 12 Months | Total, Under 1 Year | Still Births | Peri-natal Deaths | Under 1 Month | 1 and Under 12 Months | Total Under 1 Year | Still Births | Peri-natal Deaths |
| 1959 .. | 13·94 | 5·95 | 19·89 | 14·49 | 26·43 | 19·21 | 35·21 | 54·42 | 18·85 | 33·71 |
| 1958 .. | 13·61 | 5·79 | 19·40 | 15·00 | 26·19 | 22·01 | 32·36 | 54·37 | 16·20 | 34·42 |
| 1957 .. | 13·89 | 6·09 | 19·98 | 15·83 | 27·94 | 20·81 | 37·09 | 57·90 | 15·15 | 31·78 |
| 1956 .. | 13·34 | 6·05 | 19·39 | 16·73 | 28·12 | 19·96 | 34·40 | 54·36 | 19·72 | 36·90 |
| 1955 .. | 14·14 | 5·95 | 20·09 | 15·71 | 27·32 | 19·63 | 42·88 | 62·51 | 16·10 | 32·53 |

**TABLE 9—Infant-mortality Rates per 1,000 Live Births – International Comparison**

| Country | Quin-quennium | Deaths Under 1 Year per 1,000 Live Births | Country | Quin-quennium | Deaths Under 1 Year per 1,000 Live Births |
|---|---|---|---|---|---|
| Sweden .. .. .. | 1954–58 | 17 | Israel .. .. .. | 1954–58 | 38 |
| Iceland .. .. .. | 1953–57 | 19 | Belgium .. .. | 1954–58 | 38 |
| Netherlands .. .. | 1954–58 | 19 | West Germany .. .. | 1954–58 | 40 |
| Norway .. .. .. | 1953–57 | 21 | Japan .. .. .. | 1954–58 | 40 |
| Australia .. .. | 1954–58 | 22 | Greece .. .. .. | 1954–58 | 43 |
| *New Zealand .. .. | 1954–58 | 24 | Austria .. .. .. | 1954–58 | 44 |
| England and Wales .. | 1954–58 | 24 | East Germany .. .. | 1954–58 | 47 |
| Switzerland .. .. | 1954–58 | 25 | Italy .. .. .. | 1954–58 | 50 |
| Denmark .. .. | 1954–58 | 25 | Spain .. .. .. | 1954–58 | 50 |
| United States of America .. | 1954–58 | 26 | Hungary .. .. | 1954–58 | 60 |
| United Kingdom .. .. | 1953–57 | 26 | Argentina .. .. | 1953–57 | 62 |
| Finland .. .. .. | 1954–58 | 28 | Hong Kong .. .. | 1953–57 | 66 |
| Scotland .. .. | 1954–58 | 29 | Venezuela .. .. | 1953–57 | 68 |
| Northern Ireland .. | 1954–58 | 30 | Ceylon .. .. .. | 1953–57 | 70 |
| Union of South Africa .. | 1953–57 | 31 | Poland .. .. .. | 1954–58 | 77 |
| Canada .. .. .. | 1953–57 | 32 | Mexico .. .. .. | 1954–58 | 79 |
| China (Taiwan) .. .. | 1953–57 | 33 | Malaya .. .. .. | 1953–57 | 79 |
| Czechoslovakia .. .. | 1954–58 | 33 | Portugal .. .. | 1954–58 | 87 |
| Cyprus .. .. .. | 1954–58 | 35 | Yugoslavia .. .. | 1954–58 | 100 |
| Republic of Ireland .. | 1954–58 | 36 | Colombia .. .. | 1954–58 | 102 |
| France .. .. .. | 1954–58 | 36 | Chile .. .. .. | 1954–58 | 120 |

* Including Maoris.

**TABLE 10—Infant Mortality, European and Maori, 1940–59**

| Year | European and Maori | | European | | Maori | |
|---|---|---|---|---|---|---|
| | Numbers | Rate per 1,000 Live Births | Numbers | Rate per 1,000 Live Births | Numbers | Rate per 1,000 Live Births |
| 1940 .. .. | 1,362 | 36·78 | 990 | 30·21 | 372 | 87·22 |
| 1941 .. .. | 1,562 | 39·81 | 1,045 | 29·77 | 517 | 125·06 |
| 1942 .. .. | 1,388 | 36·62 | 964 | 28·71 | 424 | 97·92 |
| 1943 .. .. | 1,350 | 38·85 | 951 | 31·37 | 399 | 89·86 |
| 1944 .. .. | 1,473 | 38·65 | 1,012 | 30·12 | 461 | 102·26 |
| 1945 .. .. | 1,449 | 34·79 | 1,036 | 27·99 | 413 | 88·93 |
| 1946 .. .. | 1,524 | 31·99 | 1,093 | 26·10 | 431 | 74·62 |
| 1947 .. .. | 1,487 | 29·86 | 1,122 | 25·04 | 365 | 73·18 |
| 1948 .. .. | 1,350 | 27·47 | 970 | 21·95 | 380 | 76·67 |
| 1949 .. .. | 1,468 | 30·02 | 1,046 | 23·78 | 422 | 85·82 |
| 1950 .. .. | 1,364 | 27·60 | 1,008 | 22·75 | 356 | 69·74 |
| 1951 .. .. | 1,374 | 27·54 | 1,017 | 22·78 | 357 | 68·16 |
| 1952 .. .. | 1,475 | 28·40 | 1,014 | 21·82 | 461 | 84·45 |
| 1953 .. .. | 1,335 | 25·70 | 931 | 20·06 | 404 | 73·07 |
| 1954 .. .. | 1,302 | 24·05 | 968 | 19·99 | 334 | 58·60 |
| 1955 .. .. | 1,365 | 24·52 | 1,002 | 20·09 | 363 | 62·51 |
| 1956 .. .. | 1,313 | 23·20 | 978 | 19·39 | 335 | 54·36 |
| 1957 .. .. | 1,420 | 24·28 | 1,036 | 19·98 | 384 | 57·90 |
| 1958 .. .. | 1,416 | 23·35 | 1,043 | 19·40 | 373 | 54·37 |
| 1959 .. .. | 1,477 | 23·87 | 1,089 | 19·89 | 388 | 54·42 |

**TABLE 11—Deaths of Infants Under One Year by Causes (European and Maori Combined) 1955–59**

| Principal Cause of Death | Number of Deaths | | | | | Rates per 1,000 Live Births | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1959 | 1958 | 1957 | 1956 | 1955 | 1959 | 1958 | 1957 | 1956 | 1955 |
| Influenza, pneumonia, and bronchitis | 270 | 225 | 279 | 235 | 220 | 4·3 | 3·6 | 4·7 | 4·2 | 4·0 |
| Gastro-enteritis, diarrhoea, and dysentery | 64 | 53 | 54 | 44 | 67 | 1·0 | 0·9 | 0·9 | 0·8 | 1·2 |
| Congenital malformation .. | 255 | 255 | 193 | 210 | 214 | 4·1 | 4·2 | 3·4 | 3·7 | 3·8 |
| Birth injury .. .. | 158 | 156 | 172 | 172 | 175 | 2·6 | 2·6 | 2·9 | 3·0 | 3·1 |
| Asphyxia and atelectasis .. | 151 | 162 | 203 | 145 | 154 | 2·4 | 2·7 | 3·3 | 2·6 | 2·8 |
| Haemolytic disease of newborn | 42 | 50 | 21 | 39 | 40 | 0·7 | 0·8 | 0·5 | 0·7 | 0·7 |
| Immaturity .. .. | 208 | 186 | 205 | 183 | 202 | 3·4 | 3·1 | 3·6 | 3·2 | 3·6 |
| Other .. .. .. | 329 | 329 | 293 | 285 | 293 | 5·3 | 5·4 | 5·0 | 5·1 | 5·3 |
| Totals .. .. | 1,477 | 1,416 | 1,420 | 1,313 | 1,365 | 23·9 | 23·3 | 24·3 | 23·2 | 24·5 |

**TABLE 12—Deaths of Infants Under One Year**

A = Under one month. B = One month and under one year.

(Figures in parentheses denote those where prematurity was mentioned associated with death).

| | | European | | | | | | | | Maori | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1959 | | 1958 | | 1957 | | 1956 | | 1959 | | 1958 | | 1957 | | 1956 | |
| Influenza, pneumonia, and bronchitis | A | 29 | (8) | 31 | (11) | 30 | (5) | 36 | (10) | 11 | (3) | 12 | (2) | 16 | (7) | 6 | |
| | B | 91 | (1) | 87 | (1) | 105 | | 82 | | 139 | | 95 | (1) | 128 | | 111 | |
| Gastro-enteritis, dairrhoea, and dysentery | A | 6 | | 2 | | 3 | | 1 | | 2 | | 4 | (1) | 1 | | 2 | |
| | B | 15 | | 10 | | 10 | | 15 | | 41 | | 37 | (1) | 40 | | 26 | |
| Congenital malformation | A | 132 | (15) | 133 | (14) | 90 | (17) | 95 | (13) | 17 | (1) | 12 | | 11 | | 15 | (2) |
| | B | 97 | (1) | 96 | (1) | 75 | (3) | 89 | | 9 | | 20 | | 17 | | 11 | |
| Birth injury | A | 127 | (63) | 123 | (67) | 138 | (58) | 141 | (67) | 29 | (13) | 33 | (11) | 30 | (13) | 28 | (14) |
| | B | .. | | .. | | 3 | | 2 | | 2 | | .. | | 1 | | 1 | (1) |
| Asphyxia and atelectasis | A | 124 | (84) | 130 | (82) | 170 | (101) | 126 | (75) | 24 | (12) | 28 | (17) | 31 | (9) | 17 | (8) |
| | B | 2 | (1) | 4 | (1) | 2 | (1) | 2 | | 1 | | .. | | .. | | .. | |
| Haemolytic disease of newborn | A | 41 | (10) | 49 | (14) | 17 | (2) | 37 | (11) | .. | | .. | | 2 | | .. | |
| | B | 1 | | 1 | | 1 | | 2 | | .. | | .. | | 1 | | .. | |
| Immaturity | A | 174 | | 143 | | 175 | | 143 | | 34 | | 42 | | 28 | | 40 | |
| | B | .. | | .. | | 1 | | .. | | .. | | 1 | | 1 | | .. | |
| Other | A | 130 | (37) | 120 | (54) | 95 | (36) | 94 | (29) | 20 | (6) | 20 | (9) | 19 | (9) | 16 | (4) |
| | B | 120 | (1) | 114 | (3) | 121 | | 113 | | 59 | | 69 | | 58 | | 62 | |
| Totals | A | 763 | | 731 | | 720 | | 673 | | 137 | | 151 | | 138 | | 124 | |
| | B | 326 | | 312 | | 316 | | 305 | | 251 | | 222 | | 246 | | 211 | |

## TABLE 13—Deaths - Numbers and Rates Each Year, 1954 to 1958

| Year | Numbers | | | | | | Rates per 1,000 of Population | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | European | | | Maori | | | European Crude Rate | | | Maori Crude Rate | | | Maori Adjusted Rate | | |
| | Both Sexes | M. | F. | Both Sexes | M. | F. | Both Sexes | M. | F. | Both Sexes | M. | F. | Both Sexes | M. | F. |
| 1954 .. .. | 17,667 | 9,841 | 7,826 | 1,209 | 680 | 529 | 9·0 | 10·0 | 8·0 | 9·4 | 10·4 | 8·4 | 17·6 | 18·0 | 17·0 |
| 1955 .. .. | 17,953 | 9,933 | 8,020 | 1,272 | 694 | 578 | 9·0 | 9·9 | 8·0 | 9·6 | 10·2 | 8·9 | 17·3 | 16·1 | 18·7 |
| 1956 .. .. | 18,403 | 10,264 | 8,139 | 1,293 | 708 | 585 | 9·0 | 10·0 | 8·0 | 9·4 | 10·0 | 8·7 | 18·4 | 18·0 | 18·5 |
| 1957 .. .. | 19,411 | 10,863 | 8,548 | 1,451 | 804 | 647 | 9·3 | 10·4 | 8·2 | 10·1 | 11·0 | 9·2 | 20·1 | 19·7 | 20·3 |
| 1958 .. .. | 19,014 | 10,453 | 8,561 | 1,287 | 728 | 559 | 8·9 | 9·7 | 8·1 | 8·7 | 9·6 | 7·7 | 17·0 | 17·6 | 16·0 |
| Average, 1954–58 .. | 18,490 | 10,271 | 8,219 | 1,302 | 723 | 579 | 9·1 | 10·0 | 8·1 | 9·5 | 10·2 | 8·6 | 17·7* | 17·4* | 17·8* |

*Based on 1956 Census results

**TABLE 14—Annual Return of Poliomyelitis Vaccinations for Year Ended 31 December 1959**

(Total number of injections given: 1,363,204.)

| Districts | Children | | | Adults | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|
| | First | Second | Third | First | Second | Third | First | Second | Third |
| Whangarei .. | 6,762 | 6,310 | 13,773 | 1,272 | 1,260 | 2,183 | 8,034 | 7,570 | 15,956 |
| Auckland .. | 19,426 | 19,161 | 48,625 | 3,123 | 3,441 | 27,404 | 22,549 | 22,602 | 76,029 |
| Hamilton .. | 11,518 | 11,016 | 25,449 | 3,768 | 3,591 | 4,516 | 15,286 | 14,607 | 29,965 |
| Rotorua .. | 4,886 | 4,745 | 18,063 | 6,428 | 6,123 | 5,864 | 11,314 | 10,868 | 23,927 |
| Gisborne .. | 3,038 | 1,618 | 6,161 | 869 | 1,390 | 1,989 | 3,907 | 3,008 | 8,150 |
| Napier .. | 3,678 | 4,249 | 12,537 | 4,105 | 4,056 | 2,123 | 7,783 | 8,305 | 14,660 |
| New Plymouth .. | 3,997 | 3,392 | 12,662 | 3,045 | 2,768 | 1,265 | 7,042 | 6,160 | 13,927 |
| Palmerston North | 7,461 | 7,554 | 25,354 | 5,741 | 5,401 | 772 | 13,202 | 12,955 | 26,126 |
| Wellington .. | 6,891 | 7,751 | 29,035 | 7,806 | 8,380 | 9,433 | 14,697 | 16,131 | 38,468 |
| Nelson .. | 2,786 | 2,936 | 7,506 | 2,863 | 2,828 | 1,541 | 5,649 | 5,764 | 9,047 |
| Greymouth .. | 2,101 | 2,117 | 4,620 | 1,454 | 1,432 | 1,221 | 3,555 | 3,549 | 5,841 |
| Christchurch .. | 13,387 | 13,255 | 30,173 | 13,459 | 11,964 | 4,862 | 26,846 | 25,219 | 35,035 |
| Timaru .. | 3,579 | 4,038 | 11,258 | 3,645 | 4,267 | 2,343 | 7,224 | 8,305 | 13,601 |
| Dunedin .. | 6,267 | 5,760 | 16,839 | 5,674 | 4,868 | 9,441 | 11,941 | 10,628 | 26,280 |
| Invercargill .. | 7,051 | 6,917 | 12,051 | 1,558 | 1,576 | 737 | 8,609 | 8,493 | 12,788 |
| Totals.. | 102,828 | 100,819 | 274,106 | 64,810 | 63,345 | 75,694 | 167,638 | 164,164 | 349,800 |

**TABLE 15a—Notifiable Diseases in New Zealand for the Year Ended 31 December 1959, Showing Distribution by Months: All Cases (Including Maoris)**

| —— | January | February | March | April | May | June | July | August | September | October | November | December | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Diphtheria .. .. .. | 1 | 1 | 3 | .. | 2 | 4 | 2 | 1 | .. | 3 | 1 | .. | 18 |
| Enteric fever— | | | | | | | | | | | | | |
| Typhoid .. .. .. | 10 | 7 | 9 | 6 | 2 | 3 | 4 | 4 | 3 | 2 | 6 | 4 | 60 |
| Paratyphoid .. .. | .. | .. | .. | 2 | 2 | .. | 1 | .. | .. | 1 | .. | .. | 6 |
| Tuberculosis— | | | | | | | | | | | | | |
| Pulmonary .. .. | 68 | 94 | 100 | 102 | 104 | 81 | 126 | 103 | 95 | 105 | 116 | 109 | 1,203 |
| Other forms .. .. | 17 | 15 | 14 | 22 | 8 | 14 | 24 | 23 | 13 | 24 | 13 | 16 | 203 |
| Cerebrospinal meningitis .. | 8 | 7 | 3 | 3 | 6 | 7 | 9 | 9 | 10 | 12 | 11 | 2 | 87 |
| Poliomyelitis .. .. | 2 | 4 | 1 | 4 | .. | .. | .. | 2 | 1 | 1 | .. | 1 | 16 |
| Pneumonic influenza .. | 10 | 2 | 1 | 1 | 4 | 6 | 11 | 6 | 4 | 3 | 2 | .. | 50 |
| Ornithosis (psittacosis) .. | .. | .. | .. | .. | .. | 2 | .. | .. | .. | .. | .. | .. | 2 |
| Puerperal fever— | | | | | | | | | | | | | |
| Ordinary .. .. | 2 | 2 | .. | 4 | .. | 4 | 1 | .. | 1 | 1 | .. | 1 | 16 |
| Following abortion .. | 4 | 3 | .. | 1 | 2 | 1 | .. | 1 | 1 | 2 | 2 | 2 | 19 |
| Eclampsia .. .. .. | 2 | 6 | 6 | 10 | 8 | 6 | 4 | 4 | 4 | 6 | 2 | 6 | 64 |
| Tetanus .. .. .. | 5 | 2 | 4 | 5 | 1 | 4 | 5 | .. | 2 | 2 | 6 | 3 | 39 |
| Hydatids .. .. .. | 5 | 5 | 8 | 7 | 6 | 3 | 8 | 6 | 9 | 3 | 4 | 5 | 69 |
| Trachoma .. .. .. | .. | 1 | .. | .. | .. | .. | .. | 1 | 1 | 1 | .. | .. | 4 |
| Ophthalmia neonatorum .. | 11 | 8 | 20 | 11 | 10 | 11 | 11 | 13 | 16 | 3 | 7 | 6 | 127 |
| Food poisoning .. .. | 62 | 14 | 15 | 9 | 7 | 132 | 16 | 8 | 14 | 8 | 14 | 11 | 310 |
| Dysentery— | | | | | | | | | | | | | |
| Bacillary .. .. .. | 11 | 28 | 30 | 38 | 46 | 29 | 61 | 145 | 145 | 62 | 45 | 39 | 679 |
| Amoebic .. .. .. | .. | 1 | 2 | .. | .. | .. | .. | .. | .. | 3 | 3 | .. | 9 |
| Undulant fever .. .. | 3 | 1 | 2 | 9 | 1 | 2 | 1 | 1 | 3 | 4 | 4 | 5 | 36 |
| Leptospirosis .. .. | 8 | 5 | 4 | 7 | 11 | 4 | .. | 5 | 13 | 18 | 20 | 22 | 117 |
| Salmonellosis .. .. | 55 | 17 | 16 | 14 | 3 | 2 | 3 | 3 | 5 | 3 | 3 | 7 | 131 |
| Malaria .. .. .. | .. | 2 | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | 3 |
| Actinomycosis .. .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | 1 |
| Lethargic encephalitis .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | 1 |
| Anchylostomiasis .. .. | .. | 1 | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | 2 |
| Infective hepatitis .. .. | 163 | 165 | 158 | 132 | 116 | 167 | 149 | 209 | 137 | 174 | 225 | 178 | 1,973 |
| Pemphigus neonatorum .. | 25 | 14 | 38 | 21 | 24 | 9 | 17 | 7 | 13 | 10 | 12 | 9 | 199 |
| Staphylococcal pneumonia and septicaemia .. .. | .. | 1 | .. | 3 | 1 | 3 | 1 | 1 | 3 | 5 | .. | 2 | 20 |
| Septicaemia (following abortion or miscarriage) .. .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | 1 |
| Taeniasis .. .. .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 |
| Leprosy .. .. .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | 1 |
| Beriberi .. .. .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | 1 |
| Totals .. .. | 472 | 406 | 434 | 414 | 365 | 494 | 454 | 554 | 494 | 456 | 496 | 429 | 5,468 |

**TABLE 15b—Notifiable Diseases in New Zealand for the Year Ended 31 December 1959, Showing Distribution by Health Districts: All Cases (Including Maoris)**

| —— | Whangarei | Auckland | Hamilton | Rotorua | Gisborne | Napier | New Plymouth | Palmerston North | Wellington | Nelson | Christchurch | Greymouth | Timaru | Dunedin | Invercargill | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Diphtheria | .. | 5 | .. | 4 | 4 | .. | 3 | 1 | .. | .. | .. | .. | .. | .. | 1 | 18 |
| Enteric fever— | | | | | | | | | | | | | | | | |
| Typhoid | .. | 15 | 5 | 13 | 15 | 4 | 1 | .. | 5 | 1 | 1 | .. | .. | .. | .. | 60 |
| Paratyphoid | 1 | 4 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | 6 |
| Tuberculosis— | | | | | | | | | | | | | | | | |
| Pulmonary | 77 | 244 | 95 | 95 | 56 | 38 | 19 | 47 | 160 | 20 | 155 | 18 | 30 | 120 | 29 | 1,203 |
| Other forms | 15 | 26 | 24 | 20 | 9 | 4 | 4 | 17 | 26 | 7 | 11 | 2 | 8 | 21 | 9 | 203 |
| Cerebrospinal meningitis | 1 | 25 | 14 | 10 | 3 | 3 | 1 | 5 | 14 | 1 | 6 | 1 | 1 | .. | 2 | 87 |
| Poliomyelitis | 1 | 6 | 4 | 1 | .. | .. | .. | 1 | 1 | .. | .. | .. | .. | .. | 2 | 16 |
| Pneumonic influenza | 1 | 1 | 3 | 5 | 1 | 3 | .. | 11 | .. | 1 | 14 | 2 | 5 | 2 | 1 | 50 |
| Ornithosis (psittacosis) | .. | .. | .. | .. | .. | .. | .. | .. | 2 | .. | .. | .. | .. | .. | .. | 2 |
| Puerperal fever— | | | | | | | | | | | | | | | | |
| Ordinary | .. | 1 | 3 | 1 | .. | 3 | 2 | .. | .. | .. | 5 | .. | .. | .. | 1 | 16 |
| Following abortion | .. | .. | .. | .. | .. | 1 | .. | .. | 3 | 1 | 9 | .. | 2 | .. | 3 | 19 |
| Eclampsia | 1 | 16 | 8 | 1 | 1 | .. | 2 | 7 | 7 | 5 | 5 | 3 | 5 | 2 | 1 | 64 |
| Tetanus | 2 | 5 | 8 | 3 | 2 | 1 | 2 | 4 | .. | 1 | 3 | 1 | 2 | 1 | 4 | 39 |
| Hydatids | .. | 4 | 6 | 9 | 7 | 8 | 1 | 5 | 8 | 3 | 11 | 2 | 1 | 1 | 3 | 69 |
| Trachoma | .. | 1 | 2 | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | 4 |
| Ophthalmia neonatorum | 15 | 21 | 1 | 3 | 17 | .. | .. | 6 | .. | .. | 64 | .. | .. | .. | .. | 127 |
| Food poisoning | 6 | 71 | 53 | 1 | .. | .. | 8 | 4 | 12 | 39 | 23 | .. | 90 | 3 | .. | 310 |
| Dysentery— | | | | | | | | | | | | | | | | |
| Bacillary | 3 | 156 | 19 | 105 | 12 | 12 | 17 | 1 | 190 | 1 | 82 | 80 | 1 | .. | .. | 679 |
| Amoebic | .. | 1 | .. | .. | .. | .. | 1 | .. | 6 | .. | 1 | .. | .. | .. | .. | 9 |
| Undulant fever | 2 | 2 | 9 | 5 | .. | .. | 3 | 1 | .. | .. | 5 | .. | 2 | 6 | 1 | 36 |
| Leptospirosis | 14 | 21 | 47 | 10 | .. | .. | 15 | 6 | 2 | .. | 1 | .. | .. | 1 | .. | 117 |
| Salmonellosis | 5 | 7 | 3 | 16 | 2 | 5 | 4 | 2 | 13 | 50 | 4 | 6 | 9 | 3 | 2 | 131 |
| Malaria | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | 3 |
| Actinomycosis | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | 1 |
| Lethargic encephalitis | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 |
| Anchylostomiasis | .. | 2 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 |
| Infective hepatitis | 91 | 319 | 165 | 141 | 48 | 59 | 33 | 128 | 156 | 40 | 371 | 14 | 67 | 34 | 307 | 1,973 |
| Pemphigus neonatorum | 14 | 36 | 9 | 5 | 24 | .. | 9 | 10 | 12 | 7 | 59 | 4 | 8 | 2 | .. | 199 |
| Staphylococcal pneumonia and septicaemia | .. | 3 | .. | 1 | 1 | 1 | .. | 1 | 5 | 1 | 2 | .. | 3 | 2 | .. | 20 |
| Septicaemia (following abortion or miscarriage) | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | 1 |
| Taeniasis | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | 1 |
| Leprosy | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 |
| Beriberi | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 |
| Totals | 249 | 994 | 479 | 450 | 203 | 142 | 126 | 257 | 623 | 178 | 833 | 135 | 234 | 199 | 366 | 5,468 |

## TABLE 15c—Notifiable Diseases in New Zealand for the Year Ended 31 December 1959, Showing Distribution by Age and Sex

ALL CASES (INCLUDING MAORIS)

| | Under 1 Year | | 1 and Under 5 | | 5 and Under 10 | | 10 and Under 15 | | 15 and Under 25 | | 25 and Under 45 | | 45 and Under 65 | | 65 and Over | | Totals | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | M. | F. | M. | F. | M. | F. | M. | F. | M. | F. | M. | F. | M. | F. | M. | F. | M. | F. | |
| Diphtheria | 2 | 3 | 1 | .. | 4 | 1 | 3 | .. | .. | 3 | .. | .. | .. | .. | 1 | .. | 11 | 7 | 18 |
| Enteric Fever— | | | | | | | | | | | | | | | | | | | |
| A. Typhoid | .. | 2 | 5 | 3 | 3 | 8 | 7 | 4 | 3 | 3 | 10 | 5 | 1 | 5 | 1 | .. | 30 | 30 | 60 |
| B. Paratyphoid | .. | .. | 1 | 2 | 1 | .. | .. | .. | .. | .. | 1 | .. | 1 | .. | .. | .. | 4 | 2 | 6 |
| Tuberculosis— | | | | | | | | | | | | | | | | | | | |
| A. Pulmonary | 3 | 5 | 39 | 44 | 38 | 33 | 26 | 29 | 98 | 94 | 252 | 173 | 174 | 80 | 88 | 27 | 718 | 485 | 1,203 |
| B. Other forms | 2 | 1 | 9 | 17 | 14 | 7 | 4 | 6 | 15 | 21 | 26 | 39 | 16 | 17 | 4 | 5 | 90 | 113 | 203 |
| Cerebrospinal meningitis | 14 | 9 | 16 | 9 | 6 | 7 | 5 | 3 | 7 | 2 | 6 | .. | 1 | .. | .. | 2 | 55 | 32 | 87 |
| Poliomyelitis | 1 | .. | 3 | .. | 2 | 2 | 2 | .. | 2 | .. | 1 | 3 | .. | .. | .. | .. | 11 | 5 | 16 |
| Pneumonic influenza | 6 | .. | 1 | 2 | 4 | 2 | .. | 1 | 3 | 1 | 9 | 4 | 3 | 3 | 4 | 7 | 30 | 20 | 50 |
| Ornithosis (psittacosis) | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 | .. | .. | .. | 2 | .. | 2 |
| Puerperal Fever— | | | | | | | | | | | | | | | | | | | |
| A. Ordinary | .. | .. | .. | .. | .. | .. | .. | .. | .. | 7 | .. | 9 | .. | .. | .. | .. | .. | 16 | 16 |
| B. Following abortion | .. | .. | .. | .. | .. | .. | .. | .. | .. | 5 | .. | 14 | .. | .. | .. | .. | .. | 19 | 19 |
| Eclampsia | .. | .. | .. | .. | .. | .. | .. | .. | .. | 41 | .. | 23 | .. | .. | .. | .. | .. | 64 | 64 |
| Tetanus | 2 | 1 | 5 | 1 | 5 | 1 | 3 | 1 | 3 | 2 | 3 | 1 | 4 | 3 | 2 | 2 | 27 | 12 | 39 |
| Hydatids | .. | .. | 1 | 3 | 2 | 2 | 2 | 1 | 5 | 4 | 8 | 12 | 10 | 7 | 7 | 5 | 35 | 34 | 69 |
| Trachoma | .. | .. | .. | .. | .. | 1 | .. | .. | 1 | .. | .. | 1 | 1 | .. | .. | .. | 2 | 2 | 4 |
| Opthalmia Neonatorum | 85 | 42 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 85 | 42 | 127 |
| Food Poisoning | 2 | 3 | 12 | 11 | 8 | 10 | 8 | 6 | 104 | 33 | 27 | 37 | 16 | 20 | 4 | 9 | 181 | 129 | 310 |
| Dysentery— | | | | | | | | | | | | | | | | | | | |
| A. Bacillary | 15 | 18 | 98 | 106 | 97 | 49 | 48 | 27 | 13 | 51 | 55 | 57 | 18 | 12 | 11 | 4 | 355 | 324 | 679 |
| B. Amoebic | .. | .. | .. | .. | .. | .. | 1 | .. | 1 | 1 | 3 | 1 | 1 | 1 | .. | .. | 6 | 3 | 9 |
| Undulant fever | .. | .. | .. | .. | .. | .. | 2 | 1 | 3 | 2 | 18 | 3 | 7 | .. | .. | .. | 30 | 6 | 36 |
| Leptospirosis | .. | .. | .. | .. | 2 | 1 | 3 | .. | 17 | 1 | 73 | .. | 17 | .. | 3 | .. | 115 | 2 | 117 |
| Salmonellosis | 7 | 10 | 9 | 12 | 6 | 3 | 5 | 3 | 3 | 7 | 28 | 22 | 7 | 8 | 1 | .. | 66 | 65 | 131 |
| Malaria | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | 1 | 1 | .. | .. | .. | .. | 2 | 1 | 3 |
| Actinomycosis | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | 1 | .. | 1 |
| Lethargic encephalitis | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | 1 | .. | 1 |
| Anchylostomiasis | .. | .. | .. | .. | 1 | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 2 |
| Infective hepatitis | 2 | .. | 32 | 31 | 206 | 204 | 191 | 172 | 193 | 149 | 319 | 284 | 72 | 64 | 23 | 31 | 1,038 | 935 | 1,973 |
| Pemphigus neonatorum | 128 | 71 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 128 | 71 | 199 |
| Staphylococcal pneumonia and septicaemia | 11 | 9 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 11 | 9 | 20 |
| Septicaemia (following abortion or miscarriage) | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | 1 | 1 |
| Taeniasis | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | 1 | 1 |
| Leprosy | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | 1 | 1 |
| Beriberi | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | 1 | .. | 1 |

**TABLE 15d—Notifiable Diseases in New Zealand for the Year Ended 31 December 1959, Showing Distribution by Health Districts: Maoris**

| — | Whangarei | Auckland | Hamilton | Rotorua | Gisborne | Napier | New Plymouth | Palmerston North | Wellington | Nelson | Christchurch | Greymouth | Timaru | Dunedin | Invercargill | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Diphtheria | .. | 2 | .. | 4 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 7 |
| Enteric fever— | | | | | | | | | | | | | | | | |
| Typhoid | .. | 13 | 5 | 13 | 13 | 3 | .. | .. | 1 | .. | .. | .. | .. | .. | .. | 48 |
| Paratyphoid | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Tuberculosis— | | | | | | | | | | | | | | | | |
| Pulmonary | 62 | 82 | 59 | 61 | 43 | 18 | 12 | 15 | 39 | .. | 6 | .. | 2 | 1 | 6 | 406 |
| Other forms | 8 | 10 | 15 | 13 | 6 | 4 | 1 | 6 | 6 | .. | .. | .. | 2 | 2 | 2 | 75 |
| Cerebrospinal meningitis | .. | 6 | 5 | 6 | 2 | .. | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | 21 |
| Poliomyelitis | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 |
| Pneumonic influenza | 1 | .. | .. | 2 | 1 | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | 5 |
| Ornithosis (psittacosis) | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Puerperal fever— | | | | | | | | | | | | | | | | |
| Ordinary | .. | .. | 3 | 1 | .. | 3 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 7 |
| Following abortion | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Eclampsia | .. | 1 | 1 | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | 3 |
| Tetanus | 2 | 1 | 1 | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 5 |
| Hydatids | .. | .. | 1 | 7 | 5 | 1 | 1 | .. | 2 | 1 | .. | .. | .. | .. | .. | 18 |
| Trachoma | .. | 1 | 2 | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | 4 |
| Ophthalmia neonatorum | 8 | .. | 1 | .. | 10 | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | 20 |
| Food poisoning | 1 | 6 | .. | .. | .. | .. | .. | 1 | .. | 39 | .. | .. | .. | .. | .. | 47 |
| Dysentery— | | | | | | | | | | | | | | | | |
| Bacillary | 2 | 21 | 8 | 29 | 6 | 6 | 1 | .. | .. | .. | 2 | 6 | .. | .. | .. | 81 |
| Amoebic | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Undulant fever | 1 | .. | .. | 1 | .. | .. | 1 | .. | .. | .. | .. | .. | 1 | .. | .. | 4 |
| Leptospirosis | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 |
| Salmonellosis | 3 | 1 | .. | 7 | 1 | 1 | .. | .. | 1 | 1 | .. | .. | .. | .. | .. | 15 |
| Malaria | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Actinomycosis | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | 1 |
| Lethargic encephalitis | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 |
| Anchylostomiasis | .. | 2 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 |
| Infective hepatitis | 24 | 20 | 25 | 20 | 9 | 4 | 10 | 4 | 13 | 1 | 3 | 1 | .. | .. | .. | 134 |
| Pemphigus neonatorum | 8 | .. | 1 | 2 | 9 | .. | .. | 3 | 1 | .. | 2 | .. | .. | .. | .. | 26 |
| Staphylococcal pneumonia and septicaemia | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | 1 |
| Septicaemia (following abortion or miscarriage) | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Taeniasis | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Leprosy | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Beriberi | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Totals | 120 | 168 | 128 | 166 | 108 | 40 | 27 | 32 | 65 | 42 | 14 | 8 | 5 | 3 | 8 | 934 |

## TABLE 15e—Notifiable Diseases in New Zealand for the Year Ended 31 December 1959, showing Distribution by Age and Sex

MAORIS

| Diseases | Under 1 Year | | 1 and Under 5 | | 5 and Under 10 | | 10 and Under 15 | | 15 and Under 25 | | 25 and Under 45 | | 45 and Under 65 | | 65 and Over | | Totals | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | M. | F. | M. | F. | M. | F. | M. | F. | M. | F. | M. | F. | M. | F. | M. | F. | M. | F. | |
| Diphtheria | 1 | 2 | 1 | .. | 3 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 5 | 2 | 7 |
| Enteric fever— | | | | | | | | | | | | | | | | | | | |
| A. Typhoid | .. | 2 | 5 | 3 | 2 | 6 | 6 | 2 | 3 | 2 | 8 | 5 | 3 | 1 | .. | .. | 27 | 21 | 48 |
| B. Paratyphoid | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Tuberculosis— | | | | | | | | | | | | | | | | | | | |
| A. Pulmonary | 1 | 4 | 26 | 26 | 18 | 20 | 12 | 16 | 47 | 45 | 66 | 51 | 26 | 26 | 17 | 5 | 213 | 193 | 406 |
| B. Other forms | 1 | 1 | 3 | 5 | 3 | 3 | 1 | 4 | 8 | 11 | 8 | 19 | 3 | 3 | 1 | 1 | 28 | 47 | 75 |
| Cerebrospinal meningitis | 4 | 4 | 4 | 3 | .. | 1 | .. | .. | 1 | 1 | 3 | .. | .. | .. | .. | .. | 12 | 9 | 21 |
| Poliomyelitis | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | 1 |
| Pneumonic influenza | 3 | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | 3 | 2 | 5 |
| Ornithosis (psittacosis) | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Puerperal fever— | | | | | | | | | | | | | | | | | | | |
| A. Ordinary | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 | .. | 5 | .. | .. | .. | .. | .. | 7 | 7 |
| B. Following abortion or miscarriage | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Eclampsia | .. | .. | .. | .. | .. | .. | .. | .. | .. | 2 | .. | 1 | .. | .. | .. | .. | .. | 3 | 3 |
| Tetanus | 2 | .. | .. | 1 | .. | .. | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | 3 | 2 | 5 |
| Hydatids | .. | .. | .. | 2 | 1 | 1 | 1 | .. | 3 | 2 | 4 | 1 | 3 | .. | .. | .. | 12 | 6 | 18 |
| Trachoma | .. | .. | .. | .. | .. | 1 | .. | .. | 1 | .. | .. | .. | 1 | 1 | .. | .. | 2 | 2 | 4 |
| Ophthalmia neonatorum | 12 | 8 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 12 | 8 | 20 |
| Food poisoning | .. | .. | 3 | .. | .. | .. | 3 | 4 | 4 | 18 | 2 | 7 | 4 | 1 | 1 | .. | 17 | 30 | 47 |
| Dysentery— | | | | | | | | | | | | | | | | | | | |
| A. Bacillary | 9 | 6 | 17 | 16 | 5 | 8 | 2 | 2 | 1 | 4 | 5 | 4 | 1 | 1 | .. | .. | 40 | 41 | 81 |
| B. Amoebic | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Undulant fever | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 3 | .. | 1 | .. | .. | .. | 4 | .. | 4 |
| Leptospirosis | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | 1 | .. | .. | .. | .. | .. | 2 | .. | 2 |
| Salmonellosis | 2 | 3 | 4 | 3 | 1 | .. | .. | 2 | .. | .. | .. | .. | .. | .. | .. | .. | 7 | 8 | 15 |
| Malaria | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Actinomycosis | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | 1 | .. | 1 |
| Lethargic encephalitis | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | 1 | .. | 1 |
| Anchylostomiasis | .. | .. | .. | .. | 1 | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | 2 |
| Infective hepatitis | 1 | .. | 8 | 8 | 18 | 14 | 9 | 6 | 18 | 14 | 11 | 13 | 6 | 6 | 1 | 1 | 72 | 62 | 134 |
| Pemphigus neonatorum | 15 | 11 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 15 | 11 | 26 |
| Staphylococcal pneumonia and septicaemia | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. | 1 |
| Septicaemia (following abortion or miscarriage) | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Taeniasis | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Leprosy | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Beriberi | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |

**TABLE 16—Milk Sampling Summary for Year Ended 31 December 1959: Tests Applied and Results**

N/c = Non-complying. W = Warning. P = Prosecution recommended.

| District | Total Samples | | | | Fat | | | Solids Not Fat | | | Water | | | Reductase | | | Phosphatase | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | N/c | W | P | No. | N/c | Per Cent | No. | N/c | Per Cent | No. | N/c | Per Cent | No. | N/c. | Per Cent | No. | N/c | Per Cent |
| Whangarei .. | 300 | 12 | 4 | .. | 300 | 8 | 2·7 | 300 | 4 | 1·3 | 300 | .. | .. | 18 | .. | .. | 179 | .. | .. |
| Auckland .. | 4,679 | 209 | 12 | 8 | 4,678 | 9 | 0·2 | 4,678 | 7 | 0·1 | 4,678 | 6 | 0·1 | 4,667 | 45 | 1·0 | 4,373 | .. | .. |
| Hamilton .. | 1,232 | 70 | 26 | 1 | 1,156 | 18 | 1·6 | 1,153 | 15 | 1·3 | 1,156 | 11 | 1·0 | 555 | 28 | 5·0 | 248 | 2 | 0·8 |
| Rotorua .. | 158 | 8 | .. | 3 | 143 | .. | .. | 143 | 3 | 2·1 | 143 | 3 | 2·1 | 59 | 2 | 3·4 | 140 | 2 | 1·4 |
| Gisborne .. | 238 | 16 | 5 | .. | 127 | 1 | 0·8 | 127 | 1 | 0·8 | 127 | .. | .. | 91 | 7 | 7·7 | 1 | .. | .. |
| Napier .. .. | 164 | 8 | 5 | .. | 120 | 4 | 3·3 | 119 | 1 | 0·8 | 120 | .. | .. | 1 | .. | .. | 7 | .. | .. |
| New Plymouth .. | 803 | 45 | .. | .. | 509 | 20 | 3·9 | 509 | 6 | 1·2 | 509 | .. | .. | 216 | 9 | 4·2 | 105 | 1 | 1·0 |
| Palmerston North | 995 | 99 | 6 | 10 | 501 | 16 | 3·2 | 506 | 10 | 2·0 | 707 | 11 | 1·6 | 286 | 26 | 9·1 | 136 | 6 | 4·4 |
| Wellington .. | 1,399 | 11 | 2 | .. | 589 | .. | .. | 589 | 2 | 0·3 | 589 | .. | .. | 856 | 3 | 0·4 | 71 | .. | .. |
| Nelson .. .. | 446 | 4 | .. | 1 | 311 | 2 | 0·6 | 311 | .. | .. | 311 | .. | .. | 83 | .. | .. | 132 | .. | .. |
| Greymouth .. | 77 | 13 | 1 | .. | 66 | 6 | 9·1 | 55 | 9 | 16·4 | 66 | 1 | 1·5 | 11 | .. | .. | 6 | .. | .. |
| Christchurch .. | 346 | 76 | 1 | .. | 342 | 8 | 2·3 | 342 | 56 | 16·4 | 301 | 1 | 0·3 | 333 | 9 | 2·7 | 245 | 2 | 0·8 |
| Timaru .. .. | 555 | 72 | 26 | 1 | 533 | 10 | 1·9 | 533 | 34 | 6·4 | 533 | .. | .. | 372 | 8 | 2·2 | 418 | 10 | 2·4 |
| Dunedin .. | 720 | 49 | 6 | .. | 691 | 23 | 3·3 | 691 | 19 | 2·8 | 691 | .. | .. | 6 | .. | .. | 173 | .. | .. |
| Invercargill .. | 335 | 65 | 22 | 7 | 246 | 9 | 3·7 | 237 | 40 | 16·9 | 237 | 12 | 5·1 | 179 | 8 | 4·5 | 17 | 1 | 5·9 |
| Totals .. | 12,447 | 757 | 116 | 31 | 10,312 | 134 | 1·3 | 10,293 | 207 | 2·0 | 11,068 | 45 | 0·4 | 7,733 | 145 | 1·9 | 6,251 | 24 | 0·4 |

**TABLE 17—Food and Drug Sampling, 1959**

| — | Total Samples | Samples Non-complying | Warnings Issued | Prosecutions Recommended |
|---|---|---|---|---|
| Cereals and bread | 13 | 1 | .. | .. |
| Infants and invalids food | 4 | .. | .. | .. |
| Sausages | 901 | 69 | 48 | 18 |
| Mincemeat | 856 | 54 | 39 | 12 |
| Bacon and ham | 91 | 30 | 5 | .. |
| Fresh meat | 145 | 9 | 4 | 3 |
| Other meats | 162 | 5 | 4 | 1 |
| Meat-pickling preparations | 2 | .. | .. | .. |
| Other fish | 23 | 1 | 1 | .. |
| Cream | 1,212 | 240 | 33 | .. |
| Milk shakes | 334 | 115 | 24 | .. |
| Butter | 130 | 6 | 5 | 1 |
| Other milk products | 15 | .. | .. | .. |
| Tea, coffee, and cocoa | 11 | 1 | .. | .. |
| Salts and spices | 21 | 2 | .. | .. |
| Sauces, vinegar, and pickles | 6 | 1 | .. | .. |
| Sweetening substances and confectionery | 20 | 6 | .. | .. |
| Ice cream | 589 | 152 | 38 | 1 |
| Fruit, vegetables, and products | 23 | .. | .. | .. |
| Jams and conserves | 15 | .. | .. | .. |
| Culinary essences | 14 | 2 | .. | .. |
| Beverages (non-alcoholic) | 163 | 39 | 14 | .. |
| Beverages (alcoholic) | 29 | .. | .. | .. |
| Drugs and proprietary medicines | 21 | 4 | .. | 1 |
| Disinfectants | 2 | 1 | 1 | .. |
| Totals | 4,802 | 738 | 216 | 37 |
| Seizures and destructions | 143 | .. | .. | .. |

**TABLE 18—Notification of Diseases Arising From Occupation**

| Source | Whangarei | Auckland | Hamilton | Rotorua | Gisborne | Napier | New Plymouth | Palmerston North | Wellington | Nelson | Greymouth | Christchurch | Timaru | Dunedin | Invercargill | Total | Deaths |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Official notifications | 20 | 75 | 65 | 17 | 3 | 5 | 21 | 12 | 36 | 1 | 5 | 29 | 2 | 24 | 11 | 328 | .. |
| All sources— | | | | | | | | | | | | | | | | | |
| 1. Skin diseases arising from occupation— | | | | | | | | | | | | | | | | | |
| Dermatitis due to oils and greases | 1 | 13 | 2 | .. | .. | .. | .. | .. | 3 | .. | 1 | 2 | .. | 5 | .. | 27 | .. |
| Dermatitis due to solvents | 1 | 13 | 1 | .. | .. | .. | 1 | .. | 7 | 1 | .. | 5 | .. | 2 | 1 | 32 | .. |
| Dermatitis due to various chemicals | 5 | .. | 4 | .. | 2 | .. | .. | 6 | 16 | .. | 1 | .. | .. | 6 | 1 | 41 | .. |
| Dermatitis due to cement | .. | 2 | 1 | .. | .. | 2 | 1 | .. | 2 | 2 | 1 | 2 | 1 | 2 | 1 | 17 | .. |
| Dermatitis due to other causes | .. | 41 | 3 | 2 | 2 | 5 | 6 | 3 | 6 | .. | 1 | 19 | 6 | 10 | 2 | 106 | .. |
| Chrome ulceration | .. | 2 | .. | .. | .. | .. | .. | .. | .. | .. | .. | 4 | .. | .. | .. | 6 | .. |
| Other diseases of the skin | .. | 7 | 3 | .. | .. | .. | 1 | .. | .. | .. | .. | 6 | .. | .. | .. | 17 | .. |
| Subtotals | 7 | 78 | 14 | 2 | 4 | 7 | 9 | 9 | 34 | 3 | 4 | 38 | 7 | 25 | 5 | 246 | .. |
| 2. Diseases due to dusts, fumes, gases, vapours, or mists— | | | | | | | | | | | | | | | | | |
| Chronic lead poisoning | .. | 2 | .. | .. | .. | .. | .. | .. | 1 | .. | .. | 1 | .. | .. | .. | 4 | .. |
| Phosphorus poisoning | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Poisoning from any pesticide and agricultural chemical met with at work | .. | .. | .. | .. | .. | .. | .. | 2 | .. | .. | .. | .. | .. | 1 | .. | 3 | .. |
| Poisoning from any gas, fumigant, or refrigerant met with at work | .. | 4 | 2 | .. | .. | 2 | .. | .. | .. | 2 | 1 | 1 | .. | 2 | .. | 14 | 2 |
| Poisoning from any solvent met with at work | .. | 1 | .. | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | 2 | .. |
| Poisoning from any metal or salt of any metal met with at work | .. | 1 | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | .. |
| Diseases of respiratory system arising from occupation | .. | 3 | 2 | .. | .. | .. | .. | .. | 1 | .. | .. | 1 | 1 | 1 | 2 | 11 | 1 |
| Subtotals | .. | 11 | 4 | .. | .. | 2 | .. | 3 | 2 | 2 | 1 | 3 | 1 | 4 | 2 | 35 | 3 |
| 3. Diseases due to physical agents— | | | | | | | | | | | | | | | | | |
| Compressed-air illness | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Damage to eyesight— | | | | | | | | | | | | | | | | | |
| (a) Non-traumatic physical agents | .. | 3 | .. | 6 | .. | 2 | 1 | 1 | .. | .. | .. | 4 | .. | 6 | 1 | 24 | .. |
| (b) Trauma | 1 | 6 | .. | 1 | .. | 1 | 3 | .. | 12 | .. | .. | .. | .. | 1 | 1 | 26 | .. |
| Hearing | .. | 1 | 1 | .. | .. | .. | .. | .. | .. | .. | 1 | .. | .. | .. | 1 | 4 | .. |
| Other causes | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | .. |
| Subtotals | 1 | 10 | 1 | 7 | .. | 3 | 4 | 1 | 12 | .. | 1 | 4 | .. | 7 | 4 | 55 | .. |
| 4. Occupational diseases due to infectious agents— | | | | | | | | | | | | | | | | | |
| Leptospirosis | 14 | 15 | 47 | 10 | .. | .. | 15 | 6 | .. | .. | .. | 1 | .. | .. | .. | 108 | .. |
| Brucellosis | 2 | 1 | .. | 5 | .. | .. | 3 | 1 | .. | .. | .. | .. | .. | .. | .. | 12 | .. |
| Subtotals | 16 | 16 | 47 | 15 | .. | .. | 18 | 7 | .. | .. | .. | 1 | .. | .. | .. | 120 | .. |
| Total—All sources | 24 | 115 | 66 | 24 | 4 | 12 | 31 | 20 | 48 | 5 | 6 | 46 | 8 | 36 | 11 | 456 | 3 |

**TABLE 19a—Supervision of Workers Exposed to Lead**

| Occupation, Trade, or Process | Number of Firms | Approximate Number of Workers Under Supervision | Number of Examinations | Number Absorbing Lead in Unhealthy Quantity | Number of Cases of Lead Poisoning Notified |
|---|---|---|---|---|---|
| Ship-breaking, etc., in which oxy-acetylene flame is used on paint containing metallic lead or compounds of lead | 6 | 144 | 207 | 15 | 2 |
| Manufacture of compounds of lead | 3 | 15 | 139 | .. | .. |
| Smelting of materials containing lead or compounds of lead | 25 | 132 | 430 | 17 | 1 |
| Manufacture of lead accumulators | 25 | 187 | 1,513 | 53 | .. |
| Manufacture of paints containing lead or compounds of lead | 20 | 164 | 861 | 8 | .. |
| Spray painting with paints containing lead or compounds of lead | 19 | 97 | 305 | 5 | .. |
| Lead burning in chemical plants | 9 | 47 | 377 | 6 | .. |
| Manufacture of lead arsenate | .. | .. | .. | .. | .. |
| Pottery works in which glazes containing lead or compounds of lead are used | 4 | 20 | 40 | 1 | .. |
| Rubber works in which compounds of lead are used in manufacture of rubber | .. | .. | .. | .. | .. |
| Vitreous enamelling works in which lead or compounds of lead are used in enamelling | 1 | 3 | 6 | .. | .. |
| Lead wiping or grinding of buffing (in motorcar-body manufacture) | 9 | 134 | 363 | 1 | 1 |
| Tinning of metal hollow ware in which lead is used | 1 | 5 | 5 | .. | .. |
| Printing and newspapers | 137 | 1,016 | 1,411 | 4 | .. |
| Not listed | 23 | 120 | 221 | 2 | .. |
| Totals | 282 | 2,084 | 5,878 | 112 | 4 |
| Totals, 1958 | 234 | 1,715 | 5,677 | 165 | 1 |

**TABLE 19b—Number of Workers Exposed to Lead**

| District | Number of Workers | Number of Cases of Lead Poisoning Notified | Number of Workers Absorbing Lead in Unhealthy Quantity |
|---|---|---|---|
| Whangarei .. .. | 41 | .. | .. |
| Auckland .. .. | 1,032 | 2 | 88 |
| Hamilton .. .. | 153 | .. | 2 |
| Rotorua .. .. | 81 | .. | .. |
| Gisborne .. .. | 31 | .. | .. |
| Napier .. .. .. | 5 | .. | .. |
| New Plymouth .. .. | 8 | .. | 1 |
| Palmerston North .. | 8 | .. | .. |
| Wellington .. .. | 225 | 1 | 6 |
| Greymouth .. .. | 41 | .. | .. |
| Christchurch .. .. | 319 | 1 | 15 |
| Timaru .. .. .. | 10 | .. | .. |
| Dunedin .. .. | 83 | .. | .. |
| Invercargill .. .. | 47 | .. | .. |
| Total .. .. | 2,084 | 4 | 112 |

**TABLE 20—Supervision of Workers Engaged in Electroplating Processes**

| District | Number of Firms | Approximate Number of Workers Under Supervision | Number of Examinations | Number of Workers Suffering from Conditions Arising from Occupation |
|---|---|---|---|---|
| Whangarei .. .. | 2 | 2 | 5 | .. |
| Auckland .. .. | 40 | 102 | 1,025 | 32 |
| Hamilton .. .. | 3 | 17 | 28 | .. |
| Rotorua .. .. | 1 | 3 | 12 | .. |
| Gisborne .. .. | 1 | 2 | 24 | .. |
| Napier .. .. .. | 1 | 3 | 10 | .. |
| New Plymouth .. .. | 1 | 3 | 9 | .. |
| Palmerston North .. | 4 | 21 | 64 | .. |
| Wellington .. .. | 18 | 38 | 337 | 1 |
| Nelson .. .. | .. | .. | .. | .. |
| Greymouth .. .. | 1 | 1 | 10 | .. |
| Christchurch .. .. | 20 | 75 | 528 | 25 |
| Timaru .. .. .. | .. | .. | .. | .. |
| Dunedin .. .. | 7 | 18 | 125 | .. |
| Invercargill .. .. | 2 | 5 | 13 | 1 |
| Totals .. .. | 101 | 290 | 2,190 | 59 |

**TABLE 21a—Medical and Nursing Arrangements – Factories**

| Size of Factories by Employment Levels | Total Number in New Zealand | | Medical and Nursing Arrangements | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Full-time Nurse Provided | | Part-time Nurse Provided | | Doctor Available Only | Total Number Employed |
| | Factories | Employed | With Doctor | Without Doctor | With Doctor | Without Doctor | | |
| Above 250 | *232 | 58,405 | 11 | 17 | .. | 2 | 3 | 22,545 |
| 101–250 | | | 2 | 4 | .. | 2 | .. | 1,554 |
| 51–100 .. | *303 | 21,346 | 1 | .. | .. | 5 | 3 | 408 |
| | 535 | 79,751 | 14 | 21 | .. | 9 | 6 | 24,507 |

*Figures from *Industrial Production Report* for 1957–58 published by the Department of Statistics. Six new arrangements commenced this year.

**TABLE 21b—Medical and Nursing Arrangements – Establishments Other Than Factories**

| Size of Establishment by Employment Levels | Medical and Nursing Arrangements | | | | | |
|---|---|---|---|---|---|---|
| | Full-time Nurse Provided | | Part-time Nurse Provided | | Doctor Available Only | Total Number Employed |
| | With Doctor | Without Doctor | With Doctor | Without Doctor | | |
| Above 250 .. | 2 | 9 | .. | 1 | .. | 11,953 |
| 101–250 .. .. | *2 | .. | .. | 1 | .. | 223 |
| 51–100 .. .. | .. | 1 | .. | .. | .. | 55 |
| | 4 | 10 | .. | 2 | .. | 12,231 |

*Two nurses at one firm with a doctor in regular attendance. Three new arrangements commenced this year.

**TABLE 22—Attendances at Industrial Health Centres**

| District | Centre | Attendances | | Total | Referred to | |
|---|---|---|---|---|---|---|
| | | First | Redressings | | Own Doctor | Hospital |
| Auckland .. | Penrose [1] .. | 3,842 | 5,051 | 8,893 | 128 | 233 |
| | Queens Wharf [2] | 6,715 | 4,849 | 11,564 | 1,096 | 669 |
| | Mount Wellington [3] | .. | .. | .. | .. | .. |
| | Onehunga [4] .. | .. | .. | .. | .. | .. |
| | Carbine Road [4] | .. | .. | .. | .. | .. |
| Wellington .. | Waterfront [2] .. | 3,120 | 1,252 | 4,372 | 327 | 224 |
| | Petone [3] .. | .. | .. | .. | .. | .. |
| Christchurch .. | Woolston [5] .. | 878 | 318 | 1,196 | 116 | 13 |
| | Lyttelton Waterfront [2] .. | 2,483 | 1,997 | 4,480 | 441 | 23 |
| | Hornby [6] .. | .. | .. | .. | .. | .. |
| Timaru .. | Industrial Foreshore [7] .. | .. | .. | .. | .. | .. |
| Dunedin .. | Foreshore .. | 787 | 440 | 1,227 | 117 | 97 |
| | Mobile Clinic [8] .. | .. | .. | .. | .. | .. |
| | Totals .. | 17,825 | 13,907 | 31,732 | 2,225 | 1,259 |

[1] Expansion into a base unit with outposts at Mt. Wellington, Onehunga, and Carbine Rd. approved in principle and in hands of architect.
[2] Financial support from Waterfront Industry Commission; remainder with financial support from Workers' Compensation Board.
[3] Workers' Compensation Board architect completing working drawings.
[4] Land being sought.
[5] Building completed and handed over to Department by Workers' Compensation Board in May 1960.
[6] Workers' Compensation Board architect proceeding with working drawings.
[7] Accommodation rented and Workers' Compensation Board architect proceeding with plans for alterations.
[8] Approved in principle by Workers' Compensation Board. Details to be developed.

The Board of Health makes reference on pages 18–19 to the programme of development in its Report No. 2, *Outpatient Services in Public Hospitals in New Zealand*, published March, 1960.

**TABLE 23—Medical Examination of Young Workers**

| | Number Examined | | | Number of Certificates Issued | | | Number of Rejections | | |
|---|---|---|---|---|---|---|---|---|---|
| | Male | Female | Total | Male | Female | Total | Male | Female | Total |
| First examination .. .. | 1,560 | 1,139 | 2,699 | 1,553 | 1,138 | 2,691 | 7 | 1 | 8 |
| Subsequent examination .. | 293 | 169 | 462 | 290 | 169 | 459 | 3 | .. | 3 |
| Tota .. .. | 1,853 | 1,308 | 3,161 | 1,843 | 1,307 | 3,150 | 10 | 1 | 11 |

## TABLE 24—School and Pre-school Children, 1959

| | School Children | | | | Pre-School Children (Including Plunket Examinations) | | | |
|---|---|---|---|---|---|---|---|---|
| | Europeans | | Maoris | | Europeans | | Maoris | |
| | No. | Per Cent | No. | Per Cent | No. | Per Cent | No. | Per Cent |
| Total number of children examined .. | 103,590 | .. | 10,309 | .. | 26,426 | .. | 683 | .. |
| Total number of children found to have defects .. .. .. .. | 6,600 | 6·37 | 1,088 | 10·55 | 2,283 | 8·64 | 96 | 14·06 |
| Children showing evidence of defects— | | | | | | | | |
| In general condition— | | | | | | | | |
| General uncleanliness .. .. | 22 | 0·02 | 12 | 0·11 | 2 | 0·01 | 2 | 0·29 |
| Underweight .. .. .. | 79 | 0·08 | 13 | 0·13 | 12 | 0·05 | .. | .. |
| Obesity .. .. .. .. | 52 | 0·05 | 4 | 0·04 | 13 | 0·05 | 1 | 0·15 |
| Other .. .. .. .. | 116 | 0·11 | 43 | 0·42 | 54 | 0·20 | 8 | 1·17 |
| Total .. .. .. | 269 | 0·26 | 72 | 0·70 | 81 | 0·31 | 11 | 1·61 |
| Skin condition— | | | | | | | | |
| Impetigo .. .. .. | 53 | 0·05 | 33 | 0·32 | 17 | 0·06 | 12 | 1·76 |
| Boils or staphylococcal infection .. | 37 | 0·04 | 14 | 0·13 | 16 | 0·06 | 5 | 0·73 |
| Warts .. .. .. .. | 44 | 0·04 | 11 | 0·11 | 6 | 0·02 | .. | .. |
| Eczema (other than allergic) .. | 57 | 0·05 | 7 | 0·07 | 72 | 0·27 | 1 | 0·15 |
| Acne .. .. .. .. | 19 | 0·02 | .. | .. | .. | .. | .. | .. |
| Ringworm .. .. .. | 27 | 0·03 | 3 | 0·03 | 19 | 0·07 | .. | .. |
| Other .. .. .. .. | 102 | 0·10 | 32 | 0·31 | 61 | 0·24 | .. | .. |
| Total .. .. .. | 339 | 0·33 | 100 | 0·97 | 191 | 0·72 | 18 | 2·64 |
| Eyes— | | | | | | | | |
| Visual defect untreated .. .. | 1,204 | 1·16 | 89 | 0·86 | 17 | 0·06 | .. | .. |
| Visual defect treated .. .. | 237 | 0·23 | 10 | 0·10 | 27 | 0·11 | 3 | 0·44 |
| Squint untreated .. .. .. | 123 | 0·12 | 16 | 0·15 | 103 | 0·39 | 3 | 0·44 |
| Squint treated .. .. .. | 155 | 0·15 | 9 | 0·09 | 101 | 0·38 | .. | .. |
| Blepharitis .. .. .. | 87 | 0·08 | 4 | 0·04 | 14 | 0·05 | 2 | 0·29 |
| Conjunctivitis .. .. .. | 11 | 0·01 | 2 | 0·02 | 10 | 0·04 | 1 | 0·15 |
| Other .. .. .. .. | 49 | 0·05 | 15 | 0·15 | 31 | 0·12 | .. | .. |
| Total .. .. .. | 1,866 | 1·80 | 145 | 1·41 | 303 | 1·15 | 9 | 1·32 |
| Ears— | | | | | | | | |
| Recurrent catarrhal otitis media .. | 54 | 0·05 | 5 | 0·05 | 24 | 0·09 | 1 | 0·15 |
| Chronic suppurative otitis media with little or no impairment of hearing .. | 34 | 0·03 | 75 | 0·73 | 13 | 0·05 | .. 10 | 1·46 |
| Chronic suppurative otitis media with impairment of hearing .. .. | 140 | 0·14 | 161 | 1·56 | 21 | 0·08 | 3 | 0·44 |
| Other impairment of hearing .. | 357 | 0·35 | 96 | 0·93 | 48 | 0·18 | 3 | 0·44 |
| Other .. .. .. .. | 15 | 0·01 | 19 | 0·18 | 7 | 0·03 | 1 | 0·15 |
| Total .. .. .. | 600 | 0·58 | 356 | 3·45 | 113 | 0·43 | 18 | 2·64 |
| Mouth, nose, and throat— | | | | | | | | |
| Unhealthy tonsils .. .. .. | 873 | 0·84 | 103 | 1·00 | 312 | 1·18 | 3 | 0·44 |
| Chronic nasal obstruction .. .. | 351 | 0·34 | 74 | 0·72 | 97 | 0·37 | 4 | 0·58 |
| Untreated dental caries .. .. | 417 | 0·40 | 154 | 1·49 | 200 | 0·75 | 17 | 2·50 |
| Gingivitis .. .. .. | 20 | 0·02 | 10 | 0·10 | 4 | 0·02 | .. | .. |
| Mal-occlusion .. .. .. | 160 | 0·16 | 5 | 0·05 | 44 | 0·17 | .. | .. |
| Other .. .. .. .. | 53 | 0·05 | 13 | 0·12 | 35 | 0·13 | 2 | 0·29 |
| Total .. .. .. | 1,874 | 1·81 | 359 | 3·48 | 692 | 2·62 | 26 | 3·81 |
| Allergy— | | | | | | | | |
| Nose .. .. .. .. | 44 | 0·04 | 14 | 0·13 | 24 | 0·09 | .. | .. |
| Skin .. .. .. .. | 64 | 0·06 | 4 | 0·04 | 75 | 0·28 | 3 | 0·44 |
| Lungs (asthma) .. .. .. | 189 | 0·18 | 8 | 0·08 | 83 | 0·31 | 3 | 0·44 |
| Other .. .. .. .. | 4 | 0·01 | .. | .. | 1 | 0·01 | .. | .. |
| Total .. .. .. | 301 | 0·29 | 26 | 0·25 | 183 | 0·69 | 6 | 0·88 |
| Goitre— | | | | | | | | |
| Incipient .. .. .. | 51 | 0·05 | .. | .. | 6 | 0·02 | .. | .. |
| Other .. .. .. .. | 24 | 0·02 | .. | .. | 1 | 0·01 | .. | .. |
| Total .. .. .. | 75 | 0·07 | .. | .. | 7 | 0·03 | .. | .. |

**TABLE 24—School and Pre-school Children, 1959—*continued***

| | School Children | | | | Pre-School Children (Including Plunket Examinations) | | | |
|---|---|---|---|---|---|---|---|---|
| | Europeans | | Maoris | | Europeans | | Maoris | |
| | No. | Per Cent | No. | Per Cent | No. | Per Cent | No. | Per Cent |
| Children showing evidence of defects—*ctd.* | | | | | | | | |
| Speech, nervous system, psychological— | | | | | | | | |
| Speech defect | 359 | 0·35 | 26 | 0·25 | 86 | 0·32 | 2 | 0·29 |
| Enuresis (4 years and over) | 472 | 0·46 | 14 | 0·14 | 81 | 0·31 | .. | .. |
| Other behaviour or emotional problems | 274 | 0·26 | 23 | 0·22 | 85 | 0·32 | 1 | 0·15 |
| Impaired intelligence | 215 | 0·20 | 46 | 0·45 | 44 | 0·17 | 2 | 0·29 |
| Epilepsy | 33 | 0·03 | 6 | 0·06 | 17 | 0·06 | .. | .. |
| Other | 28 | 0·03 | 1 | 0·01 | 4 | 0·02 | .. | .. |
| Total | 1,381 | 1·33 | 116 | 1·13 | 317 | 1·20 | 5 | 0·73 |
| Orthopaedic, musculo-skeletal system— | | | | | | | | |
| Flat foot | 73 | 0·07 | 7 | 0·07 | 107 | 0·41 | 1 | 0·15 |
| Hallux valgus | 55 | 0·05 | 4 | 0·04 | 21 | 0·08 | .. | .. |
| Club foot | 37 | 0·04 | 21 | 0·20 | 52 | 0·20 | 4 | 0·58 |
| Other orthopaedic conditions of lower limb(s) | 101 | 0·10 | 18 | 0·17 | 132 | 0·50 | 4 | 0·58 |
| Curvature of spine | 30 | 0·03 | 6 | 0·06 | 6 | 0·02 | .. | .. |
| Residual paralysis following poliomyelitis | 31 | 0·03 | 6 | 0·06 | 6 | 0·02 | .. | .. |
| Cerebral palsy | 27 | 0·02 | 5 | 0·05 | 22 | 0·09 | 1 | 0·15 |
| Postural defect not included above | 56 | 0·05 | 5 | 0·05 | 14 | 0·05 | .. | .. |
| Other | 37 | 0·04 | 4 | 0·04 | 17 | 0·06 | .. | .. |
| Total | 447 | 0·43 | 76 | 0·74 | 377 | 1·43 | 10 | 1·46 |
| Heart (including cardiovascular system)— | | | | | | | | |
| Congenital heart disease without symptoms | 72 | 0·07 | 12 | 0·11 | 70 | 0·27 | 1 | 0·15 |
| Congenital heart disease with symptoms | 29 | 0·03 | 3 | 0·03 | 21 | 0·08 | 1 | 0·15 |
| Rheumatic heart disease without symptoms | 24 | 0·02 | 10 | 0·10 | 2 | 0·01 | .. | .. |
| Rheumatic heart disease with symptoms | 10 | 0·01 | 6 | 0·06 | .. | .. | .. | .. |
| Proved anaemia | 5 | 0·00 | .. | .. | 6 | 0·02 | 1 | 0·15 |
| Other heart or blood-vessel condition, e.g., varicose veins, lower limbs | 40 | 0·04 | 2 | 0·02 | 46 | 0·17 | 1 | 0·15 |
| Total | 180 | 0·17 | 33 | 0·32 | 145 | 0·55 | 4 | 0·60 |
| Lungs— | | | | | | | | |
| Chronic bronchitis, bronchiectasis | 43 | 0·04 | 35 | 0·34 | 26 | 0·11 | 11 | 1·61 |
| Tuberculosis | 3 | 0·00 | 8 | 0·08 | .. | .. | .. | .. |
| Other | 31 | 0·03 | 6 | 0·06 | 19 | 0·07 | .. | .. |
| Total | 77 | 0·07 | 49 | 0·48 | 47 | 0·18 | 11 | 1·61 |
| Other conditions— | | | | | | | | |
| Undescended testes (school children only) | 286 | 0·28 | 30 | 0·29 | .. | .. | .. | .. |
| Hernia | 122 | 0·12 | 34 | 0·33 | 92 | 0·34 | 2 | 0·29 |
| Other | 159 | 0·15 | 24 | 0·23 | 118 | 0·45 | .. | .. |
| Total | 567 | 0·55 | 88 | 0·85 | 210 | 0·79 | 2 | 0·29 |

**TABLE 25—Results of Mass X-ray Examinations**

| Year | Number Examined | Tuberculosis | | | Active Cases per 1,000 Examined | Other Lung Conditions | Cardio-vascular Disease |
|---|---|---|---|---|---|---|---|
| | | Healed | Inactive | Active | | | |
| 1956 | 202,672 | 2,391 | 550 | 359 | 1·77 | 2,352 | 643 |
| 1957 | 242,332 | 2,248 | 716 | 380 | 1·56 | 1,837 | 734 |
| 1958 | 234,548 | 1,761 | 753 | 414 | 1·76 | 2,785 | 738 |
| 1959 | 256,332 | 2,211 | 794 | 279 | 1·08 | 2,450 | 1,023 |

**TABLE 26—Results of Mantoux Testing**

| Year | Age Groups (Years) | | | | | | | | | | | | | | Total B.C.G. Vaccinations |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0–4 | | 5–9 | | 10–14 | | 15–19 | | 20–24 | | 25–34 | | 35+ | | |
| | Tested | Positive | Tested | Positive | Tested | Positive | Tested | Positive | Tested | Positive | Tested | Positive | Tested | Positive | |
| 1956 .. .. .. | 2,097 | 109 (5·2%) | 1,933 | 195 (10·1%) | 15,449 | 1,806 (11·7%) | 3,461 | 677 (19·6%) | 949 | 354 (37·3%) | 1,039 | 562 (54·0%) | 629 | 399 (63·6%) | 20,460 |
| 1957 .. .. .. | 2,242 | 119 (5·3%) | 2,303 | 262 (11·4%) | 22,126 | 2,391 (10·8%) | 5,424 | 1,304 (24·0%) | 1,303 | 425 (32·5%) | 1,121 | 507 (45·3%) | 391 | 224 (57·4%) | 29,287 |
| 1958 .. .. .. | 1,885 | 87 (4·6%) | 1,794 | 174 (9·7%) | 15,238 | 1,538 (10·0%) | 2,813 | 837 (29·7%) | 1,191 | 684 (57·4%) | 708 | 353 (50·0%) | 293 | 172 (58·8%) | 19,295 |
| 1959 .. .. .. | 2,174 | 183 (8·4%) | 2,417 | 332 (13·7%) | 30,736 | 3,785 (12·3%) | 5,629 | 1,548 (27·5%) | 1,140 | 471 (41·3%) | 754 | 396 (52·6%) | 281 | 168 (59·8%) | 34,669 |

**TABLE 27—Morbidity: Notification of New Cases of Tuberculosis During Statistical Year: Incidence of Type of Disease by Race and Sex With Number and Rate per 10,000 Estimated Mean Population**

| Year | Respiratory | | | | | | Non-respiratory | | | | | | All Types | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | European | | | Maori | | | European | | | Maori | | | Both Races | | |
| | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. |
| 1955 .. .. | 660 | 479 | 1,139 | 234 | 267 | 501 | 87 | 102 | 189 | 42 | 46 | 88 | 1,023 | 894 | 1,917 |
| | 6·7 | 4·9 | 5·8 | 35·8 | 41·7 | 38·8 | 0·87 | 1·0 | 0·96 | 6·4 | 7·2 | 6·8 | 9·8 | 8·5 | 9·1 |
| 1956 .. .. | 647 | 392 | 1,039 | 245 | 283 | 528 | 65 | 84 | 149 | 42 | 48 | 90 | 999 | 807 | 1,806 |
| | 6·3 | 3·9 | 5·1 | 39·6 | 42·0 | 38·2 | 0·63 | 0·83 | 0·73 | 6·0 | 7·1 | 6·5 | 9·1 | 7·4 | 8·4 |
| 1957 .. .. | 608 | 402 | 1,010 | 265 | 257 | 522 | 65 | 71 | 136 | 54 | 59 | 113 | 992 | 787 | 1,781 |
| | 5·8 | 3·9 | 4·7 | 36·3 | 36·7 | 36·4 | 0·62 | 0·68 | 0·65 | 7·4 | 8·4 | 7·9 | 8·7 | 7·1 | 8·0 |
| 1958 .. .. | 553 | 375 | 928 | 270 | 227 | 497 | 80 | 88 | 168 | 51 | 54 | 105 | 952 | 746 | 1,698 |
| | 5·2 | 3·5 | 4·3 | 35·8 | 31·2 | 33·6 | 0·74 | 0·82 | 0·78 | 6·9 | 7·4 | 7·1 | 8·3 | 6·7 | 7·4 |
| 1959 .. .. | 505 | 292 | 797 | 213 | 193 | 406 | 62 | 66 | 128 | 28 | 47 | 75 | 808 | 598 | 1,406 |
| | 4·6 | 2·7 | 3·6 | 27·2 | 25·5 | 26·4 | 0·56 | 0·61 | 0·58 | 3·6 | 6·2 | 4·9 | 6·9 | 5·1 | 6·0 |

**TABLE 28—Morbidity : Cases of Tuberculosis on Tuberculosis Register at End of Statistical Year : Prevalence of Type of Disease, by Race, With Number and Rate per 10,000 Estimated Mean Population**

| Year | Respiratory | | | | | | Non-respiratory | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | European | | Maori | | Both Races | | European | | Maori | | Both Races | |
| | No. | Rate | No. | Rate | No. | Rate | No. | Rate | No. | Rate | No. | Rate |
| 1955 .. | 7,802 | 39·8 | 3,523 | 273 | 11,325 | 54·1 | 763 | 3·9 | 340 | 26·3 | 1,103 | 5·3 |
| 1956 .. | 8,146 | 39·8 | 3,749 | 270 | 11,895 | 55·0 | 711 | 3·5 | 402 | 29·1 | 1,113 | 5·1 |
| 1957 .. | 8,395 | 40·0 | 4,055 | 283 | 12,450 | 55·8 | 615 | 2·9 | 448 | 31·3 | 1,063 | 4·8 |
| 1958 .. | 8,181 | 38·3 | 4,082 | 276 | 12,263 | 54·0 | 657 | 3·08 | 421 | 28·4 | 1,078 | 4·7 |
| 1959 .. | 7,989 | 36·6 | 4,091 | 266 | 12,080 | 51·7 | 547 | 2·5 | 408 | 26·4 | 955 | 4·1 |

**TABLE 29—Cases of Tuberculosis on Tuberculosis Register at End of Statistical Year : Prevalence of Bacteriological and Clinical States**

| Year | Bacteriological State | | | | |
|---|---|---|---|---|---|
| | Sputum or Discharge | | No Sputum or Discharge Available | Not Investigated | Cases on Register |
| | T.B.+ | T.B.− | | | |
| 1955 .. .. .. | 841 | 5,524 | 4,809 | 1,254 | 12,428 |
| 1956 .. .. .. | 691 | 5,829 | 5,005 | 1,483 | 13,008 |
| 1957 .. .. .. | 583 | 5,707 | 5,580 | 1,643 | 13,513 |
| 1958 .. .. .. | 458 | 5,762 | 5,359 | 1,762 | 13,341 |
| 1959 .. .. .. | 391 | 5,086 | 4,937 | 2,621 | 13,035 |

**Clinical State**

| Year | Clinical State | | | | |
|---|---|---|---|---|---|
| | Active | | Inactive | Unknown or Believed Well | |
| | Deteriorating and Stationary | Improving | Quiescent and Arrested | Unknown | Believed Well |
| 1955 .. .. .. | 1,036 | 2,388 | 8,134 | 651 | 219 |
| 1956 .. .. .. | 770 | 2,496 | 8,501 | 758 | 483 |
| 1957 .. .. .. | 771 | 2,361 | 8,963 | 936 | 482 |
| 1958 .. .. .. | 572 | 2,278 | 9,026 | 658 | 807 |
| 1959 .. .. .. | 446 | 2,080 | 8,861 | 959 | 689 |

**TABLE 30—Mortality : Deaths from Tuberculosis During Statistical Year, Mortality by Type of Disease, by Race and Sex, With Number and Rate per 100,000 Estimated Mean Population**

| Year | Respiratory | | | | | | | | | Non-respiratory | | | | | | | | | All Types | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | European | | | Maori | | | Both Races | | | European | | | Maori | | | Both Races | | | European | | | Maori | | | Both Races | | |
| | 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. |
| 1955— | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Number .. | 136 | 59 | 195 | 35 | 26 | 61 | 171 | 85 | 256 | 10 | 13 | 23 | 11 | 3 | 14 | 21 | 16 | 37 | 146 | 72 | 218 | 46 | 29 | 75 | 192 | 101 | 293 |
| Rate .. | 13·5 | 5·9 | 9·7 | 51·4 | 40·0 | 45·8 | 15·9 | 8·0 | 12·0 | 1·0 | 1·3 | 1·1 | 16·1 | 4·6 | 10·5 | 2·0 | 1·5 | 1·7 | 14·5 | 7·2 | 10·9 | 67·5 | 44·6 | 56·4 | 17·8 | 9·5 | 13·7 |
| 1956— | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Number .. | 96 | 46 | 142 | 30 | 32 | 62 | 126 | 78 | 204 | 13 | 6 | 19 | 5 | 11 | 16 | 18 | 17 | 35 | 109 | 52 | 161 | 35 | 43 | 78 | 144 | 95 | 239 |
| Rate .. | 9·3 | 4·5 | 6·9 | 42·5 | 47·4 | 44·9 | 11·5 | 7·2 | 9·3 | 1·3 | 0·6 | 0·9 | 7·1 | 16·3 | 11·6 | 1·6 | 1·6 | 1·6 | 10·6 | 5·1 | 7·8 | 49·6 | 63·7 | 56·4 | 13·1 | 8·8 | 10·9 |
| 1957— | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Number .. | 113 | 46 | 159 | 35 | 28 | 63 | 148 | 74 | 222 | 12 | 10 | 22 | 7 | 0 | 7 | 19 | 10 | 29 | 125 | 56 | 181 | 42 | 28 | 70 | 167 | 84 | 251 |
| Rate .. | 10·8 | 4·4 | 7·6 | 47·9 | 39·9 | 44·0 | 13·2 | 6·7 | 9·9 | 1·1 | 1·0 | 1·1 | 9·6 | 0·0 | 4·9 | 1·7 | 0·9 | 1·3 | 11·9 | 5·4 | 8·7 | 57·4 | 39·9 | 48·9 | 14·9 | 7·6 | 11·2 |
| 1958— | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Number .. | 84 | 41 | 125 | 26 | 21 | 47 | 110 | 62 | 172 | 7 | 8 | 15 | 10 | 5 | 15 | 17 | 13 | 30 | 91 | 49 | 140 | 36 | 26 | 62 | 127 | 75 | 202 |
| Rate .. | 7·8 | 3·9 | 5·8 | 34·4 | 28·9 | 31·7 | 9·6 | 5·5 | 7·5 | 0·7 | 0·8 | 0·7 | 13·2 | 6·9 | 10·1 | 1·5 | 1·1 | 1·3 | 8·5 | 4·6 | 6·5 | 47·6 | 35·7 | 41·8 | 11·0 | 6·6 | 8·8 |
| 1959— | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Number .. | 61 | 24 | 85 | 19 | 14 | 33 | 80 | 38 | 118 | 6 | 7 | 13 | 3 | 3 | 6 | 9 | 10 | 19 | 67 | 31 | 98 | 22 | 17 | 39 | 89 | 48 | 137 |
| Rate .. | 5·6 | 2·2 | 3·9 | 24·2 | 18·5 | 21·4 | 6·8 | 3·3 | 5·1 | 0·5 | 0·6 | 0·6 | 3·8 | 4·0 | 3·9 | 0·8 | 0·9 | 0·8 | 6·1 | 2·9 | 4·5 | 28·0 | 22·5 | 25·3 | 7·6 | 4·1 | 5·9 |

**TABLE 31—Hospital Works Programme as at 31 March 1960 (Projects over £10,000 only*)**

| —— | Total Estimated Cost | Expenditure up to 31 March 1959 | Expenditure, 1959–60 | Estimated Expenditure, 1960–61 | Estimated Expenditure, 1961–62 | Estimated Expenditure, 1962–63 | To Complete |
|---|---|---|---|---|---|---|---|
| | £ | £ | £ | £ | £ | £ | £ |
| Category A | 17,112,452 | 5,554,790 | 4,368,113 | 4,187,426 | 1,651,166 | 1,028,850 | 322,107 |
| Category B | 1,148,917 | 10,603 | 89,542 | 442,827 | 420,900 | 185,045 | .. |
| Category C | 2,633,906 | .. | 88,137 | 688,166 | 894,195 | 535,000 | 428,408 |
| | 20,895,275 | 5,565,393 | 4,545,792 | 5,318,419 | 2,966,261 | 1,748,895 | 750,515 |
| Category D | 220,856 | .. | 5,000 | 111,387 | 64,000 | 30,000 | 10,469 |
| Category E | 7,517,826 | .. | 33,449 | 964,468 | 2,007,318 | 2,176,162 | 2,336,429 |
| Category F | 6,750,647 | .. | .. | 310,540 | 829,555 | 2,054,128 | 3,556,424 |
| Category G | 13,002,822 | .. | .. | 61,000 | 1,208,077 | 1,158,000 | 10,575,745 |
| Totals—31/3/60 .. | 48,387,426 | 5,565,393 | 4,584,241 | 6,765,814 | 7,075,211 | 7,167,185 | 17,229,582 |
| Totals—31/3/59 .. | 36,032,496 | 6,029,385 | 6,403,746 | 6,600,136 | 5,447,357 | .. | 11,551,872 |

* In addition the total value of projects £1,000–£10,000 was £686,044 as at 31 March 1960.

Category A = Work commenced.
Category B = Acceptance of tender authorised.
Category C = Tenders called.
Category D = Working drawings approved.
Category E = Sketch plans approved.
Category F = Preparation of sketch plans authorised.
Category G = Provisionally approved.

**TABLE 32—Hospital Buildings Works**

*New Hospitals, Wards, and Clinical Services*

The following were completed during the year:

| Work and Location | Number of Beds | |
|---|---|---|
| | General | Maternity |
| Auckland: new laboratory, Wallace Block | .. | .. |
| Green Lane: X-ray department extensions | .. | .. |
| Green Lane: alterations, wards 14 and 15 | 6 | .. |
| Cornwall: alterations, labour suite | .. | .. |
| Thames: Tararu Homes extensions | 15* | .. |
| Taumarunui: new ward | 30 | .. |
| Opotiki: children's ward | 22 | .. |
| Te Puia: maternity ward | .. | 18 |
| Hastings: additions, new medical ward | 16 | .. |
| Hawera: theatre block extensions | .. | .. |
| Marton: general hospital | 4 | .. |
| Awapuni: old peoples' home extensions | 46* | .. |
| Wellington: casualty block | .. | .. |
| Martinborough: maternity hospital | .. | 5 |
| Princess Margaret Hospital, Christchurch | 256 | .. |
| Princess Margaret Hospital: clinical block | .. | .. |
| Timaru: Jean Todd Maternity Annexe | .. | 40 |
| Oamaru: alterations to isolation block | .. | .. |
| Otematata: maternity hospital | .. | 8 |
| Mosgiel: maternity additions | .. | 7 |
| Ranfurly: hospital extensions | 11 | .. |
| Lumsden: new hospital | .. | 8 |
| Kew: Additions X-ray department, etc. | .. | .. |

This represents a net gain from all these works of 360 general and 59 maternity beds. In addition, 35 general and 12 maternity beds were replaced in new buildings.

*Nurses Homes and Other Staff Accommodation*

The following accommodation was completed during the year:

| Location | Number of Staff Beds |
|---|---|
| Whangarei base hospital | 108 |
| "Lindisfarne" Hamilton medical staff | 14 |
| Tauranga | 75 |
| Princess Margaret Hospital | 222 |
| Ranfurly Hospital | 14 |

*Ancillary Services*

The following were completed during the year:

| Location | Work |
|---|---|
| Auckland (Nurses' Home) | Kitchen and dining-room extensions. |
| Thames | Boilerhouse and laundry block. |
| Whakatane | Boilerhouse and laundry block. |
| Te Puia | Boilerhouse and laundry block. |
| Hastings | Boilerhouse. |
| Hastings | Tutorial block. |
| Waipawa | Boilerhouse and laundry. |
| Westown | Laundry. |
| New Plymouth | Electrical reticulation. |
| Westown | Electrical reticulation. |
| Dunedin | Central laundry and powerhouse. |

*New Hospitals, Wards, and Clinical Services*

Work is in progress or tenders have been accepted for the following:

| Work and Location | Number of Beds: General | Maternity | Old People's Homes |
|---|---|---|---|
| Whangarei: base hospital | 160 | .. | .. |
| Kaitaia: extensions, theatre, X-ray, and laboratory | .. | .. | .. |
| Te Kopuru: reconstruction following fire | .. | .. | .. |
| Auckland: new National Women's Hospital | .. | 282 | .. |
| Papakura: maternity extensions | .. | 5 | .. |
| Rotorua: outpatient and clinical block | 40 | .. | .. |
| Te Aroha: maternity hospital | .. | 20 | .. |
| Tauranga: new hospital, stage 1A | 90 | .. | .. |
| Tauranga: new ward in light construction | 30 | .. | .. |
| Cook: alterations to theatre | .. | .. | .. |
| Cook: convalescent home | 16 | .. | .. |
| Wairoa: ward and theatre block | 34 | 20 | .. |
| Hastings: five-storey ward block | 90 | 20 | .. |
| Dannevirke: clinical services block | .. | .. | .. |
| New Plymouth: reconstruction of Sanitary blocks | .. | .. | .. |
| Jubilee Home, Wanganui: additions | .. | .. | 30 |
| Wanganui: theatre and ward block | 60 | .. | .. |
| Eketahuna: maternity hospital | .. | 5 | .. |
| Blenheim: children's ward extensions | 19 | .. | .. |
| Nelson: ward block | 116 | .. | .. |
| Ashburton: theatre block additions | .. | .. | .. |
| Geraldine: maternity hospital | .. | 8 | .. |
| Oamaru: alterations to laboratory and medical records | .. | .. | .. |
| Dunedin: maternity extensions | .. | 50 | .. |
| Balclutha: theatre block, etc. | .. | .. | .. |
| Cromwell: maternity block, etc. | .. | 10 | .. |
| Upper Hutt: maternity hospital | .. | 30 | .. |
| Seddon Memorial Hospital, Gore: theatre block | .. | .. | .. |
| Dee Street Hospital, Invercargill: extensions | .. | 20 | .. |

*Nurses and Other Staff Accommodation*

Tenders have been accepted for the following accommodation:

| Location | Number of Staff Beds |
|---|---|
| Middlemore | 124 |
| Green Lane | 435 |
| Opotiki | 14 |
| Hastings | 80 |
| Wanganui | 142 |
| Nelson | 155 |
| Nelson household staff | 20 |
| Dee Street Hospital, Invercargill | 35 |

*Ancillary Services*

Work is in progress or tenders have been accepted for the following:

| Location | Work |
|---|---|
| Hamilton | Central laundry. |
| Taumarunui | Boilerhouse. |
| Te Puia | Heating services. |
| Hastings | Store and mortuary. |
| Hawera | Boilerhouse and laundry. |
| Palmerston North | Laundry additions. |
| Wellington | Laundry additions. |
| Wellington | Lift replacement. |
| Masterton | Boilerhouse. |
| Greytown | Kitchen. |
| Nelson | Boilerhouse and laundry. |
| Grey | Overbridge. |
| Hokitika | Boilerhouse alterations, etc. |
| Ashburton | Tutorial block. |
| Timaru | New laundry. |

**TABLE 33—Statistics of Ambulance Services**

| | Stations | Vehicles | Patients | Milage |
|---|---|---|---|---|
| Hospital Boards | 42 | 63 | 15,399 | 356,271 |
| St. John Ambulance Association | .. | 132 | 104,116 | 1,091,514 |
| Other subsidised services | 7 | 17 | 18,319 | 187,664 |

The Ministry of Works maintains several ambulances, located at large construction works throughout the country. These ambulances are manned by departmental employees who are in most instances members of the St. John Ambulance Association.

Details for year ended 31 December 1959 are as follows:

| Location | Number of Ambulances | Patients Carried | Milage |
|---|---|---|---|
| Otematata | 2 | 57 | 8,819 |
| Roxburgh | 1 | 8 | 1,472 |
| Lake Hawea | 1 | 11 | 2,884 |
| Mangakino | 1 | 106 | 120 |
| Waipapa | 1 | 253 | 5,566 |
| Atiamuri | 2 | 158 | 9,480 |

The New Zealand Forest Service operates seven ambulances, stationed at the following locations:

Maramarua (40 miles from Hamilton)
Pureora (40 miles from Te Kuiti)
Kaingaroa (40 miles from Rotorua)
Minginui (60 miles from Rotorua)
Waiotapu (25 miles from Rotorua)
Golden Downs (35 miles from Nelson)
Conical Hills (10 miles from Gore)

A total of 454 patients were carried and the ambulances covered 18,550 miles for the year ended 31 December 1959.

The Royal New Zealand Air Force maintains several ambulances at aerodromes throughout the country, and also at Lauthala Bay, Fiji. Details of their operations for the year ended 31 December 1959 are as follows:

| Station | Number of Ambulances | Patients Carried | Milage |
|---|---|---|---|
| Whenuapai .. .. .. | 3 | 50 (approx.) | 4,885 |
| Hobsonville .. .. .. | 1 | 40 (approx.) | 2,247 |
| Ohakea .. .. .. | 2 | 29 (approx.) | 2,268 |
| Woodbourne .. .. .. | 1 | 59 (approx.) | 1,229 |
| Wigram .. .. .. | 3 | 100 (approx.) | 1,400 |
| Lauthala Bay .. .. .. | 2 | 60 (approx.) | 2,642 |
| | 12 | 338 (approx.) | 14,671 |

The Royal New Zealand Air Force point out that a considerable amount of the milage would be accounted for by station running, such as "Crash Duty" etc., and the medical officers meeting overseas aircraft.

The New Zealand Army has 15 ambulances located at various military camps throughout the Dominion which are employed full-time carrying patients. For the year ended 31 December 1959 the number of patients carried numbered 430, and 19,248 miles were travelled.

*Radiotelephone Installations in Ambulance Services*

Radiotelephone communication has been installed in the following subsidised services:

| | | Number of Vehicles |
|---|---|---|
| St. John Ambulance Association, | Auckland .. .. .. | 37 |
| ,, | Hamilton .. .. .. | 4 |
| ,, | Mt. Maunganui .. .. .. | 1 |
| ,, | Gisborne .. .. .. | 2 |
| ,, | Opotiki .. .. .. .. | 1 |
| ,, | Rotorua .. .. .. | 2 |
| ,, | Te Puke .. .. .. .. | 1 |
| ,, | Hastings .. .. .. .. | 2 |
| ,, | Napier .. .. .. .. | 2 |
| Wellington Free Ambulance | .. .. .. .. | 15 |
| St. John Ambulance Association, | Christchurch .. .. .. | 5 |
| ,, | Culverden .. .. .. | 1 |
| ,, | Timaru .. .. .. .. | 2 |
| ,, | Dunedin .. .. .. .. | 7 |

No hospital board service has radiotelephone communication installed in its vehicles.

**TABLE 34—Maternal Deaths, 1958 and 1959**

| Int. List No. | Causes of Death | Number of Deaths | | Rate per 1,000 Live Births | |
|---|---|---|---|---|---|
| | | 1958 | 1959 | 1958 | 1959 |
| | A. EUROPEAN | | | | |
| 642 | Toxaemia of pregnancy— | | | | |
| ·0 | Hypertensive disease arising during pregnancy | .. | 1 | .. | 0·02 |
| ·2 | Pre-eclampsia of pregnancy .. | 5 | 3 | 0·09 | 0·05 |
| ·3 | Eclampsia of pregnancy .. .. .. | 2 | 1 | 0·04 | 0·02 |
| ·5 | Other .. .. .. .. .. | 1 | .. | 0·02 | 0·09 |
| | | 8 | 5 | 0·15 | 0·09 |
| 643 | Placenta praevia .. .. .. .. | 1 | .. | 0·02 | .. |
| 644 | Other haemorrhage of pregnancy .. .. | 2 | .. | 0·04 | .. |
| 648 | Other complications arising from pregnancy— | | | | |
| ·1 | Hydatidiform mole .. .. .. | .. | 1 | .. | 0·02 |
| 650 | Abortion without mention of sepsis or toxaemia— | | | | |
| ·0 | Spontaneous or unspecified .. .. | 1 | 4 | 0·02 | 0·07 |
| ·2 | Induced for other than medical reasons .. | 2 | .. | 0·04 | .. |
| | | 3 | 4 | 0·06 | 0·07 |
| 651 | Abortion with sepsis— | | | | |
| ·2 | Induced for other than medical reasons .. | 1 | 4 | 0·02 | 0·07 |
| 670 | Delivery complicated by placenta praevia or ante-partum haemorrhage .. .. | 1 | .. | 0·02 | .. |
| 672 | Delivery complicated by other post-partum haemorrhage .. .. .. .. | 1 | 2 | 0·02 | 0·04 |
| 674 | Delivery complicated by disproportion or mal-position of foetus .. .. .. | .. | 1 | .. | 0·02 |
| 677 | Delivery with other trauma .. .. | 2 | 2 | 0·04 | 0·04 |
| 681 | Sepsis of childbirth and the puerperium .. | 1 | 2 | 0·02 | 0·04 |
| 682 | Puerperal phlebitis and thrombosis .. .. | 1 | 2 | 0·02 | 0·04 |
| 684 | Puerperal pulmonary embolism .. .. | 1 | 3 | 0·02 | 0·05 |
| 689 | Mastitis and other disorders of lactation .. | .. | 1 | .. | 0·02 |
| | Totals, including illegal abortion .. | 22 | 27 | 0·41 | 0·49 |
| | Totals, excluding illegal abortion .. | 19 | 23 | 0·35 | 0·42 |
| | B. MAORIS | | | | |
| 642 | Toxaemia of pregnancy— | | | | |
| ·0 | Hypertensive disease arising during pregnancy | .. | 1 | .. | 0·14 |
| ·2 | Pre-eclampsia of pregnancy .. .. | 1 | 1 | 0·15 | 0·14 |
| | | 1 | 2 | 0·15 | 0·28 |
| 644 | Haemorrhage of pregnancy .. .. | 2 | .. | 0·29 | .. |

**TABLE 34—Maternal Deaths, 1958 and 1959**—*continued*

| Int. List No. | Causes of Death | Number of Deaths | | Rate per 1,000 Live Births | |
|---|---|---|---|---|---|
| | | 1958 | 1959 | 1958 | 1959 |
| | B. MAORIS—*continued* | | | | |
| 645 ·0 | Ectopic pregnancy— Without mention of sepsis .. .. | 1 | .. | 0·15 | .. |
| 650 ·0 | Abortion without mention of sepsis or toxaemia— Spontaneous or unspecified .. .. | 1 | .. | 0·15 | .. |
| 651 ·0 | Abortion with sepsis— Spontaneous or unspecified .. .. | 1 | .. | 0·15 | .. |
| 670 | Delivery complicated by placenta praevia or ante-partum haemorrhage .. .. | .. | 1 | .. | 0·14 |
| 671 | Delivery complicated by retained placenta .. | 1 | .. | 0·15 | .. |
| 674 | Delivery complicated by disproportion or mal-position of foetus .. .. .. | .. | 1 | .. | 0·14 |
| 675 | Delivery complicated by prolonged labour of other origin .. .. .. .. | .. | 1 | .. | 0·14 |
| 677 | Delivery with other trauma .. .. | 1 | 1 | 0·15 | 0·14 |
| 678 | Delivery with other complications of childbirth | .. | 1 | .. | 0·14 |
| 684 | Puerperal pulmonary embolism .. .. | .. | 2 | .. | 0·28 |
| 689 | Mastitis and other disorders of lactation .. | 1 | .. | 0·15 | .. |
| | Totals, including illegal abortion .. | 9 | 9 | 1·31 | 1·26 |
| | Totals, excluding illegal abortion .. | 9 | 9 | 1·31 | 1·26 |

**TABLE 35—Statistics of Maternity Services and Cases, 1959**

| — | Private Hospitals | Public Hospitals | St. Helens Hospitals | Alexandra Home, Wellington | Totals, all Hospitals |
|---|---|---|---|---|---|
| 1. Hospitals and beds— | | | | | |
| Number of hospitals .. | 43 | 156 | 3 | 1 | 203 |
| Number of available beds .. | 404 | 2,341 | 133 | 20 | 2,898 |
| Percentage of beds in each type of institution .. | 13·9 | 80·8 | 4·6 | 0·7 | 100·0 |
| 2. Admissions— | | | | | |
| For ante-natal treatment .. | 301 | 4,659 | 365 | 19 | 5,344 |
| For delivery .. .. | 8,761 | 48,361 | 3,455 | 469 | 61,046 |
| Total admissions .. | 9,062 | 53,020 | 3,820 | 488 | 66,390 |
| Admissions per available bed | 22·4 | 22·6 | 28·7 | 24·4 | 22·9 |
| 3. Confinements— | | | | | |
| At full term .. .. | 8,211 | 44,853 | 3,075 | 449 | 56,588 |
| Between seventh month and full term .. .. | 516 | 2,981 | 344 | 16 | 3,857 |
| Total confinements .. | 8,727 | 47,834 | 3,419 | 465 | 60,445 |
| Percentage of confinements in each type of institution | 14·4 | 79·1 | 5·7 | 0·8 | 100·0 |
| 4. Inductions of labour— | | | | | |
| Medical .. .. | 617 | 3,154 | 220 | 51 | 4,042 |
| Surgical .. .. | 461 | 2,578 | 122 | 23 | 3,184 |
| Combined .. .. | 212 | 1,165 | 87 | 10 | 1,474 |
| Total inductions .. | 1,290 | 6,897 | 429 | 84 | 8,700 |
| Percentage of inductions (to confinements) .. | 14·8 | 13·0 | 12·5 | 18·1 | 14·4 |
| 5. Abortions— | | | | | |
| Abortions .. .. | 2 | 70 | .. | .. | 72 |
| 6. Complications— | | | | | |
| Instrumental delivery .. | 1,067 | 3,697 | 238 | 46 | 5,048 |
| Caesarean section .. | 121 | 993 | 93 | 6 | 1,213 |
| Manual removal of placenta | 142 | 712 | 51 | 5 | 910 |
| Haemorrhage— | | | | | |
| Accidental .. .. | 28 | 555 | 37 | 3 | 623 |
| Unaovidable (placenta praevia) .. .. | 25 | 343 | 38 | 2 | 408 |
| Post-partum .. .. | 124 | 2,577 | 230 | 11 | 2,942 |
| Eclampsia .. .. | 9 | 66 | 3 | .. | 78 |
| Total complications .. | 1,516 | 8,943 | 690 | 73 | 11,222 |
| Percentage of complications to admissions .. .. | 16·7 | 16·9 | 18·1 | 15·0 | 16·9 |
| 7. Morbidity— | | | | | |
| Not notifiable (mild) .. | 220 | 1,470 | 73 | 49 | 1,812 |
| Notifiable (puerperal pyrexia) .. .. | 75 | 1,223 | 146 | 3 | 1,447 |
| Puerperal fever .. .. | .. | .. | .. | .. | 35 |
| Total morbidity .. | 295 | 2,693 | 219 | 52 | 3,294 |
| Morbidity rate (per 100 admissions) .. .. | 3·3 | 5·1 | 5·7 | 10·7 | 5·0 |
| 8. Transfers— | | | | | |
| Before delivery .. .. | 98 | 638 | 27 | 10 | 773 |
| After delivery .. .. | 61 | 670 | 17 | 2 | 750 |
| 9. Deaths of Infants— | | | | | |
| Born alive .. .. | 41 | 540 | 29 | 3 | 613 |
| Stillborn .. .. | 83 | 691 | 46 | 12 | 832 |
| Total deaths of infants | 124 | 1,231 | 75 | 15 | 1,445 |
| Infant deaths and stillbirths (per 100 confinements) .. | 1·4 | 2·6 | 2·2 | 3·2 | 2·4 |

## MENTAL HOSPITALS

### TABLE 36—Admissions, Discharges, and Deaths, 1959

(a) Voluntary Boarders

| Hospital | On Registers 1 January 1959 | | | Admissions, 1959 | | | | | | Total Number of Cases Under Care | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | First Admissions | | | Not First Admissions | | | | | |
| | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. |
| Auckland .. .. | 66 | 109 | 175 | 135 | 150 | 285 | 95 | 124 | 219 | 296 | 383 | 679 |
| Kingseat .. .. | 36 | 24 | 60 | 41 | 19 | 60 | 24 | 31 | 55 | 101 | 74 | 175 |
| Raventhorpe .. .. | 1 | 6 | 7 | .. | .. | .. | .. | .. | .. | 1 | 6 | 7 |
| Tokanui .. .. .. | 37 | 51 | 88 | 89 | 139 | 228 | 36 | 70 | 106 | 162 | 260 | 422 |
| Lake Alice .. .. | 1 | .. | 1 | .. | .. | .. | 4 | .. | 4 | 5 | .. | 5 |
| Levin Farm .. .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Porirua .. .. .. | 70 | 87 | 157 | 144 | 166 | 310 | 118 | 124 | 242 | 332 | 377 | 709 |
| Nelson .. .. .. | 26 | 49 | 75 | 23 | 26 | 49 | 16 | 17 | 33 | 65 | 92 | 157 |
| Seaview .. .. .. | 6 | 8 | 14 | 13 | 12 | 25 | 12 | 6 | 18 | 31 | 26 | 57 |
| Sunnyside .. .. | 47 | 54 | 101 | 80 | 87 | 167 | 65 | 44 | 109 | 192 | 185 | 377 |
| Seacliff .. .. .. | 52 | 58 | 110 | 66 | 67 | 133 | 43 | 35 | 78 | 161 | 160 | 321 |
| Ashburn Hall .. .. | 25 | 40 | 65 | 30 | 78 | 108 | 18 | 36 | 54 | 73 | 154 | 227 |
| Total .. .. | 367 | 486 | 853 | 621 | 744 | 1,365 | 431 | 487 | 918 | 1,419 | 1,717 | 3,136 |

| Hospital | Voluntary Boarders Discharged, Transferred to Register of Patients and Died | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Discharged | | | | | | | | | Transferred to Register of Patients | | | Died | | | Total | | |
| | Recovered | | | Improved | | | Unimproved | | | | | | | | | | | |
| | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. |
| Auckland .. | 159 | 172 | 331 | 52 | 87 | 139 | 7 | 10 | 17 | 2 | 9 | 11 | 6 | 4 | 10 | 226 | 282 | 508 |
| Kingseat .. | 25 | 13 | 38 | 29 | 9 | 38 | 6 | 5 | 11 | .. | 1 | 1 | 1 | 1 | 2 | 61 | 29 | 90 |
| Raventhorpe .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 | .. | 1 | 1 |
| Tokanui .. | 71 | 138 | 209 | 26 | 46 | 72 | 16 | 11 | 27 | 1 | .. | 1 | 6 | 1 | 7 | 120 | 196 | 316 |
| Lake Alice .. | .. | .. | .. | .. | .. | .. | 1 | .. | 1 | .. | .. | .. | .. | .. | .. | 1 | .. | 1 |
| Levin Farm .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Porirua .. | 163 | 195 | 358 | 83 | 56 | 139 | 6 | 18 | 24 | 2 | 1 | 3 | 7 | 8 | 15 | 261 | 278 | 539 |
| Nelson .. | 14 | 20 | 34 | 2 | 1 | 3 | 4 | 2 | 6 | .. | .. | .. | .. | 1 | 1 | 20 | 24 | 44 |
| Seaview .. | 13 | 6 | 19 | 5 | 4 | 9 | 2 | .. | 2 | .. | .. | .. | 3 | .. | 3 | 23 | 10 | 33 |
| Sunnyside .. | 22 | 59 | 81 | 61 | 50 | 111 | 40 | 11 | 51 | 1 | 2 | 3 | 4 | 9 | 13 | 128 | 131 | 259 |
| Seacliff .. | 61 | 58 | 119 | 32 | 35 | 67 | 6 | 2 | 8 | 1 | 1 | 2 | 2 | 2 | 4 | 102 | 98 | 200 |
| Ashburn Hall | 27 | 75 | 102 | 14 | 22 | 36 | 8 | 15 | 23 | .. | .. | .. | .. | .. | .. | 49 | 112 | 161 |
| Total .. | 555 | 736 | 1,291 | 304 | 310 | 614 | 96 | 74 | 170 | 7 | 14 | 21 | 29 | 27 | 56 | 991 | 1,161 | 2,152 |

| Hospital | On Registers 31 December 1959 | | | Average Number Resident During Year | | | Percentage of Recoveries on Admissions During the Year | | | Percentage of Deaths on Average Number Resident During Year | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. |
| Auckland .. .. | 70 | 101 | 171 | 65 | 83 | 148 | 69·1 | 62·8 | 65·7 | 9·2 | 4·8 | 6·8 |
| Kingseat .. .. | 40 | 45 | 85 | 37 | 30 | 67 | 38·5 | 26·0 | 33·0 | 2·7 | 3·3 | 3·0 |
| Raventhorpe .. .. | 1 | 5 | 6 | 1 | 6 | 7 | .. | .. | .. | .. | 16·7 | 14·3 |
| Tokanui .. .. | 42 | 64 | 106 | 36 | 47 | 83 | 56·8 | 66·0 | 62·6 | 16·7 | 2·1 | 8·4 |
| Lake Alice .. .. | 4 | .. | 4 | 3 | .. | 3 | .. | .. | .. | .. | .. | .. |
| Levin Farm .. .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Porirua .. .. | 71 | 99 | 170 | 66 | 95 | 161 | 62·2 | 67·2 | 64·9 | 10·6 | 8·4 | 9·3 |
| Nelson .. .. | 45 | 68 | 113 | 20 | 19 | 39 | 35·9 | 46·5 | 41·5 | .. | 5·3 | 2·6 |
| Seaview .. .. | 8 | 16 | 24 | 7 | 12 | 19 | 52·0 | 33·3 | 44·2 | 42·9 | .. | 15·8 |
| Sunnyside .. .. | 64 | 54 | 118 | 61 | 55 | 116 | 15·2 | 45·0 | 29·3 | 6·6 | 16·4 | 11·2 |
| Seacliff .. .. | 59 | 62 | 121 | 56 | 49 | 105 | 56·0 | 56·9 | 56·4 | 3·6 | 4·1 | 3·8 |
| Ashburn Hall .. .. | 24 | 42 | 66 | 22 | 39 | 61 | 56·3 | 65·8 | 63·0 | .. | .. | .. |
| Total .. .. | 428 | 556 | 984 | 374 | 435 | 809 | 52·8 | 59·8 | 56·5 | 7·8 | 6·2 | 6·9 |

**TABLE 36—Admissions, Discharges, and Deaths, 1959**—*continued*

(b) PATIENTS

| Hospital | On Registers 1 January 1959 | | | Admissions in 1959 | | | | | | | | | Total Number of Cases Under Care | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | First Admissions | | | Not First Admissions | | | Transfers | | | | | |
| | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. |
| Auckland .. | 673 | 755 | 1,428 | 128 | 114 | 242 | 54 | 58 | 112 | 11 | 8 | 19 | 866 | 935 | 1,801 |
| Kingseat .. | 455 | 443 | 898 | 62 | 55 | 117 | 17 | 12 | 29 | 11 | 28 | 39 | 545 | 538 | 1,083 |
| Raventhorpe | 8 | 266 | 274 | .. | .. | .. | .. | .. | .. | 4 | 13 | 17 | 12 | 279 | 291 |
| Tokanui .. | 417 | 457 | 874 | 83 | 72 | 155 | 41 | 40 | 81 | 51 | 44 | 95 | 592 | 613 | 1,205 |
| Lake Alice | 318 | .. | 318 | .. | .. | .. | .. | .. | .. | 35 | .. | 35 | 353 | .. | 353 |
| Levin Farm | 372 | 194 | 566 | 14 | 15 | 29 | .. | .. | .. | 3 | 1 | 4 | 389 | 210 | 599 |
| Porirua .. | 545 | 792 | 1,337 | 155 | 182 | 337 | 88 | 103 | 191 | 19 | 9 | 28 | 807 | 1,086 | 1,893 |
| Nelson .. | 562 | 468 | 1,030 | 28 | 39 | 67 | 10 | 11 | 21 | 6 | 1 | 7 | 606 | 519 | 1,125 |
| Seaview .. | 209 | 301 | 510 | 9 | 8 | 17 | 8 | 1 | 9 | 9 | 13 | 22 | 235 | 323 | 558 |
| Sunnyside .. | 734 | 757 | 1,491 | 120 | 101 | 221 | 33 | 42 | 75 | 27 | 10 | 37 | 914 | 910 | 1,824 |
| Seacliff .. | 696 | 568 | 1,264 | 90 | 73 | 163 | 22 | 25 | 47 | 4 | 4 | 8 | 812 | 670 | 1,482 |
| Ashburn Hall | 8 | 11 | 19 | 1 | 2 | 3 | .. | 1 | 1 | 1 | 2 | 3 | 10 | 16 | 26 |
| Total .. | 4,997 | 5,012 | 10,009 | 690 | 661 | 1,351 | 273 | 293 | 566 | 181 | 133 | 314 | 6,141 | 6,099 | 12,240 |

| Hospital | Patients Discharged, Transferred, and Died | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Discharged | | | | | | | | | | | |
| | Recovered | | | Improved | | | Unimproved | | | Not Committed | | |
| | M. | F. | T. | M. | F. | T. | M. | F. | T. | M. | F. | T. |
| Auckland .. .. .. | 73 | 67 | 140 | 17 | 16 | 33 | 13 | 27 | 40 | 32 | 5 | 37 |
| Kingseat .. .. .. | 8 | 18 | 26 | 3 | 4 | 7 | 10 | 6 | 16 | .. | 1 | 1 |
| Raventhorpe .. .. | 0 | 1 | 1 | .. | 1 | 1 | .. | .. | .. | .. | .. | .. |
| Tokanui .. .. .. | 49 | 57 | 106 | 6 | 1 | 7 | 8 | 4 | 12 | 12 | 4 | 16 |
| Lake Alice .. .. .. | 2 | .. | 2 | .. | .. | .. | 1 | .. | 1 | .. | .. | .. |
| Levin Farm .. .. .. | .. | .. | .. | 1 | .. | 1 | 2 | 3 | 5 | .. | .. | .. |
| Porirua .. .. .. | 124 | 166 | 290 | 18 | 10 | 28 | 8 | 7 | 15 | 21 | 3 | 24 |
| Nelson .. .. .. | 10 | 19 | 29 | 1 | 4 | 5 | 1 | 1 | 2 | .. | .. | .. |
| Seaview .. .. .. | 6 | 5 | 11 | .. | 2 | 2 | 3 | 1 | 4 | 2 | .. | 2 |
| Sunnyside .. .. .. | 21 | 47 | 68 | 2 | 9 | 11 | 6 | 8 | 14 | 28 | .. | 28 |
| Seacliff .. .. .. | 29 | 46 | 75 | 12 | 13 | 25 | 5 | 3 | 8 | 8 | 1 | 9 |
| Ashburn Hall .. .. | 1 | 3 | 4 | 1 | 2 | 3 | .. | .. | .. | .. | .. | .. |
| Total .. .. .. | 323 | 429 | 752 | 61 | 62 | 123 | 57 | 60 | 117 | 103 | 14 | 117 |

| Hospital | Patients Discharged, Transferred, and Died—*continued* | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Transferred | | | Died | | | Total | | |
| | M. | F. | T. | M. | F. | T. | M. | F. | T. |
| Auckland .. .. | 58 | 76 | 134 | 64 | 61 | 125 | 257 | 252 | 509 |
| Kingseat .. .. | 11 | 12 | 23 | 38 | 26 | 64 | 70 | 67 | 137 |
| Raventhorpe .. .. | 2 | 2 | 4 | .. | 10 | 10 | 2 | 14 | 16 |
| Tokanui .. .. | 7 | 4 | 11 | 28 | 43 | 71 | 110 | 113 | 223 |
| Lake Alice .. .. | 20 | .. | 20 | 17 | .. | 17 | 40 | .. | 40 |
| Levin Farm .. .. | 14 | 2 | 16 | 9 | 7 | 16 | 26 | 12 | 38 |
| Porirua .. .. | 40 | 5 | 45 | 48 | 109 | 157 | 259 | 300 | 559 |
| Nelson .. .. | 5 | 2 | 7 | 32 | 31 | 63 | 49 | 57 | 106 |
| Seaview .. .. | 1 | 5 | 6 | 13 | 13 | 26 | 25 | 26 | 51 |
| Sunnyside .. .. | 18 | 21 | 39 | 44 | 58 | 102 | 119 | 143 | 262 |
| Seacliff .. .. | 4 | 4 | 8 | 60 | 62 | 122 | 118 | 129 | 247 |
| Ashburn Hall .. | 1 | .. | 1 | .. | 1 | 1 | 3 | 6 | 9 |
| Total .. .. | 181 | 133 | 314 | 353 | 421 | 774 | 1,078 | 1,119 | 2,197 |

**TABLE 36—Admissions, Discharges, and Deaths, 1959**—*continued*

(b) PATIENTS—*continued*

| Hospital | On Registers 31 December 1959 | | | 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 .. .. | 609 | 683 | 1,292 | 542 | 560 | 1,102 | 40·1 | 39·0 | 39·5 | 11·8 | 10·9 | 11·3 |
| Kingseat .. .. | 475 | 471 | 946 | 434 | 433 | 867 | 10·1 | 26·9 | 17·8 | 8·8 | 6·0 | 7·4 |
| Raventhorpe .. .. | 10 | 265 | 275 | 9 | 262 | 271 | .. | .. | .. | .. | 3·8 | 3·7 |
| Tokanui .. .. | 482 | 500 | 982 | 427 | 415 | 842 | 39·5 | 50·9 | 44·9 | 6·6 | 10·4 | 8·4 |
| Lake Alice .. .. | 313 | .. | 313 | 306 | .. | 306 | .. | .. | .. | 5·6 | .. | 5·6 |
| Levin Farm .. .. | 363 | 198 | 561 | 341 | 182 | 523 | .. | .. | .. | 2·6 | 3·8 | 3·1 |
| Porirua .. .. | 548 | 786 | 1,334 | 520 | 747 | 1,267 | 51·0 | 58·2 | 54·9 | 9·2 | 14·6 | 12·4 |
| Nelson .. .. | 557 | 462 | 1,019 | 539 | 417 | 956 | 26·3 | 38·0 | 33·0 | 5·9 | 7·4 | 6·6 |
| Seaview .. .. | 210 | 297 | 507 | 204 | 292 | 496 | 35·3 | 55·6 | 42·3 | 6·4 | 4·5 | 5·2 |
| Sunnyside .. .. | 795 | 767 | 1,562 | 720 | 667 | 1,387 | 13·7 | 32·9 | 23·0 | 6·1 | 8·7 | 7·4 |
| Seacliff .. .. | 694 | 541 | 1,235 | 646 | 474 | 1,120 | 25·9 | 46·9 | 35·7 | 9·3 | 13·1 | 10·9 |
| Ashburn Hall .. .. | 7 | 10 | 17 | 8 | 10 | 18 | 100·0 | 100·0 | 100·0 | .. | 10·0 | 5·6 |
| Total .. .. | 5,063 | 4,980 | 10,043 | 4,696 | 4,459 | 9,155 | 33·5 | 45·0 | 39·2 | 7·5 | 9·4 | 8·5 |

**TABLE 37—Showing the Admissions, Discharges, and Deaths, With the Mean Annual Mortality and Proportion of Recoveries Per Cent of the Admissions**

(a) VOLUNTARY BOARDERS

| Year | Admitted | | | Discharged | | | | | | | | | Died | | | Remaining on 31 December in Each Year | | | Average Number Resident | | | Percentage of Recoveries on Admissions | | | Percentage of Deaths on Average Number Resident | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Recovered | | | Improved | | | Unimproved | | | | | | | | | | | | | | | | | |
| | 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. |
| 1957 .. | 773 | 953 | 1,726 | 450 | 548 | 998 | 191 | 273 | 464 | 56 | 70 | 126 | 37 | 29 | 66 | 327 | 439 | 766 | 287 | 373 | 660 | 58·2 | 57·5 | 57·8 | 12·9 | 7·8 | 10·0 |
| 1958 .. | 846 | 1,017 | 1,863 | 483 | 635 | 1,118 | 236 | 250 | 486 | 63 | 73 | 136 | 17 | 17 | 34 | 372 | 488 | 860 | 311 | 389 | 700 | 57·1 | 62·4 | 60·0 | 5·5 | 4·4 | 4·9 |
| 1959 .. | 1,052 | 1,231 | 2,283 | 555 | 736 | 1,291 | 304 | 310 | 614 | 103 | 88 | 191 | 29 | 27 | 56 | 428 | 556 | 984 | 374 | 435 | 809 | 52·8 | 59·8 | 56·5 | 7·8 | 6·2 | 6·9 |

(b) PATIENTS

| | 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. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1957 .. | 916 | 1,026 | 1,942 | 323 | 469 | 792 | 64 | 64 | 128 | 79 | 70 | 149 | 448 | 414 | 862 | 4,963 | 5,067 | 10,030 | 4,657 | 4,530 | 9,187 | 35·3 | 45·7 | 40·8 | 9·6 | 9·1 | 9·4 |
| 1958 .. | 901 | 977 | 1,878 | 318 | 472 | 790 | 59 | 73 | 132 | 117* | 78* | 195* | 370 | 396 | 766 | 4,996 | 5,015 | 10,011 | 4,688 | 4,507 | 9,195 | 35·3 | 48·3 | 42·1 | 7·9 | 8·8 | 8·3 |
| 1959 .. | 963 | 954 | 1,917 | 323 | 429 | 752 | 61 | 62 | 123 | 160† | 74† | 234† | 353 | 421 | 774 | 5,063 | 4,980 | 10,043 | 4,696 | 4,459 | 9,155 | 33·5 | 45·0 | 39·2 | 7·5 | 9·4 | 8·5 |

*Includes 65 males and 12 females discharged "not committed". †Includes 103 males and 14 females discharged "not committed".

**TABLE 38—Voluntary Boarders Discharged Recovered, 1959**

| Stay in Hospital | Males | Females | Total |
|---|---|---|---|
| 13 weeks and under .. .. .. | 418 | 465 | 883 |
| 14 to 25 weeks .. .. .. | 53 | 94 | 147 |
| 26 weeks and over .. .. .. | 22 | 40 | 62 |
| On probation .. .. .. | 62 | 137 | 199 |
| Totals .. .. .. | 555 | 736 | 1,291 |

**TABLE 39—Average Cash Cost of Each Patient for Financial Year 1959–60**

| Hospitals | 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 | Furniture, Furnishings, and Equipment, Including Maintenance |
|---|---|---|---|---|---|---|---|---|
| | | £ | £ | £ | £ | £ | £ | £ |
| Auckland .. .. | 1,250 | 207·74 | 52·62 | 15·73 | 14·02 | 3·98 | 19·12 | 2·02 |
| Kingseat (Papakura) .. | 934 | 158·96 | 49·15 | 15·05 | 12·57 | 8·15 | 22·60 | 8·66 |
| Raventhorpe (Bombay) | 278 | 105·62 | 24·86 | 4·01 | 16·98 | 3·08 | 16·20 | 4·47 |
| Tokanui (Te Awamutu) | 925 | 159·79 | 49·20 | 14·93 | 11·00 | 9·44 | 24·60 | 4·31 |
| Lake Alice (Marton) .. | 309 | 133·25 | 68·75 | 12·27 | 8·60 | 14·65 | 20·26 | 2·06 |
| Levin farm (Levin) .. | 523 | 194·14 | 65·34 | 26·53 | 16·05 | 2·06 | 35·31 | 7·34 |
| Porirua .. .. | 1,428 | 146·31 | 62·51 | 17·22 | 6·24 | 5·65 | 25·94 | 4·80 |
| Ngawhatu (Nelson) .. | 995 | 176·06 | 54·96 | 13·63 | 13·81 | 4·69 | 22·63 | 6·22 |
| Seaview (Hokitika) .. | 515 | 168·95 | 45·46 | 11·19 | 6·73 | 3·16 | 25·92 | 2·11 |
| Sunnyside (Christchurch) | 1,503 | 192·32 | 67·12 | 17·34 | 11·65 | 9·42 | 32·60 | 12·30 |
| Seacliff .. .. | 1,225 | 198·11 | 69·73 | 12·95 | 10·08 | 17·62 | 35·73 | 7·26 |
| Head Office .. .. | .. | 1·10 | .. | .. | .. | .. | .. | .. |
| Average total cost .. | 9,885 | 176·20 | 57·98 | 15·39 | 11·25 | 7·88 | 26·57 | 6·26 |

| Hospitals | Rations | Surgery and Dispensary | Miscellaneous | Total Cost Per Patient (*) | Receipts (†) | Net Cost Per Patient (†) | Net Cost Previous Year | +Increase or −Decrease in 1959–60 |
|---|---|---|---|---|---|---|---|---|
| | £ | £ | £ | £ | £ | £ | £ | £ |
| Auckland .. .. | 46·60 | 8·19 | 29·76 | 399·78 | 4·43 | 395·35 | 329·69 | +65·66 |
| Kingseat (Papakura) .. | 49·04 | 10·17 | 31·50 | 365·85 | 12·23 | 353·62 | 312·25 | +41·37 |
| Raventhorpe (Bombay) .. | 42·61 | 0·41 | 19·46 | 237·70 | 3·21 | 234·49 | 232·92 | + 1·57 |
| Tokanui (Te Awamutu) | 52·37 | 6·39 | 26·96 | 358·99 | 19·47 | 339·52 | 335·27 | + 4·25 |
| Lake Alice (Marton) .. | 52·48 | 4·52 | 37·01 | 353·85 | 21·20 | 332·65 | 349·03 | −16·38 |
| Levin Farm (Levin) .. | 59·18 | 5·80 | 34·74 | 446·49 | 1·44 | 445·05 | 441·77 | + 3·28 |
| Porirua .. .. | 47·52 | 7·29 | 25·91 | 349·39 | 2·68 | 346·71 | 327·87 | +18·84 |
| Ngawhatu (Nelson) .. | 43·09 | 5·38 | 25·12 | 365·59 | 6·15 | 359·44 | 328·41 | +31·03 |
| Seaview (Hokitika) .. | 50·19 | 6·92 | 18·57 | 339·20 | 4·85 | 334·35 | 339·46 | − 5·11 |
| Sunnyside (Christchurch) | 60·61 | 10·29 | 30·46 | 444·11 | 17·30 | 426·81 | 384·42 | +42·39 |
| Seacliff .. .. | 53·65 | 12·22 | 35·97 | 453·32 | 25·02 | 428·30 | 425·23 | + 3·07 |
| Head Office .. .. | .. | .. | 2·95 | 4·05 | .. | 4·05 | 2·76 | + 1·29 |
| Average total cost .. | 51·08 | 8·09 | 32·08 | 392·78 | 11·36 | 381·42 | 354·45 | +26·97 |

*Cost does not include interest on capital and depreciation on buildings, etc.
†Receipts from maintenance not included.

BY AUTHORITY:
R. E. OWEN, GOVERNMENT PRINTER, WELLINGTON, NEW ZEALAND—1960

*Price 5s. 6d.* 23734—60